USGS
science for a changing world

Prepared in cooperation with the Commonwealth of Puerto Rico,
the Government of the U.S. Virgin Islands, and with other agencies

Water Resources Data
Puerto Rico and the U.S. Virgin Islands
Water Year 2004

Water-Data Report PR-04-1

U.S. Department of the Interior
U.S. Geological Survey

Calendar for Water Year 2004

2003

October

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

November

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

December

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

2004

January

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29						

March

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

April

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

May

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

June

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

July

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

August

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

September

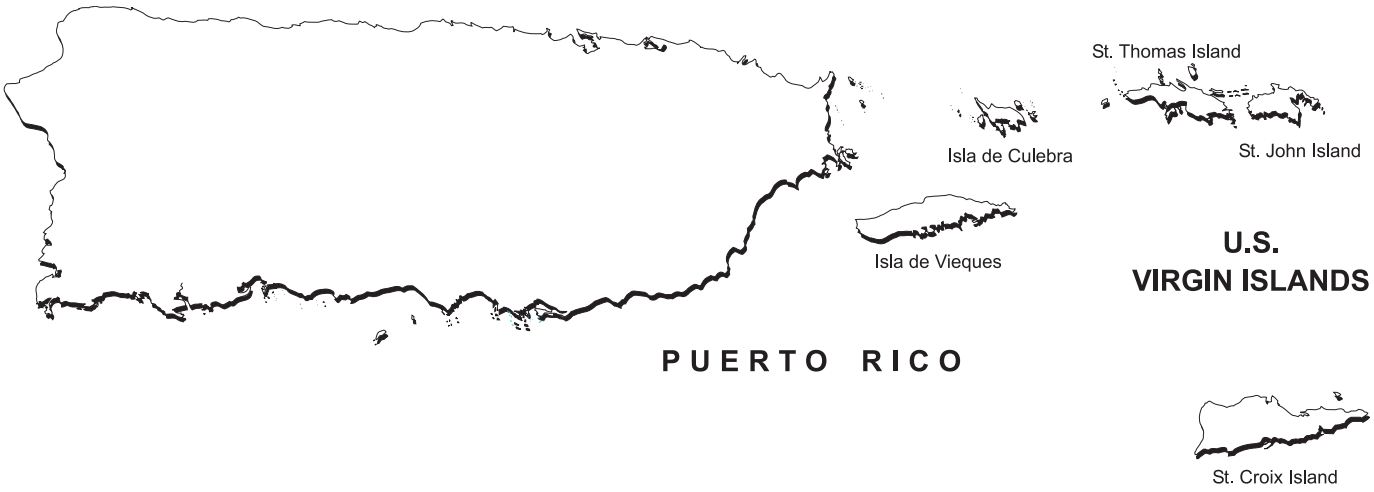
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

U.S. Department of the Interior
U.S. Geological Survey

Water Resources Data Puerto Rico and the U.S. Virgin Islands Water Year 2004

By Carlos Figueroa-Alamo, Zaida Aquino, Senén Guzmán-Ríos, and Ana V. Sánchez

Water-Data Report PR-04-1



Prepared in cooperation with the Commonwealth of Puerto Rico, the Government of the U.S. Virgin Islands, and with other agencies

U.S. Department of the Interior
P. Lynn Scarlett, Acting Secretary

U.S. Geological Survey
P. Patrick Leahy, Acting Director

2006

U.S. Geological Survey
GSA Center, Suite 400-15
651 Federal Drive
Guaynabo, PR 00965
Telephone: (787) 749-4346

Information about the USGS, Caribbean Water Science Center, is available on the Internet at http://pr.water.usgs.gov/

Information about all USGS reports and products is available by calling 1-888-ASK-USGS or on the Internet via the World Wide Web at http://www.usgs.gov/

Additional earth science information is available by accessing the USGS home page at http://www.usgs.gov/

PREFACE

This annual hydrologic data report of Puerto Rico and the U.S. Virgin Islands is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, the U.S. Virgin Islands, and the other Trust Territories. These records of streamflow, ground-water levels, and quality-of-water provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

The report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey, Caribbean Water Science Center, who collected, compiled, analyzed, verified, and organized the data, and who revised, edited, typed, illustrated, and assembled the report. In addition to the authors, who had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to the U.S. Geological Survey policy and established guidelines, the following individuals contributed significantly to the collection, processing, and preparation of the data:

Alexander Avila
George Arroyo
Iris M. Concepción
Israel Cruz
Angel G. Ferrer
Yaniré Martínez
José Merced
Carlos Narvaez
Julio Oms
Awilda Ortíz
Rafael Peña-Cortéz
Ronald T. Richards
Manuel Rosario
José René Sánchez
Luis Santiago-Rivera
Carlos Santos
Luis Soler
Elliot M. Sosa
Angel Torres
Heriberto Torres-Sierra
James Torres
Sigfredo Torres-González
Luis Vega

Francisco Maldonado prepared the illustrations and Ruth I. Guzmán prepared the scripts for surface-water discharge, water-quality, and miscellaneous stations (with the assistance of Iris M Concepción), and typed and assembled the report. Iris M. Concepción prepared the scripts for the daily sediment stations and Ana V. Sánchez prepared the scripts for the ground-water level stations.

This report was prepared in cooperation with agencies of the Commonwealth of Puerto Rico, the Government of the U.S. Virgin Islands, and with other Federal agencies under the general supervision of Pedro L. Díaz, Director, Caribbean Water Science Center, San Juan, Puerto Rico.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	June 2006	Annual - October 1, 2003 to September 30, 2004

4. TITLE AND SUBTITLE

Water Resources Data for Puerto Rico and the U.S. Virgin Islands
Water Year 2004

5. FUNDING NUMBERS

6. AUTHOR(S)

Carlos Figueroa-Alamo, Zaida Aquino, Senén Guzmán-Ríos, and Ana V. Sánchez

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

U.S. Geological Survey, Caribbean Water Science Center
GSA Center, 651 Federal Drive, Suite 400-15
Guaynabo, Puerto Rico 00965

8. PERFORMING ORGANIZATION REPORT NUMBER

USGS-WDR-PR-04-1

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

U.S. Geological Survey, Caribbean Water Science Center
GSA Center, 651 Federal Drive, Suite 400-15
Guaynabo, Puerto Rico 00965

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

USGS-WDR-PR-04-1

11. SUPPLEMENTARY NOTES

Prepared in cooperation with the Commonwealth of Puerto Rico, the Government of the U.S. Virgin Islands, and other agencies.

12a. DISTRIBUTION / AVAILABILITY STATEMENT

NO RESTRICTION ON DISTRIBUTION

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

Water resources data for surface-water, quality-of-water, and ground-water records for the 2004 water year for Puerto Rico and the U.S. Virgin Islands consists of records of discharge, water quality of streams, and water levels of wells. This report contains discharge records for 89 streamflow-gaging stations; daily sediment records for 13 streamflow stations; stage records for 18 reservoirs; water-quality records for 20 streamflow-gaging stations, 38 ungaged stream sites, 1 lake site, 2 lagoons, and 1 bay; and water-level records for 72 observation wells. These data represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating local and Federal agencies in Puerto Rico and the U.S. Virgin Islands.

14. SUBJECT TERMS

*Puerto Rico, *U.S. Virgin Islands, *Surface water, *Water quality, *Ground water, Aquifers, Chemical analysis, Gaging stations, Hydrologic data sediments, Streamflow, Water analysis, Water levels, Lakes

15. NUMBER OF PAGES

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified		

CONTENTS

Page

Preface iii
List of Surface-Water and Water-Quality stations, in Downstream Order, for Which Records are Published in this Volume vii
List of Ground-Water Wells, by Basin, for Which Records are Aublished in this Volume xii
List of Discontinued Streamflow Stations xiv
Introduction 1
Cooperation 2
Summary of Hydrologic Conditions 3
- Precipitation 3
- Surface Water 4
- Ground Water 6
- Water Quality 9

Special Networks and Programs 13
Explanation of Records 14
Downstream Order and Station Number 14
Numbering System for Wells and Miscellaneous Sites 19
Explanation of Stage- and Water-Discharge Records 19
- Data Collection and Computation 19
- Data Presentation 20
  - Station Manuscript 21
  - Data Table of Daily Mean Values 22
  - Statistics of Monthly Mean Data 22
  - Summary Statistics 22
- Identifying Estimated Daily Discharge 24
- Accuracy of Field Data and Computed Results 24
- Other Data Records Available 25

Surface-Water Quality Records 25
- Classification of Records 25
- Arrangement of Records 25
- On-Site Measurements and Sample Collection 25
- Water Temperature 26
- Sediment 26
- Laboratory Measurements 27
- Data Presentation 27
- Remark Codes 28
- Water-Quality Control Data 28
- Blank Samples 28
- Reference Samples 29
- Replicate Samples 29
- Spike Samples 30

Explanation of Ground-Water-Levels Records 30
- Site Identification Numbers 30
- Data Collection and Computation 30
- Data Presentation 31
  - Water-Level Tables 31
  - Hydrographs 32

Access to U.S. Geological Survey Water Data 32
Definition of Terms 33
Techniques of Water-Resources Investigations of the U.S. Geological Survey 51
Surface and Quality-of-Water Records for Puerto Rico 55
Water Quality at Partial Record Stations in Puerto Rico 447
Ground-Water Records for Puerto Rico 491
Ground-Water Records for U.S. Virgin Islands 563
Index 571

ILLUSTRATIONS

Page

Figure
1. Graphs showing monthly-mean discharge of selected streams in Puerto Rico 5
2. Graphs showinground-water levels at selected wells in Puerto Rico and the U.S. Virgin Islands 7
3. Map showing location of maximum concentrations of fecal coliform bacteria at the water-quality sampling sites in Puerto Rico 10
4. Map showing location of maximum concentrations of total coliform bacteria at the water-quality sampling sites in Puerto Rico 11
5. Map showing location of surface-water stations in Puerto Rico 15
6. Map showing location of water-quality stations in Puerto Rico 16
7. Map showing location of ground-water stations in Puerto Rico 17
8. Map showing location of ground-water stations in the U.S. Virgin Islands 18
9. Grid showing system for numbering wells and miscellaneous sites (latitude and longitude) 19
10. Map showing the Río Guajataca basin 57
11. Map showing the Río Camuy basin 75
12. Map showing the Río Grande de Arecibo basin 79
13. Map showing the Río Grande de Manatí basin 155
14. Map showing the Río Cibuco basin 185
15. Map showing the Río de la Plata basin 193
16. Map showing the Río Hondo to Río Puerto Nuevo basins 219
17. Map showing the Río Grande de Loíza basin 247
18. Map showing the northeastern river basins -- Río Herrera to Río Antón Ruíz basins 293
19. Map showing the southeastern river basins -- Río Humacao to Quebrada Aguas Verdes basins 319
20. Map showing the south coast river basins -- Río Salinas to Río Jacaguas basins 343
21. Map showing the south coast river basins -- Río Inabón to Río Loco basins 367
22. Map showing the Río Guanajibo basin 413
23. Map showing the Río Yagüez to Río Grande de Añasco basins....425
24. Map showing the Río Culebrinas basin 437

TABLES

Page

Table
1. Islandwide monthly rainfall for the water year 2004 and monthly normal rainfall for the 30-year reference period, 1970-2000 3
2. Highest ground-water levels recorded during 2004 water year and previous high ground-water levels at selected wells in Puerto Rico and the U.S. Virgin Islands 8
3. Lowest ground-water levels recorded during 2003 water year and previous lowest ground-water levels at selected wells in Puerto Rico 8
4. Sediment yields at selected sediment stations for water year 2004 12

SURFACE-WATER AND WATER-QUALITY STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

(Letter after station name designates type of data: (d) discharge, (c) chemical, (b) biological, (s) sediment, (p) pesticide, (e) elevation, gage heights)

	Station number	Page
RIO GUAJATACA BASIN		
Río Guajataca at Lares (c,b)	50010500	58
Lago Guajataca at Damsite near Quebradillas (e)	50010800	60
Canal Principal de Diversiones at Lago Guajataca (c,b)	50011000	62
Canal de Riego de Moca below Forebay (d)	50011080	64
Canal Moca above Lago Regulador (d)	50011085	66
Canal de Moca below Hwy 112 (d)	50011095	68
Canal Moca (M216) above Aguadilla Plant (d)	50011130	70
Río Guajataca above mouth near Quebradillas (c,b)	50011400	72
RIO CAMUY BASIN		
Río Camuy near Bayaney (d)	50014800	76
RIO GRANDE DE ARECIBO BASIN		
Lago Garzas near Adjuntas (e)	50020100	80
Río Grande de Arecibo near Adjuntas (d,c,b)	50020500	82
Río Pellejas above Central Pellejas (d)	50021030	86
Río Grande de Arecibo above Utuado (d)	50021700	88
Río Viví below Hacienda El Progreso (d,s)	50022810	90
Río Grande de Arecibo below Utuado (d,s)	50024950	100
Río Grande de Arecibo near Utuado (c,b)	50025000	106
Río Saliente at Coabey near Jayuya (d,s)	50025155	108
Río Jauca at Paso Palma (d,s)	50025850	113
Río Caonillas at Paso Palma (d,s)	50026025	119
Río Caonillas above Lago Caonillas near Jayuya (c,b)	50026050	124
Lago Caonillas at Damsite near Utuado (e)	50026140	126
Río Caonillas below Lago Caonillas Tunnel (d)	50026200	128
Río Yunes at Hwy 140 near Florida (d,s)	50026400	130
Río Limón above Lago Dos Bocas (d)	50027000	135
Lago Dos Bocas at Damsite near Utuado (e)	50027100	138
Río Grande de Arecibo below Lago Dos Bocas near Florida (c,b)	50027250	140
Río Grande de Arecibo near San Pedro (d)	50027600	142
Río Tanamá near Utuado (d,c,b)	50028000	144
Río Tanamá at Charco Hondo (d)	50028400	148
Río Grande de Arecibo at Central Cambalache (d,c,b)	50029000	150
RIO GRANDE DE MANATI BASIN		
Río Orocovis at Orocovis (d)	50030460	156
Río Orocovis near Orocovis (c,b)	50030700	158
Río Grande de Manatí near Morovis (d,c,b,s)	50031200	160
Lago El Guineo at Damsite near Villalba (e)	50032290	167
Lago de Matrullas at Damsite near Orocovis (e)	50032590	169
Río Bauta near Orocovis (d)	50034000	171
Río Grande de Manatí at Ciales (d)	50035000	173
Río Grande de Manatí at Highway 149 at Ciales (c,b)	50035500	175
Río Cialitos at Highway 649 at Ciales (c,b)	50035950	177
Río Grande de Manatí at Highway 2 near Manatí (d,c,b,p)	50038100	179

SURFACE-WATER AND WATER-QUALITY STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME—Continued

	Station number	Page
LAGUNA TORTUGUERO BASIN		
Laguna Tortuguero outlet near Vega Baja (c,b)	50038200	183
RIO CIBUCO BASIN		
Río Cibuco below Corozal (d,c,b)	50038320	186
Río Cibuco at Vega Baja (d,c,b)	50039500	190
RIO DE LA PLATA BASIN		
Lago Carite at Gate Tower near Cayey (e)	50039990	194
Río de la Plata at Proyecto La Plata (c,b)	50043000	196
Río de la Plata at Comerío (d,s)	50043800	198
Río de la Plata near Comerío (c,b)	50044000	203
Río Guadiana near Guadiana (d,s)	50044810	205
Río Guadiana near Naranjito (c,b)	50044850	210
Lago La Plata at Damsite near Toa Alta (e)	50045000	212
Río de la Plata below La Plata Dam (d)	50045010	214
Río de la Plata at Highway 2 near Toa Alta (d,c,b,p)	50046000	216
Río Hondo at Flood Channel near Cataño (c,b)	50047530	220
RIO DE BAYAMON BASIN		
Río de Bayamón at Arenas (d)	50047535	221
Lago de Cidra at Damsite near Cidra (e)	50047550	223
Río de Bayamón below Lago Cidra (d)	50047560	225
Río de Bayamón near Aguas Buenas (c,b)	50047600	227
Río de Bayamón near Bayamón (d)	50047850	228
Río Guaynabo near Bayamón (c,b)	50047990	230
Río de Bayamón at Flood Channel at Bayamón (c,b,p)	50048510	232
RIO PUERTO NUEVO BASIN		
Río Piedras:		
Lago Las Curías at Damsite near Río Piedras (e)	50048680	234
Quebrada Las Curías below Las Curías Dam (d)	50048690	236
Río Piedras at El Señorial (d)	50048770	238
Río Piedras near Río Piedras (c,b,p)	50048800	240
Río Piedras at Hato Rey (d,c,b)	50049100	242
Laguna San José:		
Laguna San José No. 2 at San Juan (c,b)	50049820	245
Bahía de San Juan:		
Bahía de San Juan No. 5 at San Juan (c,b)	50049920	246
QUEBRADA BLASINA BASIN		
Quebrada Blasina near Carolina (c,b)	50050300	248
RIO GRANDE DE LOIZA BASIN		
Río Grande de Loíza at Quebrada Arenas (d)	50050900	249
Quebrada Salvatierra near San Lorenzo (d)	50051180	251
Río Cayaguas at Cerro Gordo (d)	50051310	253
Río Grande de Loíza at Highway 183 near San Lorenzo (d)	50051800	255
Río Turabo above Borinquén (d)	50053025	257
Río Grande de Loíza at Caguas (d,c,b,s)	50055000	259
Río Cagüitas:		
Río Cagüitas at Villa Blanca at Caguas (d)	50055225	267
Río Cagüitas at Highway 30 at Caguas (c,b)	50055250	269

SURFACE-WATER AND WATER-QUALITY STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME—Continued

	Station number	Page
RIO GRANDE DE LOIZA BASIN—Continued		
Río Bairoa:		
Río Bairoa near Caguas (c,b)	50055400	270
Río Gurabo:		
Río Gurabo below El Mangó (d,s)	50055750	272
Río Valenciano near Juncos (d)	50056400	277
Río Gurabo near Gurabo (c,b)	50057025	279
Lago Loíza at Damsite near Trujillo Alto (c,b,e)	50059000	281
Río Grande de Loíza below Damsite (d)	50059050	284
Río Grande de Loíza below Trujillo Alto (c,b)	50059100	286
Río Canóvanas near Campo Rico (d)	50061800	288
RIO ESPIRITU SANTO BASIN		
Quebrada Sonadora near El Verde (d)	50063440	290
Río Espíritu Santo near Río Grande (d,c,b)	50063800	294
Río Grande near El Verde (d)	50064200	297
RIO MAMEYES BASIN		
Río Mameyes near Sabana (d)	50065500	299
Río Mameyes at Mameyes (d)	50066000	301
RIO SABANA BASIN		
Río Sabana at Sabana (d)	50067000	303
RIO FAJARDO BASIN		
Río Fajardo at Paraíso near Fajardo (d)	50070900	305
Río Fajardo near Fajardo (d,c,b,p)	50071000	307
Río Fajardo below Fajardo (c,b)	50072500	311
RIO BLANCO BASIN		
Quebrada Guabá near Naguabo (d)	50074950	312
Río Icacos near Naguabo (d)	50075000	314
Río Blanco near Florida (d)	50076000	316
RIO HUMACAO BASIN		
Río Humacao at Las Piedras (d)	50081000	320
Humacao at Highway 3 at Humacao (c,b)	50082000	322
RIO GUAYANES BASIN		
Río Guayanés at Yabucoa (c,b,p)	50083500	324
Río Guayanés above mouth at Playa de Guayanés (c,b)	50086500	326
RIO MAUNABO BASIN		
Río Maunabo at Lizas (d)	50090500	327
Río Maunabo at Maunabo (c,b)	50091000	329
RIO CHICO BASIN		
Río Chico at Providencia (c,b)	50091800	331
RIO GRANDE DE PATILLAS BASIN		
Río Grande de Patillas near Patillas (d,c,b)	50092000	332
Río Marín near Patillas (d)	50093000	335
Lago Patillas at Damsite near Patillas (e)	50093045	337
Canal de Riego de Patillas above Guayama Filtration Plant (d)	50093075	339
Canal de Riego de Patillas below Guayama Filtration Plant (d)	50093078	341

SURFACE-WATER AND WATER-QUALITY STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME—Continued

	Station number	Page
RIO SALINAS BASIN		
Río Lapa near Rabo del Buey (d)	50100200	344
Río Majada at La Plena (d)	50100450	346
RIO COAMO BASIN		
Río Coamo at Hwy 14 at Coamo (d)	50106100	348
Río Coamo near Coamo (c,b)	50106500	350
RIO DESCALABRADO BASIN		
Río Descalabrado near Los Llanos (d)	50108000	352
RIO JACAGUAS BASIN		
Río Toa Vaca above Lago Toa Vaca (d,s)	50110900	354
Lago Toa Vaca at Damsite near Villalba (e)	50111210	359
Lago Guayabal at Damsite near Juana Díaz (e)	50111300	361
Río Jacaguas at Juana Díaz (d)	50111500	363
RIO INABON BASIN		
Río Inabón at Real Abajo (d)	50112500	365
RIO BUCANA BASIN		
Río Cerrillos above Lago Cerrillos near Ponce (d)	50113800	368
Lago Cerrillos at Damsite near Ponce (e)	50113950	370
Río Cerrillos near Ponce (d,c,b)	50114000	372
RIO PORTUGUES BASIN		
Río Portugues at Tibes (d,s)	50114900	376
Río Portugués near Ponce (c,b)	50115000	382
Río Portugués at Highway 14 at Ponce (d)	50115900	384
Río Portugués at Ponce (c,b,p)	50116200	386
RIO GUAYANILLA BASIN		
Río Guayanilla near Guayanilla (d)	50124200	388
Río Guayanilla at Central Rufina (c,b,p)	50124700	390
RIO YAUCO BASIN		
Lago Lucchetti at Damsite near Yauco (e)	50125780	392
Río Yauco above Diversion Monserrate near Yauco (d)	50126150	394
RIO LOCO BASIN		
Lago Loco at Damsite near Yauco (e)	50128900	396
Canal de Riego de Lajas below Lago Loco Dam at Yauco (d)	50128905	398
Canal de Riego de Lajas above Majinas Filtration Plant (d)	50128920	400
Canal Principal de Riego Valle de Lajas Basin (d)	50128925	402
Canal Principal de Riego Valle de Lajas Basin (d)	50128935	404
Canal de Riego de Lajas below Lajas Filtration Plant at Lajas (d)	50128940	406
Canal de Riego de Lajas at Bo. Palmarejo near Lajas (d)	50128945	408
Río Loco at Guánica (c,b,p)	50129700	410
RIO GUANAJIBO BASIN		
Río Guanajibo near San Germán (c,b)	50133600	414
Río Rosario near Hormigueros (d,c,b)	50136400	416
Río Guanajibo near Hormigueros (d,c,b,p)	50138000	420
RIO YAGÚEZ		
Río Yagüez near Mayagüez (c,b)	50138800	

SURFACE-WATER AND WATER-QUALITY STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME—Continued

	Station number	Page
RIO GRANDE DE AÑASCO BASIN		
Lago Guayo at Damsite near Castañer (e)	50141500	427
Río Grande de Añasco near Lares (c,b)	50143000	429
Rio Grande de Añasco near San Sebastian (d,c,b)	50144000	431
Río Grande de Añasco near Añasco (c,b,p)	50146000	434
RIO CULEBRINAS BASIN		
Río Culebrinas near San Sebastián (c,b)	50147600	438
Río Culebrinas at Highway 404 near Moca (d)	50147800	440
Río Culebrinas at Margarita Dam near Aguada (d)	50148890	442
Río Culebrinas near Aguada (c,b,p)	50149100	444

GROUND-WATER WELLS, BY BASIN, FOR WHICH RECORDS ARE PUBLISHED

Page

RIO GUAJATACA BASIN:
Well 182422067015100. Local number, 165 492
Well 182647066552400. Local number, 202 493

RIO CAMUY BASIN
Well 182723066511200. Local number, 1026 495

RIO GRANDE DE ARECIBO BASIN
Well 182737066370900. Local number, 204 496
Well 182616066364100. Local number, 1052 497
Well 182626066345100. Local number, 1053 498
Well 182639066385200. Local number, 1056 499
Well 182209066340600. Local number, 1057 500

RIO GRANDE DE MANATI BASIN
Well 182544066341500. Local number, 205 501
182549066304300. Local number, 166 493
Well 182506066280200. Local number, 1076 503
Well 182308066260400. Local number, 210 504

RIO CIBUCO BASIN
Well 182712066251700. Local number, 1102 505
Well 182615066235300. Local number, 211 506
Well 182647066201700. Local number, 70 507
Well 182330066185700. Local number, 213 508

RIO DE LA PLATA BASIN
Well 182526066165001. Local number, 1127 509
Well 182548066164401. Local number, 1128 510
Well 182620066163403. Local number, 1130 512
Well 182654066150600. Local number, 1133 513
Well 182530066135400. Local number, 216 514
Well 180646066095500. Local number, 1134 515

RIO HONDO TO RIO PUERTO NUEVO BASINS
Well 182441066082600. Local number, 219 516
Well 182531066075900. Local number, 652 517
Well 182435066052700. Local number, 1153 518
Well 182445066043401. Local number, 1154 519
Well 182406066034700. Local number, 1158 520
Well 182451066080200. Local number, 1159 521

RIO GRANDE DE LOIZA BASIN
Well 181352066025300. Local number, 1176 522
Well 181311066022500. Local number, 1177 523
Well 181539066014500. Local number, 1179 524
Well 182515065594100. Local number, 222 525

RIO HERRERA TO RIO ANTON RUIZ BASINS
Well 181217065453000. Local number, 1203 526
Well 182131065421100. Local number,1205 527
Well 181917065382701. Local number, 1207 528
Well 182234065440000. Local number, 1208 529

GROUND-WATER WELLS, BY BASIN, FOR WHICH RECORDS ARE PUBLISHED—Continued

Page

RIO HUMACAO TO QUEBRADA AGUAS VERDES BASINS
Well 180415065513900. Local number, 96 530
Well 175855066050500. Local number, 1228 531
Well 175728066072200. Local number, 1229 532
Well 172719066085500. Local number, 1230 533
Well 175858066100200. Local number, 6 534
Well 175947066130601. Local number, 1233 535
Well 175814066102200. Local number, 1239 536

RIO SALINAS TO RIO JACAGUAS BASINS
Well 175809066133100. Local number, 1251 537
Well 180104066152300. Local number, 1253 539
Well 175910066155500. Local number, 1254 540
Well 175848066170700. Local number, 1256 541
Well 175943066224800. Local number, 1257 542
Well 175929066232200. Local number, 87 543
Well 180020066261500. Local number, 1258 544
Well 180602066133100. Local number, 1260 545
Well 175833066145800. Local number, 1261 546
Well 175735066151800. Local number, 1262 548
Well 175734066233300. Local number, 146 549
Well 175843066244100. Local number, 1263 550
Well 175756066244001. Local number, 1264 552

RIO INABON TO RIO LOCO BASINS
Well 175950066354200. Local number, 141 553
Well 175934066364800. Local number, 1276 554
Well 180045066381600. Local number, 1277 555
Well 180156066434000. Local number, 1278 556
Well 180133066503300. Local number, 132 557

RIO GUANAJIBO BASIN
Well 180132067033800. Local number, 143 558
Well 180415065513900. Local number, 1301 559
Well 180103067042500. Local number, 1303 560

RIO CULEBRINAS BASIN
Well 182017067143300. Local number, 1352 561
Well 182442067091700. Local number, 200 562

ST. CROIX BASIN, U.S. VIRGIN ISLANDS
Well 174225064472000. Local number, 2 564
Well 174243064475100. Local number, 3 565
Well 174316064480800. Local number, 13 566

ST. THOMAS BASIN, U.S. VIRGIN ISLANDS
Well 182038064550300. Local number, 6 567
Well 182038064580000. Local number, 8 568

ST. JOHN BASIN, U.S. VIRGIN ISLANDS
Well 181956064464500. Local number, 11 569

DISCONTINUED STREAMFLOW STATIONS

The following continuous-record streamflow stations in Puerto Rico and the U.S. Virgin Islands have been discontinued or converted to partial-record stations. Daily streamflow or stage records were collected for the period of record shown for each station.

Station number	Station name	Drainage area (mi^2)	Period of record
50007000	Quebrada de los Cedros near Isabela	6.91	1970
50010600	Río Guajataca above Lago de Guajataca	--	1984-89
50011000	Canal Diversion Lago Guajataca	--	1970
50011200	Río Guajataca below Lago Guajataca	--	1969-70,1984-87
50011400	Río Guajataca above mouth near Quebradillas	--	1969-70,1984-89
50013000	Río Camuy near Lares	7.62	1969-71
50014000	Río Criminales near Lares	4.68	1969-70
50014600	Río Camuy at Tres Pueblos Sinkhole	--	1990-96
50015700	Río Camuy near Hatillo	--	1984-96
50016000	Río Camuy near Camuy	--	1969-73
50021050	Río Pellejas below Central Pellejas	7.89	1972-75
50021500	Río Pellejas near Utuado	9.55	1969-71
50023000	Río Viví near Central Pellejas	5.66	1969-75
50027200	Río Grande de Arecibo below Lago Dos Bocas	169	1970-71
50027250	Río Grande de Arecibo below Lago Dos Bocas near Florida	170	2000-2002
50027750	Río Grande de Arecibo above Arecibo	170	1982-2002
50031500	Río Sana Muerto near Orocovis	3.68	1965-70
50035200	Río Grande de Manatí at Hwy 145 at Ciales	132	1972
50035950	Río Cialitos at Hwy 649 at Ciales	17	1970-82
50038360	Río Mavilla near Corozal	9.51	1969-70
50038600	Río Unibón near Morovis	5.29	1969-70
50038700	Río Morovis at Morovis	1.26	1968
50038900	Río Indio at Vega Baja	--	1963,66,71
50039600	Río Cibuco at Central San Vicente	--	1969-72
50043200	Río Usabon near Barranquitas	9.15	1968-69,71
50043400	Río Aibonito Tributary near Aibonito	1.13	1968-71
50044600	Río Guadiana near Naranjito	1.73	1971
50044650	Quebrada del Toro near Naranjito	0.54	1971
50044800	Quebrada Anones near Naranjito	2.32	1971
50045700	Río Lajas at Toa Alta	8.65	1966-75
50047540	Río Sabana at Vista Monte	0.80	1993,1996-2002
50047820	Río de Bayamón at Hwy 174 near Bayamón	31.90	1966
50048000	Río de Bayamón at Bayamón	71.90	1963-67
50049000	Río Piedras at Río Piedras	12.5	1971-82, 1987-93
50049310	Quebrada Josefina at Piñero Avenue	3.84	1988-91
50051150	Quebrada Blanca at El Jagual	3.25	1984-2002
50053050	Río Turabo at Borinquen	7.89	1984-90
50054000	Quebrada de las Quebradillas near Caguas	6.25	1969-71,73
50055100	Río Cagüitas near Aguas Buenas	5.30	1990-2003
50055170	Río Cagüitas near Caguas	8.27	1992-97
50055390	Río Bairoa at Bairoa	5.08	1990-2001
50055650	Quebrada Caimito near Juncos	0.82	1984-87
50056000	Río Valenciano near Las Piedras	6.85	1971
50056900	Quebrada Mamey near Gurabo	2.30	1984-92
50058300	Quebrada Arena near Caguas	--	1971

DISCONTINUED STREAMFLOW STATIONS—Continued

Station number	Station name	Drainage area (mi^2)	Period of record
50061300	Río Canovanillas near Loíza	14.40	1968-73
50062500	Río Herrera near Colonia Dolores	2.75	1968-72
50063300	Río Espíritu Santo near El Verde	2.23	1968-73
50063500	Quebrada Toronja at El Verde	0.064	1983-96
50065700	Río Mameyes at Hwy 191 at Mameyes	11.80	1967-85
50070500	Río Fajardo above Fajardo	3.69	1995-2001
50072000	Río Fajardo at Fajardo	21.60	1960-63
50073200	Río Daguao at Daguao	2.26	1966-82
50073400	Quebrada Palma at Daguao	4.84	1972-77
50074000	Río Santiago at Naguabo	4.99	1966-82
50075500	Río Blanco at Florida	11.00	1966-82
50077000	Río Blanco at Río Blanco	17.60	1973-77
50077400	Río Blanco at Colonia La Fe	18.80	1967-70
50078500	Río Anton Ruíz at Central Pasto Viejo	4.33	1968
50081500	Río Humacao near Humacao	9.23	1973
50082000	Río Humacao at Hwy 3 at Humacao	17.30	1983-85
50082200	Río Humacao near La Suiza	19.90	1965-66, 1969-71
50082800	Río Guayanés near Colonia Laura	4.69	1969-82
50083500	Río Guayanés near Yabucoa	17.20	1969-71
50084000	Río Limones near Yabucoa	7.89	1969-71
50085100	Río Guayanés at Central Roig	26.60	1965-66, 1968,70
50086100	Río del Ingenio at Comunas	5.50	1965-66, 1968-69
50086500	Río Guayanés at Playa Guayanés	34.00	1965-66, 1968-71
50087200	Caño Santiago near Central Roig	6.04	1965-71
50091000	Río Maunabo at Maunabo	12.40	1965,67, 1969-82
50091200	Río Maunabo near Maunabo	12.70	1971-72
50091400	Río Jacaboa near Lamboglia	4.13	1965-73
50091700	Río Chico at Patillas	6.82	1965, 1969-72
50091800	Río Chico at Providencia	4.90	1965, 1967-69, 1971
50094200	Río Grande de Patillas at Patillas	27.90	1967, 1969, 1971
50094300	Río Grande de Patillas at Providencia	29.00	1971
50094400	Río Nigua at Pitahaya	5.86	1965, 1969, 1970-71, 1973
50095200	Río Guamaní at Guayama	8.22	1969-71
50095500	Río Guamaní near Guayama	12.30	1969-70
50099000	Quebrada Aguas Verdes near Salinas	0.39	1989
50106500	Río Coamo near Coamo	46.00	1967-68, 1984-85, 1986
50106900	Río Coamo below Lago Coamo near Coamo	65.40	1967-68
50107200	Río Coamo at mouth near Santa Isabel	69.30	1967-68
50108200	Río Descalabrado at Las Ollas	13.90	1965, 1967-71
50108500	Río Descalabrado near Santa Isabel	18.10	1966-67
50111200	Río Toa Vaca near Villalba	21.40	1966-70
50111700	Río Jacaguas near Juana Díaz	53.20	1966-68
50111750	Río Jacaguas below Quebrada Guanábana	56.30	1989
50112100	Río Jacaguas near Arús	59.60	1966-67
50112600	Río Inabón at Coto Laurel	--	1967-71

DISCONTINUED STREAMFLOW STATIONS—Continued

Station number	Station name	Drainage area (mi^2)	Period of record
50113100	Río Guayo near Coto Laurel	11.80	1965, 1968-71
50113500	Río Inabón near Arús	30.20	1964-65
50114390	Río Bucaná at Hwy 14 Bridge near Ponce	24.9	1987-2002
50114400	Río Bucaná near Ponce	25.60	1965-81
50114700	Río Bucaná near Playa de Ponce	28.40	1964-67
50115000	Río Portugués near Ponce	8.82	1964-97
50116500	Río Portugués at Highway 2 Bypass at Ponce	20.50	1964-65
50119000	Río Matilde at Ponce	19.40	1965-66
50121000	Río Tallaboa at Peñuelas	24.20	1959-82
50122000	Río Tallaboa at Tallaboa	31.50	1959-63
50124000	Río Guayanilla nr Guayanilla	18.50	1961-69
50124500	Río Guayanilla at Guayanilla	20.80	1971-82
50125900	Río Duey above Diversion near Yauco	8.93	1977-80
50128000	Río Yauco near Yauco	45.50	1962-64, 1977-85
50129000	Río Loco near Yauco	8.50	1963-67
50129500	Río Loco near Guánica	21.00	1963-69
50129900	Laguna Cartagena near Boquerón	--	1984-86
50130320	Quebrada Mamey at Joyuda	0.38	1986-88
50136000	Río Rosario at Rosario	16.40	1975-86
50141000	Río Yahuecas near Adjuntas	15.40	1980-85
50145000	Río Grande de Añasco at El Espino	108.00	1959-66, 1961-63
50147000	Río Culebrinas at San Sebastian	16.70	1960-82
50214500	Quebrada Resaca near Monte Resaca, Culebra	0.23	1991-93
50215000	Drainage Canal at Culebra Airport, Culebra	0.08	1991-93
50231000	Quebrada Confresí Tributary near Isabel II, Vieques	0.28	1991-93
50232000	Quebrada La Mina near Esperanza, Vieques	0.68	1991-96
50233000	Quebrada Pilón at Colonia Puerto Real, Vieques	0.67	1991-96
50276000	Turpentine Run at Mariendal, St.Thomas	2.97	1963-69, 1978-86
50292600	Lameshur Bay Gut at Lameshur, St. John	0.38	1992-94
50294000	Fish Bay Gut at Fish Bay, St. John	1.48	1992-94
50295500	Cruz Bay Gut at Cruz Bay, St. John, VI	0.09	1992-93
50332000	River Gut at River	1.42	1991-93
50333500	River Gut near Golden Grove	5.40	1990-93
50333700	River Gut at Hwy 66 at Fairplanes	5.89	1990-96
50334500	Bethehem Gut at Hwy 66 at Fairplanes	4.11	1990-96
50337500	Gut 4.5 at Cane Valley	0.2	1991-93
50348000	Salt River at Canaan	0.36	1991-93
50349000	Gut 10 near Altona	0.13	1991-93

INTRODUCTION

The Caribbean Water Science Center of the U.S. Geological Survey (USGS), in cooperation with local and Federal agencies obtains a large amount of data pertaining to the water resources of the Commonwealth of Puerto Rico and the Territory of the U.S. Virgin Islands each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the area. To make these data readily available to interested parties outside the U.S. Geological Survey, the data are published annually in this report series entitled "Water Resources Data for Puerto Rico and the U.S. Virgin Islands."

This report includes records on both surface and ground water. Specifically, it contains: (1) discharge records for 89 streamflow-gaging stations, daily sediment records for 13 sediment stations, stage records for 18 reservoirs, and (2) water-quality records for 20 streamflow-gaging stations, and for 38 ungaged stream sites, 1 lake site, 2 lagoons, and 1 bay, and (3) water-level records for 72 observation wells.

Water-resources data for Puerto Rico for calendar years 1958-67 were released in a series of reports entitled "Water Records of Puerto Rico." Water-resources data for the U.S. Virgin Islands for the calendar years 1962-69 were released in a report entitled "Water Records of U.S. Virgin Islands." Included were records of streamflow, ground-water levels, and water-quality data for both surface and ground water.

Beginning with the 1968 calendar year, surface-water records for Puerto Rico were released separately on an annual basis. Ground-water level records and water-quality data for surface and ground water were released in companion reports covering periods of several years. Data for the 1973-74 reports were published under separate covers. Water-resources data reports for 1975 to 2003 water years consist of one volume each and contain data for streamflow, water quality, and ground water.

Publications similar to this report are published annually by the U.S. Geological Survey for all States. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report PR-04-1." These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia, 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the USGS Water Science Center at the address given on back of the title page or by telephone (787) 749-4346.

COOPERATION

The U.S. Geological Survey has had cooperative agreements with organizations of the Commonwealth of Puerto Rico and the Territory of the U.S. Virgin Islands for the systematic collections of water resources data since 1958. Organizations that supplied data are acknowledged in the station descriptions. Organizations that assisted in collecting data through cooperative agreements with the U.S. Geological Survey are:

Puerto Rico Environmental Quality Board
Puerto Rico Aqueduct and Sewer Authority
Puerto Rico Department of Agriculture
Puerto Rico Industrial Development Company
Puerto Rico Highway Authority
Puerto Rico Department of Natural and Environmental Resources
Puerto Rico Department of Health
Puerto Rico Electric Power Authority
Puerto Rico Solid Waste Management Authority
Puerto Rico Legislature
Puerto Rico Emergency Management Agency
U.S. Virgin Islands Department of Planning and Natural Resources
Puerto Rico Infrastructure Financing Authority

Funds were also provided by the U.S. Army, Corps of Engineers, for the collection of records at six gaging stations published in this report.

SUMMARY OF HYDROLOGIC CONDITIONS

Precipitation

Annual rainfall during water year 2004 (October 2003 to September 2004) was 38 percent above normal rainfall conditions islandwide. Annual rainfall averaged about 126 percent of normal in northern Puerto Rico, 132 percent of normal in western Puerto Rico, 142 percent of normal in eastern Puerto Rico, and 156 percent of normal in southern Puerto Rico. Normal rainfall is defined as the mean monthly rainfall for certain period of time. In Puerto Rico, the reference period used to define the monthly normal rainfall is 1970-2000 (table 1).

During nine months of the water year 2004, the rainfall was above normal conditions (table 1). The most significant rainfall events were registered in November, May, and September, when the above normal rainfall was exceeded by 170, 66, and 63 percent, respectively. The above normal rainfall during November was the result, to a great extent, of the passage of a strong tropical wave over Puerto Rico and the U.S. Virgin Islands. The tropical wave produced heavy rains throughout November 10-15, 2003 (http://www.srh.noaa.gov/sju/FloodEventNov2003.htm). In Puerto Rico, many areas received from 10 to 20 inches of rain during November 12-14, 2003.

In the U.S. Virgin Islands, annual rainfall was 35 percent above normal rainfall during water year 2004. The months of November, March, and September registered the most significant above normal rainfall conditions. During November, as much as 26.80 inches of rain were recorded at Coral Bay in St John. About 50 percent of this rainfall amount (12.62 inches) fell during November 10-15, 2003. This 5-day rainfall amount was produced by the passage of the tropical wave over the U.S. Virgin Islands. Rainfall amounts produced by this tropical disturbance ranged from 10 to 15 inches across the U.S. Virgin Islands.

Table 1. Islandwide monthly rainfall for the water year 2004 and monthly normal rainfall for the 30-year reference period, 1970-2000.

[Data from the National Oceanographic and Atmospheric Administration]

Month	2004 Water Year (inches)	30-year normal (inches)
October	8.83	7.98
November	17.67	6.53
December	6.04	4.05
January	3.44	3.20
February	3.12	2.90
March	4.55	2.96
April	3.89	4.19
May	11.09	6.67
June	4.20	4.46
July	5.83	4.88
August	4.57	6.51
September	12.90	7.91
TOTAL	86.13	62.24

Surface Water

Streamflow in Puerto Rico during most of the water year 2004 (October 1, 2003 to September 30, 2004), was above normal as recorded by the four index stations compared with the long-term median of the monthly mean flows. An active tropical wave that passed through the island during November 12-14, produced heavy rains that caused extensive flooding and landslides over the entire island. Nineteen (19) municipalities in Puerto Rico were declared a Federal disaster area, with total damages estimated around $45 million (http://www.srh.noaa.gov/sju/FloodEventNov2003.htm). Two people drowned in Aibonito and Ciales as a consequence of the flooding. The U.S. Virgin Islands were also declared Federal disaster area with damages estimated around $25-$35 million.

Comparisons of the monthly mean flows during water year 2004 with the long-term minimum, median, and maximum of the monthly mean flows for the period of record at the index stations on the Río Grande de Manatí (northern area), the Río Fajardo (eastern area), the Río Inabón (southern area), and the Río Grande de Añasco (western area) are shown in figure 1. The following overview of the four areas describes in more detail, the hydrologic conditions prevailing in Puerto Rico for the 2004 water year.

In the northern area, represented by the Río Grande de Manatí index station, and the western area represented by the Río Grande de Añasco index station, monthly mean flows were above the long-term median of the monthly mean flows for the entire year. During november, the index station at the Río Grande de Manatí recorded the highest monthly mean for the period of record. In the western area, the index station at the Río Grande de Añasco recorded historical monthly mean maximums for November, December, and January.

The index station at the Río Fajardo, representing the eastern area, registered monthly mean flows above the long-term median of the monthly mean flows during seven months of the water year. Monthly mean flows above the long-term median were registered during November, December, March, April, May, June, and September. During October, February, July, and August, the monthly mean flows were below the long-term median of the monthly mean flows.

The monthly mean flows registered at the Río Inabón index station, representing the southern area, were also above the long-term median of the monthly mean flows for most of the year except for October and June. During November, December, and February, historical maximum monthly means were recorded at this station.

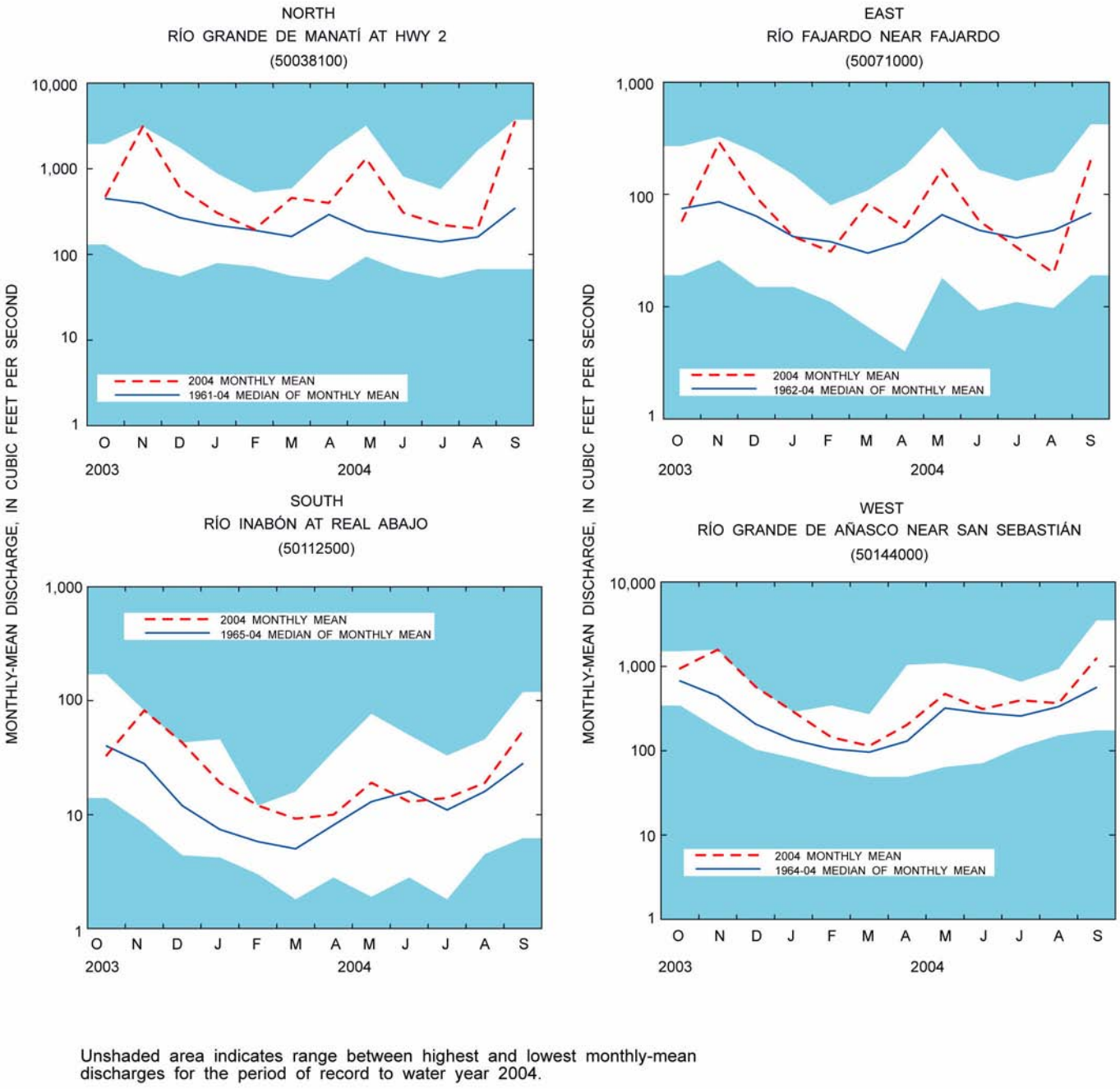


Figure 1. Monthly-mean discharge of selected streams in Puerto Rico.

Ground Water

Ground-water levels throughout most aquifers in Puerto Rico and the U.S. Virgin Islands rose in water year 2004. In Puerto Rico, 81 percent of all ground-water-levels monitoring stations showed an increase in water year 2004. The only ground-water-levels monitoring station in the U.S. Virgin Islands is on the upper unit of the island of St. John. Records from this station indicate that water levels rose throughout the year. In the North Coast Limestone aquifer system, the South Coastal Plain aquifer system, and in other less extensive aquifers of Puerto Rico, the average rise was 3.21, 6.13, and 2.56 feet, respectively. The North Coast Limestone aquifer system and the South Coastal Plain aquifer system extend over areas of about 770 and 310 square mile, respectively. Other aquifers consist primarily of stream alluvial deposits and extend over areas of less than 50 square miles.

The most significant rainfall in water year 2004 occurred from November 11 to 15, 2003. The National Weather Service reports that on the South Coastal Plain, the four-day rainfall total exceeded the 25 year event. For the entire month, rainfall ranged from 109 percent of normal in the North Coast Climatic Division to 455 of normal in South Coast Climatic Division. Rainfall in November 2003 caused ground-water levels to rise significantly throughout Puerto Rico and the U.S. Virgin Islands.

Twelve ground-water stations in Puerto Rico and one in the U.S. Virgin Islands hit record highs in water year 2004 (table 2). This is up from water year 2003, when only two stations hit record highs. In Puerto Rico, all of the twelve observation wells with record-high water levels were east of an imaginary line running from Manatí in the north to Ponce in the south. Six wells in Puerto Rico hit record low water levels in water year 2004 (table 3), which is down from ten in water year 2003. The observation well Cruce Dávila NC-5 is in the lower aquifer of the North Coast Limestone aquifer system and has been falling steadily for 15 years. Most months, it hits a new record low. No other ground-water station in Puerto Rico is as consistently downward as this one. Two observation wells, Tiburones at Barceloneta and USGS Building 652 at Guaynabo, both open in the upper aquifer of the North Coast Limestone aquifer system established record lows in water year 2004. In the South Coastal Plain aquifer, in the weeks prior to the November 2003 recharge event, three wells established record lows. These three stations are located in Guayama and Salinas.

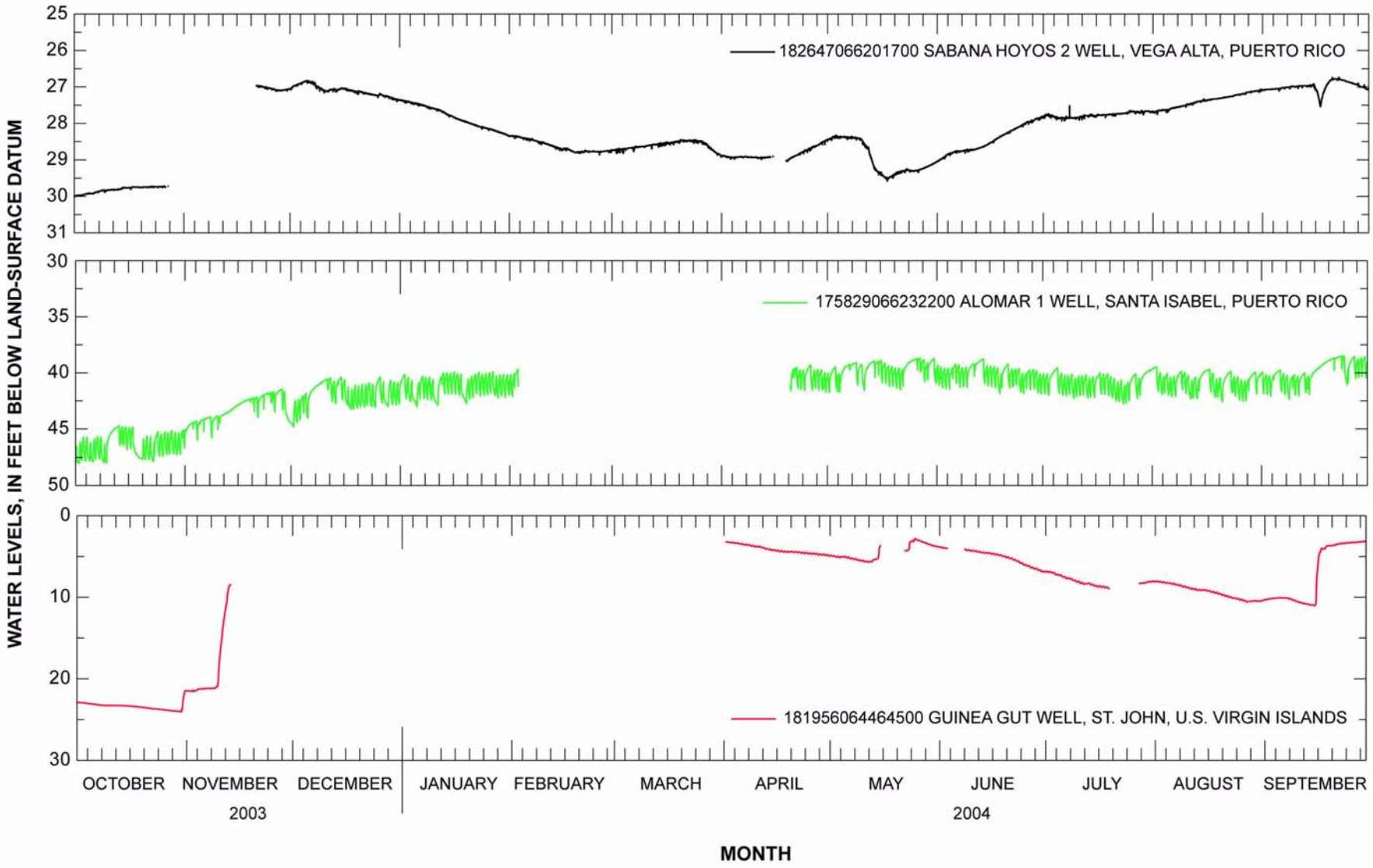


Figure 2. Ground-water levels at selected wells in Puerto Rico and the U.S. Virgin Islands.

Table 2. Highest ground-water levels recorded during 2004 water year and previous high ground-water levels at selected wells in Puerto Rico and the U.S. Virgin Islands.

[PR, Puerto Rico; ft-blsd, feet below land-surface datum; mm-dd-yy, month-day-year; mm-yy, month-year]

Well name	Local number	Location	2004 highest water level (ft-blsd)	Date (mm-dd-yy)	Previous highest water level (ft-blsd)	Date (mm-dd-yy)	Period of record (mm-yy)
PRASA 166 USGS Observation	166	PR	21.25	09-17-04	21.38	11-21-99	05-96 to 09-04
Rosario 2	211	PR	190.69	07-02-04	191.29	05-16-86	10-85 to 09-04
Minima	1134	PR	13.33	12-09-03	15.39	12-27-99	02-98 to 09-04
Piezometer Fort Buchanan 1	1159	PR	23.99	07-06-04	24.91	09-11-03	09-97 to 09-04
Piezometer Caguas-Juncos 15	1179	PR	4.14	05-24-04	4.92	12-03-98	05-97 to 09-04
Piezometer Carlos Arroyo 1	1203	PR	0.17	11-12-03	1.55	04-17-03	10-97 to 09-04
Yabucoa 7	96	PR	5.28	12-18-03	6.74	06-07-02	04-78 to 09-04
Piezometer Aguirre HW 5B	1233	PR	4.28	11-14-03	5.55	11-13-99	04-88 to 09-04
Paso Seco 7	1257	PR	78.73	02-28-04	81.11	12-03-92 12-04-92 12-06-92 12-07-92	03-92 to 09-04
Bauzá 1	1260	PR	124.16	06-28-04	201.20	05-18-99	10-97 to 09-04
Constancia 3	1276	PR	7.18	11-14-03 11-15-03	9.13	09-28-00 09-29-00	05-96 to 09-04
Albergue de Niños	1277	PR	16.77	12-11-03	23.83	06-04-03	03-92 to 09-04
Kirwan Terrace VIEO 6	8	St. Thomas	10.22	12-11-03	14.30	12-06-96 2-07-96	02-90 to 09-04

Table 3. Lowest ground-water levels recorded during 2003 water year and previous lowest ground-water levels at selected wells in Puerto Rico.

[PR, Puerto Rico; ft-blsd, feet below land-surface datum; mm-dd-yy, month-day-year; mm-yy, month-year]

Well name	Local number	Location	2004 lowest water level (ft-blsd)	Date (mm-dd-yy)	Previous lowest water level (ft-blsd)	Date (mm-dd-yy)	Period of record (mm-yy)
Tiburones	1053	PR	292.35	04-25-04 04-26-04	292.34	04-13-01 04-14-01	05-96 to 09-04
Cruce Dávila NC-5	205	PR	125.28	09-10-04	104.78	09-15-03	12-86 to 09-04
Piezometer USGS Bldg. 652	652	PR	9.34	01-22-04	9.14	10-01-98	05-97 to 09-04
Jobos	1239	PR	37.67	10-27-03	37.39	09-10-03	04-97 to 09-04
Coqui 1 BTR	1251	PR	20.49	10-26-03	19.97	09-23-03	03-97 to 09-04
Piezometer G RASA	1256	PR	36.97	10-08-03 to 10-11-03	34.96	08-25-03 to 09-06-03	09-91 to 09-04

Water Quality

The U.S. Geological Survey, in cooperation with several Commonwealth agencies, collected water-quality data at 60 surface-water stations during water year 2003. Water-quality data collected at these stations included major ions, trace elements, nutrients, pesticides, as well as fecal indicator bacteria and physical parameters. The presence of high concentrations of fecal coliform (fig. 3) and fecal streptococcal (fig. 4) bacteria during water year 2003 continued to be one of the principal water-quality problems in Puerto Rico. Although water pollution control measures are being implemented to decrease the concentrations of these bacteria and even when there has been an improvement in the water quality of the majority of the streams in comparison with previous years, the values are still above the established water-quality standards for natural waters.

The U.S. Geological Survey, in cooperation with various Commonwealth and Federal agencies, collected suspended-sediment samples at 10 stations in Puerto Rico during the 2004 water year. High suspended-sediment concentrations are a common problem in many streams in Puerto Rico. Most of the streams with high suspended-sediment concentrations are related to land use, especially urban development, agriculture, and activities which disturb soil cover. High suspended-sediment concentrations affect the operation of public surface-water supply filtration plants and contribute with the storage depletion capacities of reservoirs. Table 4 summarizes the annual sediment discharge (in tons) and sediment yield (in tons/mi^2), for some of the monitored stations. Calculated sediment yields varied from a minimum of 2,032 tons/mi^2 at station 50025155, Río Saliente at Coabey near Jayuya, to a maximum of 11,400 tons/mi^2 at station 50022810, Río Viví below Hacienda El Progreso. The average sediment yield was 6,390 tons/mi^2 and the median was 5,510 tons/mi^2.

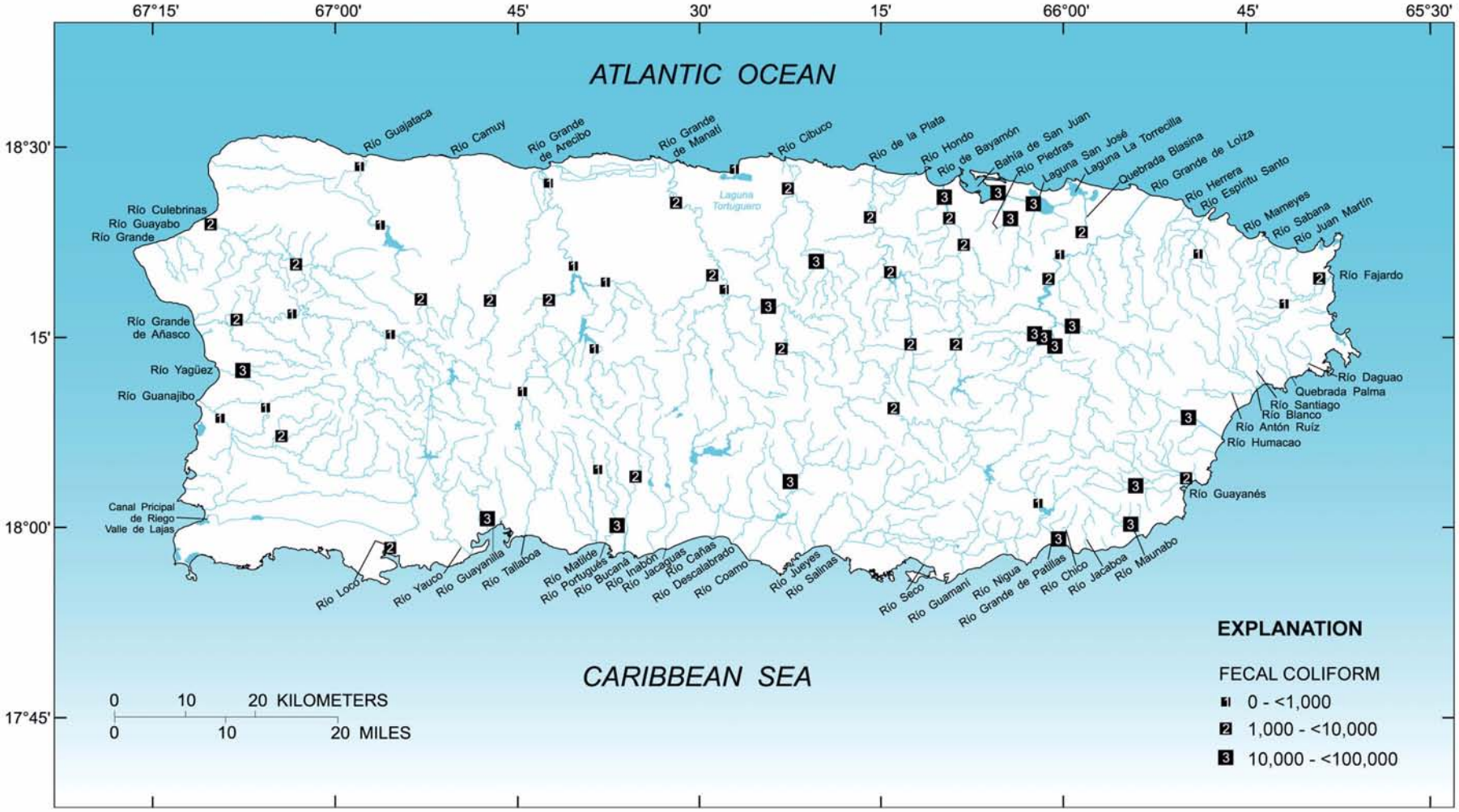


Figure 3. Location of maximum concentrations of fecal coliform bacteria at the water-quality sampling sites in Puerto Rico.

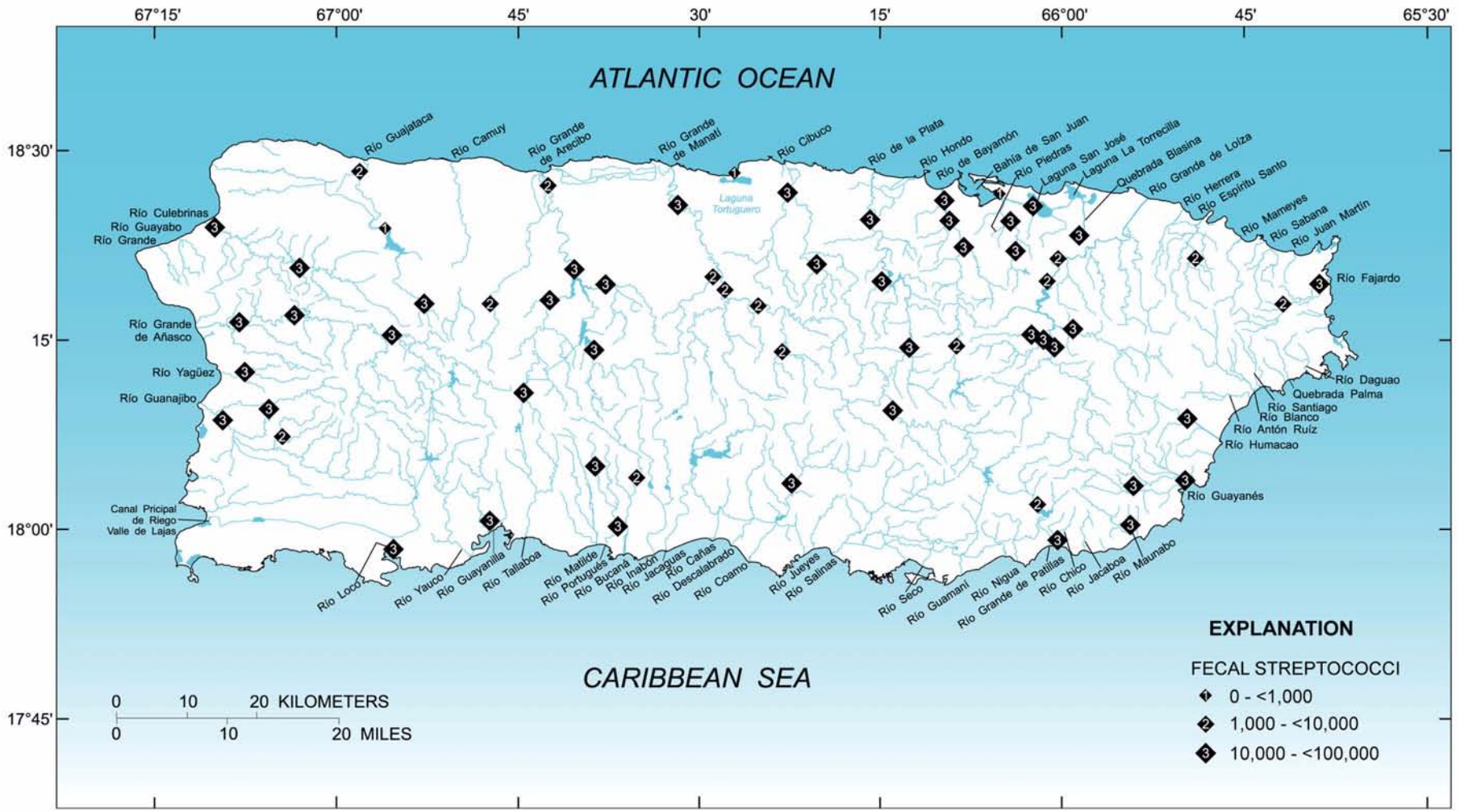


Figure 4. Location of maximum concentrations of total coliform bacteria at the water-quality sampling sites in Puerto Rico.

Table 4. Sediment yields at selected sediment stations for water year 2004.

[mi^2, square miles; tons/mi^2, tons per square miles]

Station number	Station name	Drainage area, in mi^2	Annual sediment discharge, in tons	Sediment yields, in tons/mi^2
50022810	Río Viví below Hacienda El Progreso	2.99	34,200	11,400
50024950	Río Grande de Arecibo below Utuado	65.6	740,000	11,280
50025155	Río Saliente at Coabey near Jayuya	9.25	18,800	2,032
50025850	Río Jauca at Paso Palma	6.89	32,200	4,670
50026025	Río Caonillas at Paso Palma	37.9	314,000	8,280
50026400	Río Yunes at Hwy 140 near Florida	13.9	45,400	3,270
50031200	Río Grande de Manatí near Morovis	55.2	35,000	6,360
50043800	Río de la Plata at Comerío	109	490,000	4,490
50044810	Río Guadiana near Guadiana	8.60	64,900	7,520
50055000	Río Grande de Loíza at Caguas	89.8	417,000	4,640

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 61 sites in small drainage basins in 39 States that was established in 1963 to provide consistent streamflow data representative of undeveloped watersheds nationwide, and from which data could be analyzed on a continuing basis for use in comparison and contrast with conditions observed in basins more obviously affected by human activities. At selected sites, water-quality information is being gathered on major ions and nutrients, primarily to assess the effects of acid deposition on stream chemistry. Additional information on the Hydrologic Benchmark Program may be accessed from *http://water.usgs.gov/hbn/*

National Stream-Quality Accounting Network (NASQAN) is a network of sites used to monitor the water quality of large rivers within the Nation's largest river basins. From 1995 through 1999, a network of approximately 40 stations was operated in the Mississippi, Columbia, Colorado, and Rio Grande River basins. For the period 2000 through 2004, sampling was reduced to a few index stations on the Colorado and Columbia Rivers so that a network of 5 stations could be implemented on the Yukon River. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment (NAWQA) Program; (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals. Additional information about the NASQAN Program may be accessed from *http://water.usgs.gov/nasqan/*.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) is a network of monitoring sites that provide continuous measurement and assessment of the chemical constituents in precipitation throughout the United States. As the lead Federal agency, the USGS works together with over 100 organizations to provide a long-term, spatial and temporal record of atmospheric deposition generated from this network of 250 precipitation-chemistry monitoring sites. The USGS supports 74 of these 250 sites. This long-term, nationally consistent monitoring program, coupled with ecosystem research, provides critical information toward a national scorecard to evaluate the effectiveness of ongoing and future regulations intended to reduce atmospheric emissions and subsequent impacts to the Nation's land and water resources. Reports and other information on the NADP/NTN Program, as well as data from the individual sites, may be accessed from *http://bqs.usgs.gov/acidrain/*.

The USGS National Water-Quality Assessment (NAWQA) Program is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; to provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and to provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 42 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents is measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for water-resources managers to use in making decisions and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and Federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key Federal, State, and local water-resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies. Additional information about the NAWQA Program may be accessed from *http://water.usgs.gov/nawqa/*.

The USGS National Streamflow Information Program (NSIP) is a long-term program with goals to provide framework streamflow data across the Nation. Included in the program are creation of a permanent Federally funded streamflow network, research on the nature of streamflow, regional assessments of streamflow data and databases, and upgrades in the streamflow information delivery systems. Additional information about NSIP may be accessed from *http://water.usgs.gov/nsip/*.

EXPLANATION OF RECORDS

The surface- and ground-water records published in this report are for the 2004 water year that began October 1, 2003 and ended September 30, 2004. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, water-quality data for surface and ground water, and ground-water-level data. The locations of the stations and wells where the data were collected are shown in figures 3 to 8. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, hydrologic-station records in USGS reports have been listed in order of downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary entering between two main-stream stations is listed between those stations. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary on which a station is located with respect to the stream to which it is immediately tributary is indicated by an indention in that list of stations in the front of this report. Each indentation represents one rank. This downstream order and system of indentation indicates which stations are on tributaries between any two stations and the rank of the tributary on which each station is located.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These station numbers are in the same downstream order used in this report. In assigning a station number, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list composed of both types of stations. Gaps are consecutive. The complete 8-digit (or 10-digit) number for each station such as 50028000, which appears just to the left of the station name, includes a 2-digit part number “50” plus the 6-digit (or 8-digit) downstream order number “028000.” In areas of high station density, an additional two digits may be added to the station identification number to yield a 10-digit number. The stations are numbered in downstream order as described above between stations of consecutive 8-digit numbers.

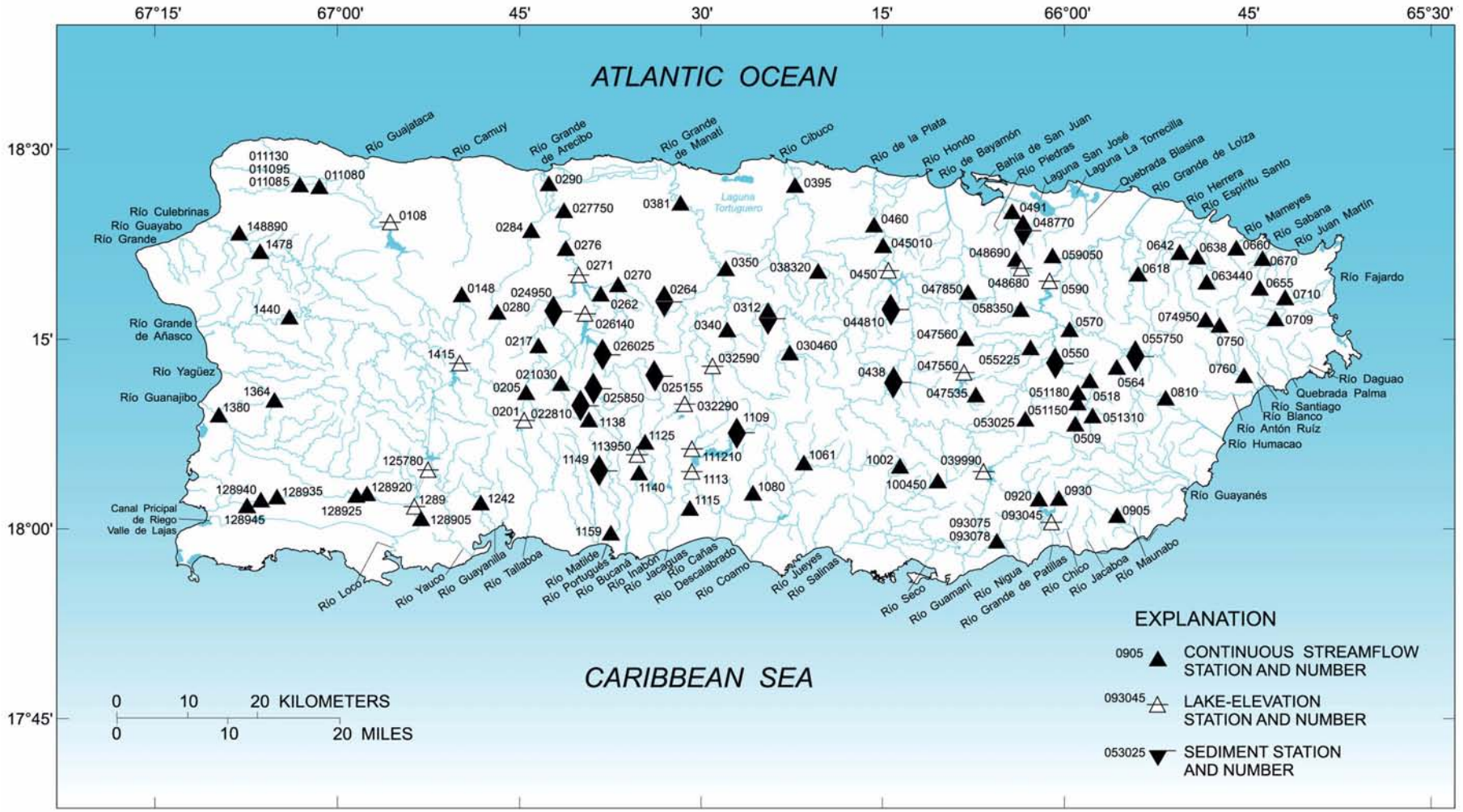


Figure 5. Location of surface-water stations in Puerto Rico.

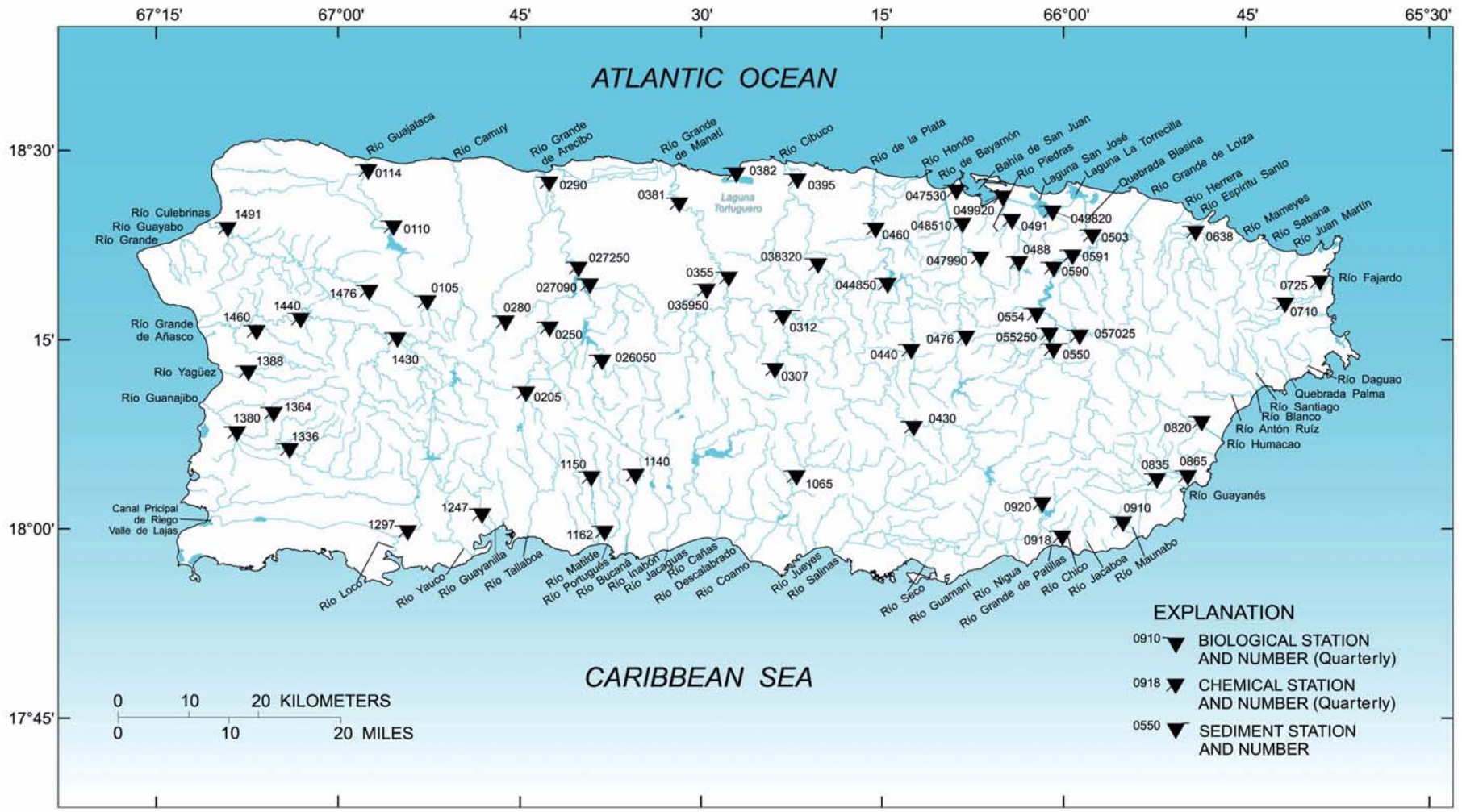


Figure 6. Location of water-quality stations in Puerto Rico.

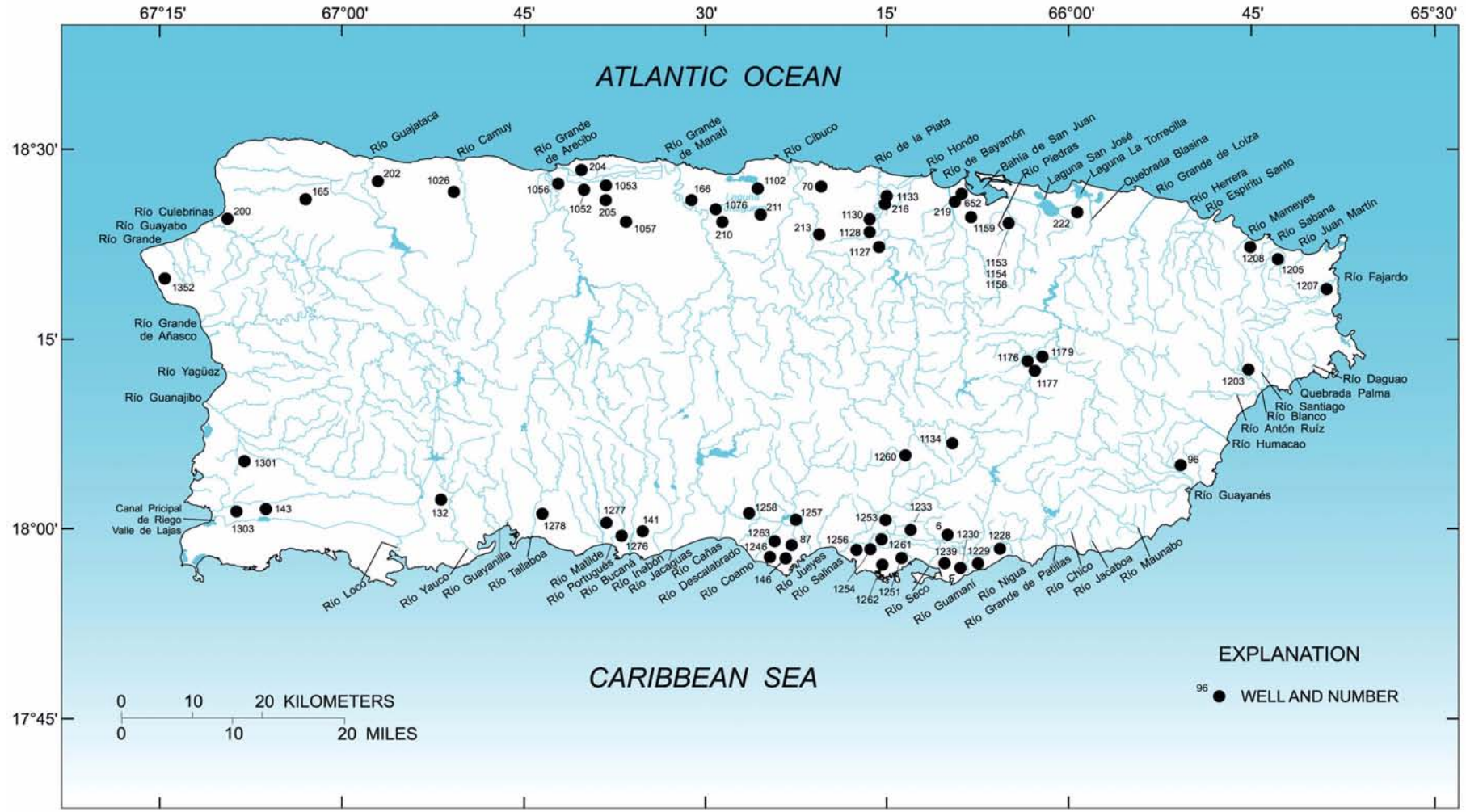


Figure 7. Location of ground-water stations in Puerto Rico.

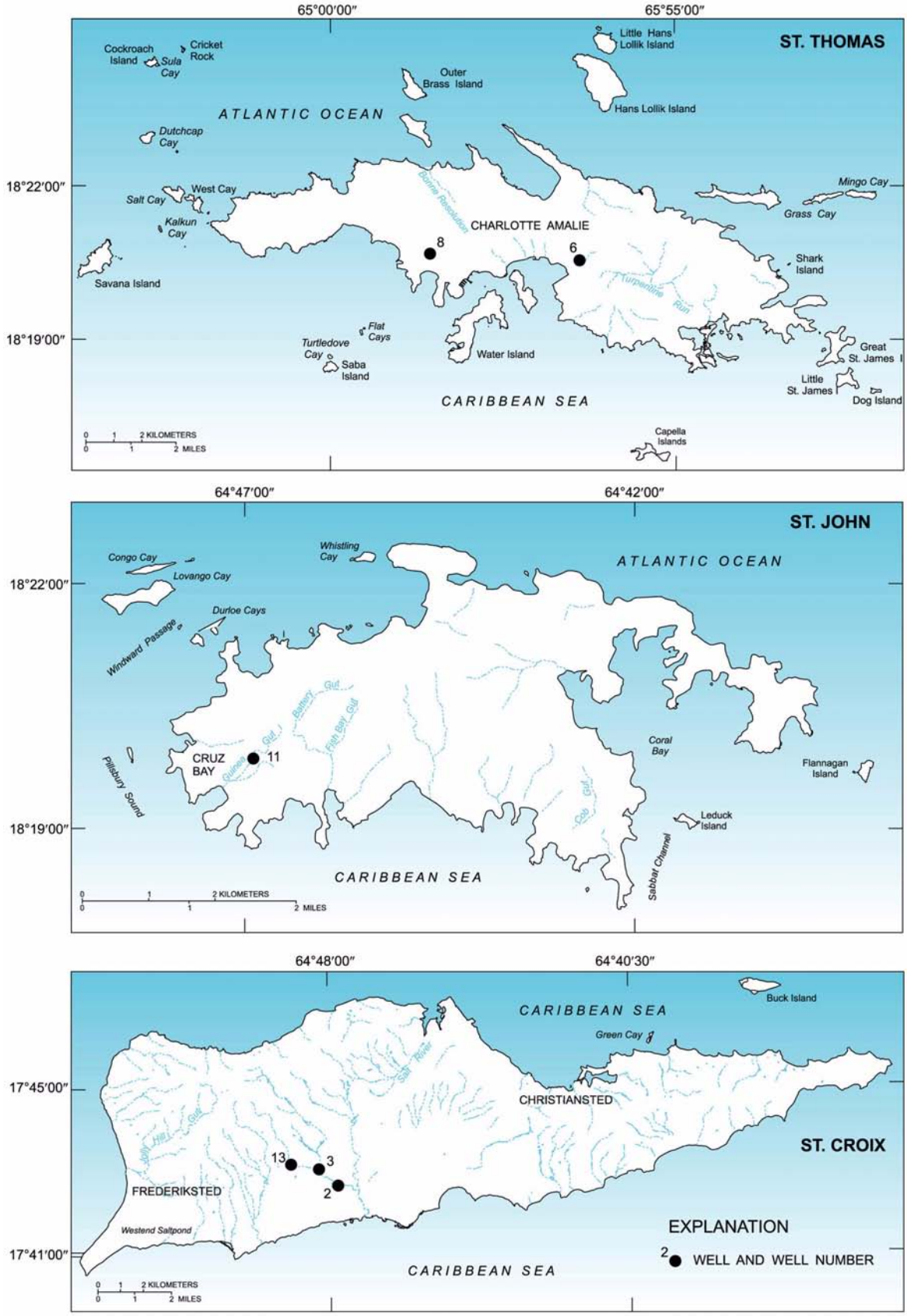


Figure 8. Location of ground-water stations in the U.S. Virgin Islands.

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

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

The USGS well and miscellaneous site-numbering system is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, and the next 7 digits denote degrees, minutes, and seconds of longitude; the last 2 digits are a sequential number for wells within a 1-second grid. In the event that the latitude-longitude coordinates for a well and miscellaneous site are the same, a sequential number such as "01," "02," and so forth, would be assigned as one would for wells (see fig. 9). The 8-digit, downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

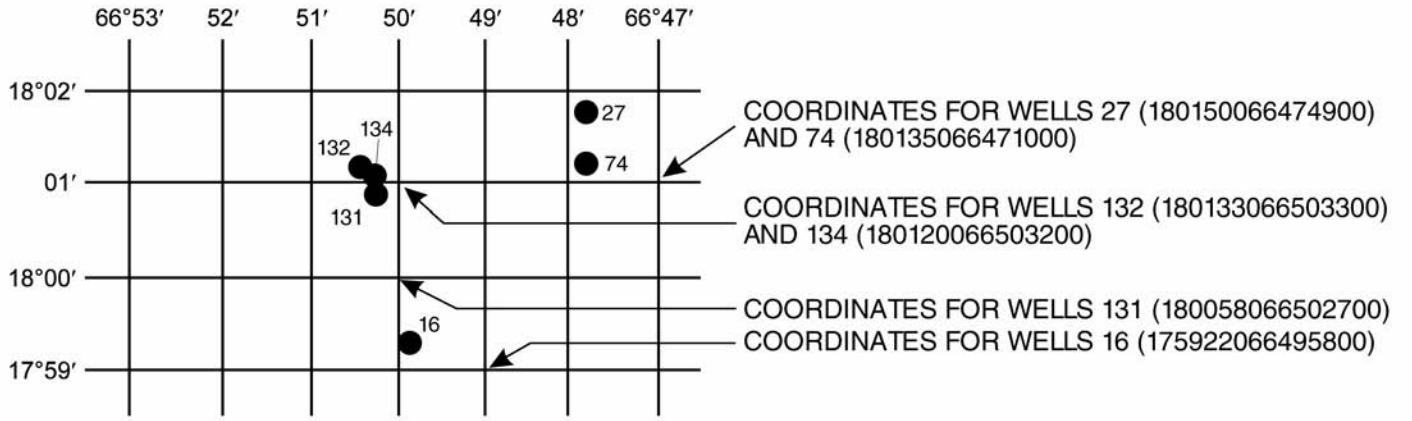


Figure 9. System for numbering wells and miscellaneous sites (latitude and longitude).

EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS

Data Collection and Computation

The base data collected at gaging stations (figs. 5 and 8) consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and volume of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from a water-stage recorder that is either downloaded electronically in the field to a laptop computer or similar device or is transmitted using telemetry such as GOES satellite, land-line or cellular-phone modems, or by radio transmission. Measurements of discharge are made with a current meter or acoustic Doppler current profiler, using the general methods adopted by the USGS. These methods are described in standard textbooks, USGS Water-Supply Paper 2175, and the Techniques of Water-Resources Investigations of the United States Geological Survey (TWRIs), Book 3, Chapters A1 through A19 and Book 8, Chapters A2 and B2, which may be accessed from *http://water.usgs.gov/pubs/twri/*. The methods are consistent with the American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

For stream-gaging stations, discharge-rating tables for any stage are prepared from stage-discharge curves. If extensions to the rating curves are necessary to express discharge greater than measured, the extensions are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, or computation of flow over dams and weirs), step-backwater techniques, velocity-area studies, and logarithmic

plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharges are computed from the daily values. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features of the stream channel, the daily mean discharge is computed by the shifting-control method in which correction factors based on individual discharge measurements and notes by engineers and observers are used when applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the controlling section, the daily mean discharge is computed by the shifting-control method.

The stage-discharge relation at some stream-gaging stations is affected by backwater from reservoirs, tributary streams, or other sources. Such an occurrence necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage at some distance from the base gage.

An index velocity is measured using ultrasonic or acoustic instruments at some stream-gaging stations and this index velocity is used to calculate an average velocity for the flow in the stream. This average velocity along with a stage-area relation is then used to calculate average discharge.

At some stations, stage-discharge relation is affected by changing stage. At these stations, the rate of change in stage is used as a factor in computing discharge.

At some stream-gaging stations in the northern United States, the stage-discharge relation is affected by ice in the winter; therefore, computation of the discharge in the usual manner is impossible. Discharge for periods of ice effect is computed on the basis of gage-height record and occasional winter-discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge from other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the volume or contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly changes are computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys, the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some stream-gaging stations, periods of time occur when no gage-height record is obtained or the recorded gage height is faulty and cannot be used to compute daily discharge or contents. Such a situation can happen when the recorder stops or otherwise fails to operate properly, the intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records from other stations in the same or nearby basins. Likewise, lake or reservoir volumes may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

Data Presentation

The records published for each continuous-record surface-water discharge station (stream-gaging station) consist of five parts: (1) the station manuscript or description; (2) the data table of daily mean values of discharge for the current water year with summary data; (3) a tabular statistical summary of monthly mean flow data for a designated period, by water year; (4) a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration; and (5) a hydrograph of discharge.

Station Manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside the period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments follow that clarify information presented under the various headings of the station description.

LOCATION.—Location information is obtained from the most accurate maps available. The location of the gaging station with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages, given for only a few stations, were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

DRAINAGE AREA.—Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.—This term indicates the time period for which records have been published for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not and whose location was such that its flow reasonably can be considered equivalent to flow at the present station.

REVISED RECORDS.—If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

GAGE.—The type of gage in current use, the datum of the current gage referred to a standard datum, and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.—All periods of estimated daily discharge either will be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily discharge table. (See section titled Identifying Estimated Daily Discharge.) Information is presented relative to the accuracy of the records, to special methods of computation, and to conditions that affect natural flow at the station. In addition, information may be presented pertaining to average discharge data for the period of record; to extremes data for the period of record and the current year; and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, the outlet works and spillway, and the purpose and use of the reservoir.

COOPERATION.—Records provided by a cooperating organization or obtained for the USGS by a cooperating organization are identified here.

EXTREMES OUTSIDE PERIOD OF RECORD.—Information here documents major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the USGS.

REVISIONS.—Records are revised if errors in published records are discovered. Appropriate updates are made in the USGS distributed data system, NWIS, and subsequently to its Web-based National data system, NWISWeb (*http://water.usgs.gov/nwis/nwis*). Users are encouraged to obtain all required data from NWIS or NWISWeb to ensure that they have the most recent data updates. Updates to NWISWeb are made on an annual basis.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because no current or, possibly, future station manuscript would be published for these stations to document the revision in a REVISED RECORDS entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the District Office (address given on the back of the title page of this report) to determine if the published records were revised after the station was discontinued. If, however, the data for a discontinued station were obtained by computer retrieval, the data would be current. Any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the REMARKS and in the inclusion of a stage-capacity table when daily volumes are given.

Data Table of Daily Mean Values

The daily table of discharge records for stream-gaging stations gives mean discharge for each day of the water year. In the monthly summary for the table, the line headed TOTAL gives the sum of the daily figures for each month; the line headed MEAN gives the arithmetic average flow in cubic feet per second for the month; and the lines headed MAX and MIN give the maximum and minimum daily mean discharges, respectively, for each month. Discharge for the month is expressed in cubic feet per second per square mile (line headed CFSM); or in inches (line headed IN); or in acre-feet (line headed AC-FT). Values for cubic feet per second per square mile and runoff in inches or in acre-feet may be omitted if extensive regulation or diversion is in effect or if the drainage area includes large noncontributing areas. At some stations, monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversion data or reservoir volumes are given. These values are identified by a symbol and a corresponding footnote.

Statistics of Monthly Mean Data

A tabular summary of the mean (line headed MEAN), maximum (MAX), and minimum (MIN) of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those values. The designated period will be expressed as FOR WATER YEARS __-__, BY WATER YEAR (WY), and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. The designated period will consist of all of the station record within the specified water years, including complete months of record for partial water years, and may coincide with the period of record for the station. The water years for which the statistics are computed are consecutive, unless a break in the station record is indicated in the manuscript.

Summary Statistics

A table titled SUMMARY STATISTICS follows the statistics of monthly mean data tabulation. This table consists of four columns with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, WATER YEARS __-__, will consist of all of the station records within the specified water years, including complete months of record for partial water years, and may coincide with the period of record for the station. The water years for which the statistics are computed are consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (see line headings below), except for the ANNUAL 7-DAY MINIMUM statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the heading. When the dates of occurrence do not fall within the selected water years listed in the heading, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration-curve statistics and runoff data also are given. Runoff data may be omitted if extensive regulation or diversion of flow is in effect in the drainage basin.

The following summary statistics data are provided with each continuous record of discharge. Comments that follow clarify information presented under the various line headings of the SUMMARY STATISTICS table.

ANNUAL TOTAL.—The sum of the daily mean values of discharge for the year.

ANNUAL MEAN.—The arithmetic mean for the individual daily mean discharges for the year noted or for the designated period.

HIGHEST ANNUAL MEAN.—The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.—The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.—The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.—The minimum daily mean discharge for the year or for the designated period.

ANNUAL 7-DAY MINIMUM.—The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1-March 31). The date shown in the summary statistics table is the initial date of the 7-day period. This value should not be confused with the 7-day 10-year low-flow statistic.

MAXIMUM PEAK FLOW.—The maximum instantaneous peak discharge occurring for the water year or designated period. Occasionally the maximum flow for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak flow is given in the table and the maximum flow may be reported in a footnote or in the REMARKS paragraph in the manuscript.

MAXIMUM PEAK STAGE.—The maximum instantaneous peak stage occurring for the water year or designated period. Occasionally the maximum stage for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak stage is given in the table and the maximum stage may be reported in the REMARKS paragraph in the manuscript or in a footnote. If the dates of occurrence of the maximum peak stage and maximum peak flow are different, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.—The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF.—Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

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

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

Inches (INCHES) indicate the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

10 PERCENT EXCEEDS.—The discharge that has been exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.—The discharge that has been exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.—The discharge that has been exceeded 90 percent of the time for the designated period.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first table lists annual maximum stage and discharge at crest-stage stations, and the second table lists discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are often made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for a special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified. This identification is shown either by flagging individual daily values with the letter "e" and noting in a table footnote, "e–Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of Field Data and Computed Results

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

The degree of accuracy of the records is stated in the REMARKS in the station description. "Excellent" indicates that about 95 percent of the daily discharges are within 5 percent of the true value; "good" within 10 percent; and "fair," within 15 percent. "Poor" indicates that daily discharges have less than "fair" accuracy. Different accuracies may be attributed to different parts of a given record.

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

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, values of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other Data Records Available

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

Information on the availability of unpublished data or statistical analyses may be obtained from the District office (see address that is shown on the back of the title page of this report).

SURFACE-WATER QUALITY RECORDS

Records of surface-water quality ordinarily are obtained at or near stream gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A *continuing-record station* is a site where data are collected on a regularly scheduled basis. Frequency may be once or more times daily, weekly, monthly, or quarterly. A *partial-record station* is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A *miscellaneous sampling site* is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between *continuing records* as used in this report and *continuous recordings*, that refer to a continuous graph or a series of discrete values punched at short intervals. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 6.

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurement at miscellaneous sites.

On-Site Measurements and Sample Collection

In obtaining water-quality data, a major concern is assuring that the data obtained represent the naturally occurring quality of the water. To ensure this, certain measurements, such as water temperature, pH, and dissolved oxygen, must be made on site when the samples are taken. To assure that measurements made in the laboratory also represent the naturally occurring water, carefully prescribed procedures must be followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for on-site measurements and for collecting, treating, and shipping samples are given in TWRIs Book 1, Chapter D2; Book 3, Chapters A1, A3, and A4; and Book 9, Chapters A1-A9. Most of the methods used for collecting and analyzing water samples are described in the TWRIs, which may be accessed from http://water.usgs.gov/pubs/twri/. Also, detailed information on collecting, treating, and shipping samples can be obtained from the USGS District office (see address that is shown on the back of title page in this report).

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. Whether samples are obtained from the centroid of flow or from several verticals, depends on flow conditions and other factors which must be evaluated by the collector.

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

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges. Water temperatures measured at the time of water-discharge measurements are on file in the District office.

Sediment

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

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

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

In addition to the records of suspended-sediment discharge, records of the periodic measurements of the particle-size distribution of the suspended sediment are included for some stations.

Laboratory Measurements

Samples for indicator bacteria are analyzed locally. All other samples are analyzed in the USGS laboratory in Lakewood, Colorado, unless otherwise noted. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chapter C1. Methods used by the USGS laboratories are given in the TWRIs, Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, and A4. The TWRI publications may be accessed from *http://water.usgs.gov/pubs/twri/*. These methods are consistent with ASTM standards and generally follow ISO standards.

Sediment samples are analyzed in the U.S. Geological Survey laboratories in the Kentucky District Sediment Laboratory. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey laboratories are given in TWRI, Book 1, Chapter D2; Book 3, Chapter C2; Book 5, Chapters A1, A3, and A4.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first, and tables of "daily values" of suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.—See Data Presentation under EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

DRAINAGE AREA.—See Data Presentation under EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

PERIOD OF RECORD.—This indicates the time periods for which published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.—Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.—Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.—Records provided by a cooperating organization or obtained for the USGS by a cooperating organization are identified here.

EXTREMES.—Maximums and minimums are given only for parameters measured daily or more frequently. For parameters measured weekly or less frequently true maximums or minimums may not have been obtained. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.—Records are revised if errors in published water-quality records are discovered. Appropriate updates are made in the USGS distributed data system, NWIS, and subsequently to its Web-based National data system, NWISWeb (*http://waterdata.usgs.gov/nwis*). Users of USGS water-quality data are encouraged to obtain all required data from NWIS or NWISWeb to ensure that they have the most recent updates. Updates to the NWISWeb are made on an annual basis.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

The following remark codes may appear with the water-quality data in this section:

Printed Output	Remark
E or e	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
M	Presence verified, not quantified

Water-Quality Control Data

The USGS National Water Quality Laboratory collects quality-control data on a continuing basis to evaluate selected analytical methods to determine long-term method detection levels (LT-MDLs) and laboratory reporting levels (LRLs). These values are re-evaluated each year on the basis of the most recent quality-control data and, consequently, may change from year to year.

This reporting procedure limits the occurrence of false positive error. Falsely reporting a concentration greater than the LT-MDL for a sample in which the analyte is not present is 1 percent or less. Application of the LRL limits the occurrence of false negative error. The chance of falsely reporting a non-detection for a sample in which the analyte is present at a concentration equal to or greater than the LRL is 1 percent or less.

Accordingly, concentrations are reported as less than LRL for samples in which the analyte was either not detected or did not pass identification. Analytes detected at concentrations between the LT-MDL and the LRL and that pass identification criteria are estimated. Estimated concentrations will be noted with a remark code of “E.” These data should be used with the understanding that their uncertainty is greater than that of data reported without the E remark code.

Data generated from quality-control (QC) samples are a requisite for evaluating the quality of the sampling and processing techniques as well as data from the actual samples themselves. Without QC data, environmental sample data cannot be adequately interpreted because the errors associated with the sample data are unknown. The various types of QC samples collected by this District office are described in the following section. Procedures have been established for the storage of water-quality-control data within the USGS. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples. These data are not presented in this report but are available from the District office.

Blank Samples

Blank samples are collected and analyzed to ensure that environmental samples have not been contaminated in the overall data-collection process. The blank solution used to develop specific types of blank samples is a solution

that is free of the analytes of interest. Any measured value signal in a blank sample for an analyte (a specific component measured in a chemical analysis) that was absent in the blank solution is believed to be due to contamination. Many types of blank samples are possible; each is designed to segregate a different part of the overall data-collection process. The types of blank samples collected in this district are:

Field blank—A blank solution that is subjected to all aspects of sample collection, field processing preservation, transportation, and laboratory handling as an environmental sample.

Trip blank—A blank solution that is put in the same type of bottle used for an environmental sample and kept with the set of sample bottles before and after sample collection.

Equipment blank—A blank solution that is processed through all equipment used for collecting and processing an environmental sample (similar to a field blank but normally done in the more controlled conditions of the office).

Sampler blank—A blank solution that is poured or pumped through the same field sampler used for collecting an environmental sample.

Filter blank—A blank solution that is filtered in the same manner and through the same filter apparatus used for an environmental sample.

Splitter blank—A blank solution that is mixed and separated using a field splitter in the same manner and through the same apparatus used for an environmental sample.

Preservation blank—A blank solution that is treated with the sampler preservatives used for an environmental sample.

Reference Samples

Reference material is a solution or material prepared by a laboratory. The reference material composition is certified for one or more properties so that it can be used to assess a measurement method. Samples of reference material are submitted for analysis to ensure that an analytical method is accurate for the known properties of the reference material. Generally, the selected reference material properties are similar to the environmental sample properties.

Replicate Samples

Replicate samples are a set of environmental samples collected in a manner such that the samples are thought to be essentially identical in composition. Replicate is the general case for which a duplicate is the special case consisting of two samples. Replicate samples are collected and analyzed to establish the amount of variability in the data contributed by some part of the collection and analytical process. Many types of replicate samples are possible, each of which may yield slightly different results in a dynamic hydrologic setting, such as a flowing stream. The types of replicate samples collected in this district are:

Concurrent samples—A type of replicate sample in which the samples are collected simultaneously with two or more samplers or by using one sampler and alternating the collection of samples into two or more compositing containers.

Sequential samples—A type of replicate sample in which the samples are collected one after the other, typically over a short time.

Split sample—A type of replicate sample in which a sample is split into subsamples, each subsample contemporaneous in time and space.

Spike Samples

Spike samples are samples to which known quantities of a solution with one or more well-established analyte concentrations have been added. These samples are analyzed to determine the extent of matrix interference or degradation on the analyte concentration during sample processing and analysis.

EXPLANATION OF GROUND-WATER-LEVELS RECORDS

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

Site Identification Numbers

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs (see NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITE in this report for a detailed explanation).

Data Collection and Computation

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

Most methods for collecting and analyzing water samples are described in the TWRIs referred to in the On-site Measurements and Sample Collection and the Laboratory Measurements sections in this report. In addition, TWRI Book 1, Chapter D2, describes guidelines for the collection and field analysis of ground-water samples for selected unstable constituents. Procedures for on-site measurements and for collecting, treating, and shipping samples are given in TWRIs Book 1, Chapter D2; Book 3, Chapters A1, A3, and A4; and Book 9, Chapters A1 through A9. The TWRI publications may be accessed from *http://water.usgs.gov/pubs/twri/*. The values in this report represent water-quality conditions at the time of sampling, as much as possible, and that are consistent with available sampling techniques and methods of analysis. These methods are consistent with ASTM standards and generally follow ISO standards. Trained personnel collected all samples. The wells sampled were pumped long enough to ensure that the water collected came directly from the aquifer and had not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material, possibly metal, comprising the casings.

Water-level records are obtained from direct measurements with a steel tape at about bimonthly/monthly intervals at all observation wells and also from digital water-stage data logger at 60-minute intervals at selected wells. The water-level measurements in this report are given in feet with reference to land-surface datum (lsd). Land-surface datum is a datum plane that is approximately at land surface at each well. If known, the elevation of the land-surface datum is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every day as an instantaneous observation at noon.

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

Data Presentation

The primary identification number for a given well is the 15-digit site identification number that appears in the center of the table. The secondary identification number is the local well number. Well locations are shown in figure 7; each well is identified on the map by its local well number.

Each well record consists of three parts, the station description, the data table of water levels observed during the water year and a graph of the water levels for the current water year and other selected periods. The description of the well is presented first through use of descriptive headings preceding the tabular data. The comments to follow clarify information presented under the various headings of the well description.

LOCATION.--This paragraph follows the well-identification number and reports the latitude and longitude (given in degrees, minutes, and seconds); a landline location designation; the hydrologic-unit number; the distance and direction from a geographic point of reference; and the observation well name. Latitudes and longitudes ysed in this report are preorted as Puerto Rico Datum which is based on the North American Datum of 1927, unless otherwise specified. The positions of ground-water stations have been verified with Global Positioning System data.

AQUIFER.--This entry designates by name (if a name exists) and geologic unit open to the well.

WELL CHARACTERISTICS.--This entry describes the well in terms of depth, diameter, casing depth and/or screened interval, method of construction, use, and additional information such as casing breaks, collapsed screen, and other changes since construction.

INSTRUMENTATION.--This paragraph provides information on both the frequency of measurement and the collection method used, allowing the user to better evaluate the reported water-level extremes by knowing whether they are based on weekly, monthly, or some other frequency of measurement.

DATUM.--This entry describes both the measuring point and the land-surface elevation at the well. The measuring point is described physically (such as top of collar, notch in top of casing, plug in pump base and so on), and in relation to land surface (such as 1.3 ft above land-surface datum). The elevation of the land-surface datum is described in feet above (or below) sea level; it is reported with a precision depending on the method of determination.

REMARKS.--This entry describes factors that may influence the water level in a well or the measurement of the water level. It should identify wells that also are water-quality observation wells, and may be used to acknowledge the assistance of local (non-Survey) observers.

PERIOD OF RECORD.--This entry indicates the period for which there are published records for the well. It reports the month and year of the start of publication of water-level records by the U.S. Geological Survey and the words "to current year" if the records are to be continued into the following year. Periods for which water-level records are available, but are not published by the Geological Survey, may be noted.

EXTREMES FOR PERIOD OF RECORD.--This entry contains the highest and lowest water levels of the period of published record, with respect to land-surface datum, and the dates of their occurrence.

Water-Level Tables

A table of water levels follows the station description for each well. Water levels are reported in feet below land-surface datum and all taped measurements of water level are listed.

For wells equipped with recorders, daily values tables are published for the instantaneous water-level observation at noon. The highest and lowest water levels of the water year and their dates of occurrence are shown on a line below the table. Because all values are not published for wells with data loggers, the extremes may be values that are not listed in the table. Missing records are indicated by dashes in place of the water level. A hydrograph for a selected period of record follows each water-level table.

Hydrographs

Hydrographs are a graphic display of water-level fluctuations over a period of time. In this report, current water year and, when appropriate, period-of-record hydrographs are shown. Hydrographs that display periodic water-level measurements show points that may be connected with a dashed line from one measurement to the next. Hydrographs that display recorder data show a solid line representing the mean water level recorded for each day. Missing data are indicated by a blank space or break in a hydrograph. Missing data may occur as a result of recorder malfunctions, battery failures, or mechanical problems related to the response of the recorder's float mechanism to water-level fluctuations in a well.

ACCESS TO U.S. GEOLOGICAL SURVEY WATER DATA

The U.S. Geological Survey provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily-mean and peak-flow discharge data for most current or discontinued gaging stations through the world wide web (WWW). These data may be accessed at *http://water.usgs.gov.*

Water-quality data and ground-water data also are available through the WWW. In addition, data can be provided in various machine-readable formats on various media. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each Water Discipline District Office (See address that is shown on the back of the title page of this report.)

DEFINITION OF TERMS

Specialized technical terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. Terms such as algae, water level, and precipitation are used in their common everyday meanings, definitions of which are given in standard dictionaries. Not all terms defined in this alphabetical list apply to every State. See also table for converting English units to International System (SI) Units. Other glossaries that also define water-related terms are accessible from *http://water.usgs.gov/glossaries.html*.

Acid neutralizing capacity (ANC) is the equivalent sum of all bases or base-producing materials, solutes plus particulates, in an aqueous system that can be titrated with acid to an equivalence point. This term designates titration of an "unfiltered" sample (formerly reported as alkalinity).

Acre-foot (AC-FT, acre-ft) is a unit of volume, commonly used to measure quantities of water used or stored, equivalent to the volume of water required to cover 1 acre to a depth of 1 foot and equivalent to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters. (See also "Annual runoff")

Adenosine triphosphate (ATP) is an organic, phosphate-rich compound important in the transfer of energy in organisms. Its central role in living cells makes ATP an excellent indicator of the presence of living material in water. A measurement of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter.

Adjusted discharge is discharge data that have been mathematically adjusted (for example, to remove the effects of a daily tide cycle or reservoir storage).

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample. (See also "Biomass" and "Dry weight")

Alkalinity is the capacity of solutes in an aqueous system to neutralize acid. This term designates titration of a "filtered" sample.

Annual runoff is the total quantity of water that is discharged ("runs off") from a drainage basin in a year. Data reports may present annual runoff data as volumes in acre-feet, as discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches.

Annual 7-day minimum is the lowest mean value for any 7-consecutive-day period in a year. Annual 7-day minimum values are reported herein for the calendar year and the water year (October 1 through September 30). Most low-flow frequency analyses use a climatic year (April 1-March 31), which tends to prevent the low-flow period from being artificially split between adjacent years. The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day, 10-year low-flow statistic.)

Aroclor is the registered trademark for a group of poly-chlorinated biphenyls that were manufactured by the Monsanto Company prior to 1976. Aroclors are assigned specific 4-digit reference numbers dependent upon molecular type and degree of substitution of the biphenyl ring hydrogen atoms by chlorine atoms. The first two digits of a numbered aroclor represent the molecular type, and the last two digits represent the percentage weight of the hydrogen-substituted chlorine.

Artificial substrate is a device that purposely is placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is collected. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection. (See also "Substrate")

Ash mass is the mass or amount of residue present after the residue from a dry-mass determination has been ashed in a muffle furnace at a temperature of 500 ºC for 1 hour. Ash mass of zooplankton and phytoplankton is expressed in grams per cubic meter (g/m_3), and periphyton and benthic organisms in grams per square meter (g/m_2). (See also "Biomass" and "Dry mass")

Aspect is the direction toward which a slope faces with respect to the compass.

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

Bankfull stage, as used in this report, is the stage at which a stream first overflows its natural banks formed by floods with 1- to 3-year recurrence intervals.

Base discharge (for peak discharge) is a discharge value, determined for selected stations, above which peak discharge data are published. The base discharge at each station is selected so that an average of about three peak flows per year will be published. (See also "Peak flow")

Base flow is sustained flow of a stream in the absence of direct runoff. It includes natural and human-induced streamflows. Natural base flow is sustained largely by ground-water discharge.

Bed material is the sediment mixture of which a stream-bed, lake, pond, reservoir, or estuary bottom is composed. (See also "Bedload" and "Sediment")

Bedload is material in transport that primarily is supported by the streambed. In this report, bedload is considered to consist of particles in transit from the bed to the top of the bedload sampler nozzle (an elevation ranging from 0.25 to 0.5 foot). These particles are retained in the bedload sampler. A sample collected with a pressure-differential bedload sampler also may contain a component of the suspended load.

Bedload discharge (tons per day) is the rate of sediment moving as bedload, reported as dry weight, that passes through a cross section in a given time. NOTE: Bedload discharge values in this report may include a component of the suspended-sediment discharge. A correction may be necessary when computing the total sediment discharge by summing the bedload discharge and the suspended-sediment discharge. (See also "Bedload," "Dry weight," "Sediment," and "Suspended-sediment discharge")

Benthic organisms are the group of organisms inhabiting the bottom of an aquatic environment. They include a number of types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish. They are useful as indicators of water quality.

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

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

Biomass pigment ratio is an indicator of the total proportion of periphyton that are autotrophic (plants). This also is called the Autotrophic Index.

Blue-green algae (*Cyanophyta*) are a group of phytoplankton and periphyton organisms with a blue pigment in addition to a green pigment called chlorophyll. Blue-green algae can cause nuisance water-quality conditions in lakes and slow-flowing rivers; however, they are found commonly in streams throughout the year. The abundance of blue-green algae in phytoplankton samples is expressed as the number of cells per milliliter (cells/mL) or biovolume in cubic micrometers per milliliter (μm^3/mL). The abundance of blue-green algae in periphyton samples is given in cells per square centimeter (cells/cm^2) or biovolume per square centimeter ($\mu m^3/cm^2$). (See also "Phytoplankton"and "Periphyton")

Bottom material (See "Bed material")

Bulk electrical conductivity is the combined electrical conductivity of all material within a doughnut-shaped volume surrounding an induction probe. Bulk conductivity is affected by different physical and chemical properties of the material including the dissolved-solids content of the pore water, and the lithology and porosity of the rock.

Canadian Geodetic Vertical Datum 1928 is a geodetic datum derived from a general adjustment of Canada's first order level network in 1928.

Cell volume (biovolume) determination is one of several common methods used to estimate biomass of algae in aquatic systems. Cell members of algae are used frequently in aquatic surveys as an indicator of algal production. However, cell numbers alone cannot represent true biomass because of considerable cell-size variation among the algal species. Cell volume (μm_3) is determined by obtaining critical cell measurements or cell dimensions (for example, length, width, height, or radius) for 20 to 50 cells of each important species to obtain an average biovolume per cell. Cells are categorized according to the correspondence of their cellular shape to the nearest geometric solid or combinations of simple solids (for example, spheres, cones, or cylinders). Representative formulae used to compute biovolume are as follows:

sphere $4/3\ \pi r3$ cone $1/3\ \pi r2h$ cylinder $\pi r2h$.

pi (π) is the ratio of the circumference to the diameter of a circle; pi = 3.14159….

From cell volume, total algal biomass expressed as biovolume (μm_3/mL) is thus determined by multiplying the number of cells of a given species by its average cell volume and then summing these volumes for all species.

Cells/volume refers to the number of cells of any organism that is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample volume, and generally are reported as cells or units per milliliter (mL) or liter (L).

Cfs-day (See "Cubic foot per second-day")

Channel bars, as used in this report, are the lowest prominent geomorphic features higher than the channel bed.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with BOD or with carbonaceous organic pollution from sewage or industrial wastes. [See also "Biochemical oxygen demand (BOD)"]

Clostridium perfringens *(C. perfringens)* is a spore-forming bacterium that is common in the feces of human and other warmblooded animals. Clostridial spores are being used experimentally as an indicator of past fecal contamination and the presence of microorganisms that are resistant to disinfection and environmental stresses. (See also "Bacteria")

Coliphages are viruses that infect and replicate in coliform bacteria. They are indicative of sewage contamination of water and of the survival and transport of viruses in the environment.

Color unit is produced by 1 milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Confined aquifer is a term used to describe an aquifer containing water between two relatively impermeable bound-aries. The water level in a well tapping a confined aquifer stands above the top of the confined aquifer and can be higher or lower than the water table that may be present in the material above it. In some cases, the water level can rise above the ground surface, yielding a flowing well.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Continuous-record station is a site where data are collected with sufficient frequency to define daily mean values and variations within a day.

Control designates a feature in the channel that physically affects the water-surface elevation and thereby determines the stage-discharge relation at the gage. This feature may be a constriction of the channel, a bedrock outcrop, a gravel bar, an artificial structure, or a uniform cross section over a long reach of the channel.

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

Cubic foot per second (CFS, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point in 1 second. It is equivalent to approximately 7.48 gallons per second or approximately 449 gallons per minute, or 0.02832 cubic meters per second. The term "second-foot" sometimes is used synonymously with "cubic foot per second" but is now obsolete.

Cubic foot per second-day (CFS-DAY, Cfs-day, [$(ft^3/s)/d$]) is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.98347 acre-feet, 646,317 gallons, or 2,446.6 cubic meters. The daily mean discharges reported in the daily value data tables numerically are equal to the daily volumes in cfs-days, and the totals also represent volumes in cfs-days.

Cubic foot per second per square mile [CFSM, $(ft^3/s)/mi^2$] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming the runoff is distributed uniformly in time and area. (See also "Annual runoff")

Daily mean suspended-sediment concentration is the time-weighted mean concentration of suspended sediment passing a stream cross section during a 24-hour day. (See also "Sediment" and "Suspended-sediment concentration")

Daily record station is a site where data are collected with sufficient frequency to develop a record of one or more data values per day. The frequency of data collection can range from continuous recording to data collection on a daily or near-daily basis.

Data collection platform (DCP) is an electronic instrument that collects, processes, and stores data from various sensors, and transmits the data by satellite data relay, line-of-sight radio, and/or landline telemetry.

Data logger is a microprocessor-based data acquisition system designed specifically to acquire, process, and store data. Data usually are downloaded from onsite data loggers for entry into office data systems.

Datum is a surface or point relative to which measurements of height and/or horizontal position are reported. A vertical datum is a horizontal surface used as the zero point for measurements of gage height, stage, or elevation; a horizontal datum is a reference for positions given in terms of latitude-longitude, State Plane coordinates, or Universal Transverse Mercator (UTM) coordinates. (See also "Gage datum," "Land-surface datum," "National Geodetic Vertical Datum of 1929," and "North American Vertical Datum of 1988")

Diatoms *(Bacillariophyta)* are unicellular or colonial algae with a siliceous cell wall. The abundance of diatoms in phytoplankton samples is expressed as the number of cells per milliliter (cells/mL) or biovolume in cubic micrometers per milliliter (μm^3/mL). The abundance of diatoms in periphyton samples is given in cells per square centimeter (cells/cm^2) or biovolume per square centimeter ($\mu m^3/cm^2$). (See also "Phytoplankton" and "Periphyton")

Diel is of or pertaining to a 24-hour period of time; a regular daily cycle.

Discharge, or **flow**, is the rate that matter passes through a cross section of a stream channel or other water body per unit of time. The term commonly refers to the volume of water (including, unless otherwise stated, any sediment or other constituents suspended or dissolved in the water) that passes a cross section in a stream channel, canal, pipeline, and so forth, within a given period of time (cubic feet per second). Discharge also can apply to the rate at which constituents, such as suspended sediment, bedload, and dissolved or suspended chemicals, pass through a cross section, in which cases the quantity is expressed as the mass of constituent that passes the cross section in a given period of time (tons per day).

Dissolved refers to that material in a representative water sample that passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal and State agencies that collect water-quality data. Determinations of "dissolved" constituent concentrations are made on sample water that has been filtered.

Dissolved oxygen (DO) is the molecular oxygen (oxygen gas) dissolved in water. The concentration in water is a function of atmospheric pressure, temperature, and dissolved-solids concentration of the water. The ability of water to retain oxygen decreases with increasing temperature or dissolved-solids concentration. Photosynthesis and respiration by plants commonly cause diurnal variations in dissolved-oxygen concentration in water from some streams.

Dissolved solids concentration in water is the quantity of dissolved material in a sample of water. It is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. In the mathematical calculation, the bicarbonate value, in milligrams per liter, is multiplied by 0.4926 to convert it to carbonate. Alternatively, alkalinity concentration (as mg/L $CaCO_3$) can be converted to carbonate concentration by multiplying by 0.60.

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

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

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

Drainage area of a stream at a specific location is that area upstream from the location, measured in a horizontal plane, that has a common outlet at the site for its surface runoff from precipitation that normally drains by gravity into a stream. Drainage areas given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

Drainage basin is a part of the Earth's surface that contains a drainage system with a common outlet for its surface runoff. (See "Drainage area")

Dry mass refers to the mass of residue present after drying in an oven at 105 °C, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass. (See also "Ash mass," "Biomass," and "Wet mass")

Dry weight refers to the weight of animal tissue after it has been dried in an oven at 65 °C until a constant weight is achieved. Dry weight represents total organic and inorganic matter in the tissue. (See also "Wet weight")

Embeddedness is the degree to which gravel-sized and larger particles are surrounded or enclosed by finer-sized particles. (See also "Substrate embeddedness class")

Enterococcus bacteria commonly are found in the feces of humans and other warmblooded animals. Although some strains are ubiquitous and not related to fecal pollution, the presence of enterococci in water is an indication of fecal pollution and the possible presence of enteric pathogens. Enterococcus bacteria are those bacteria that produce pink to red colonies with black or reddish-brown precipitate after incubation at 41 °C on mE agar (nutrient medium for bacterial growth) and subsequent transfer to EIA medium. Enterococci include *Streptococcus feacalis, Streptococcus feacium, Streptococcus avium,* and their variants. (See also "Bacteria")

EPT Index is the total number of distinct taxa within the insect orders Ephemeroptera, Plecoptera, and Trichoptera. This index summarizes the taxa richness within the aquatic insects that generally are considered pollution sensitive; the index usually decreases with pollution.

Escherichia coli *(E. coli)* are bacteria present in the intestine and feces of warmblooded animals. *E. coli* are a member species of the fecal coliform group of indicator bacteria. In the laboratory, they are defined as those bacteria that produce yellow or yellow-brown colonies on a filter pad saturated with urea substrate broth after primary culturing for 22 to 24 hours at 44.5 °C on mTEC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also "Bacteria")

Estimated (E) value of a concentration is reported when an analyte is detected and all criteria for a positive result are met. If the concentration is less than the method detection limit (MDL), an E code will be reported with the value. If the analyte is identified qualitatively as present, but the quantitative determination is substantially more uncertain, the National Water Quality Laboratory will identify the result with an E code even though the measured value is greater than the MDL. A value reported with an E code should be used with caution. When no analyte is detected in a sample, the default reporting value is the MDL preceded by a less than sign (<). For bacteriological data, concentrations are reported as estimated when results are based on non-ideal colony counts.

Euglenoids (*Euglenophyta*) are a group of algae that usually are free-swimming and rarely creeping. They have the ability to grow either photosynthetically in the light or heterotrophically in the dark. (See also "Phytoplankton")

Extractable organic halides (EOX) are organic compounds that contain halogen atoms such as chlorine. These organic compounds are semivolatile and extractable by ethyl acetate from air-dried streambed sediment. The ethyl acetate extract is combusted, and the concentration is determined by microcoulometric determination of the halides formed. The concentration is reported as micrograms of chlorine per gram of the dry weight of the streambed sediment.

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

Fecal streptococcal bacteria are present in the intestines of warmblooded animals and are ubiquitous in the environment. They are characterized as gram-positive, cocci bacteria that are capable of growth in brain-heart infusion broth. In the laboratory, they are defined as all the organisms that produce red or pink colonies within 48 hours at 35 °C plus or minus 1.0 °C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also "Bacteria")

Fire algae (*Pyrrhophyta*) are free-swimming unicells characterized by a red pigment spot. (See also "Phytoplankton")

Flow-duration percentiles are values on a scale of 100 that indicate the percentage of time for which a flow is not exceeded. For example, the 90th percentile of river flow is greater than or equal to 90 percent of all recorded flow rates.

Gage datum is a horizontal surface used as a zero point for measurement of stage or gage height. This surface usually is located slightly below the lowest point of the stream bottom such that the gage height is usually slightly greater than the maximum depth of water. Because the gage datum is not an actual physical object, the datum is usually defined by specifying the elevations of permanent reference marks such as bridge abutments and survey monuments, and the gage is set to agree with the reference marks. Gage datum is a local datum that is maintained independently of any national geodetic datum. However, if the elevation of the gage datum relative to the national datum (North American Vertical Datum of 1988 or National Geodetic Vertical Datum of 1929) has been determined, then the gage readings can be converted to elevations above the national datum by adding the elevation of the gage datum to the gage reading.

Gage height (G.H.) is the water-surface elevation, in feet above the gage datum. If the water surface is below the gage datum, the gage height is negative. Gage height often is used interchangeably with the more general term "stage," although gage height is more appropriate when used in reference to a reading on a gage.

Gage values are values that are recorded, transmitted, and/or computed from a gaging station. Gage values typically are collected at 5-, 15-, or 30-minute intervals.

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

Gas chromatography/flame ionization detector (GC/FID) is a laboratory analytical method used as a screening technique for semivolatile organic compounds that are extractable from water in methylene chloride.

Geomorphic channel units, as used in this report, are fluvial geomorphic descriptors of channel shape and stream velocity. Pools, riffles, and runs are types of geomorphic channel units considered for National Water-Quality Assessment (NAWQA) Program habitat sampling.

Green algae *(Chlorophyta)* are unicellular or colonial algae with chlorophyll pigments similar to those in terrestrial green plants. Some forms of green algae produce mats or floating "moss" in lakes. The abundance of green algae in phytoplankton samples is expressed as the number of cells per milliliter (cells/mL) or biovolume in cubic micrometers per milliliter (μm^3/mL). The abundance of green algae in periphyton samples is given in cells per square centimeter (cells/cm^2) or biovolume per square centimeter ($\mu m^3/cm^2$). (See also "Phytoplankton" and "Periphyton")

Habitat, as used in this report, includes all nonliving (physical) aspects of the aquatic ecosystem, although living components like aquatic macrophytes and riparian vegetation also are usually included. Measurements of habitat typically are made over a wider geographic scale than are measurements of species distribution.

Habitat quality index is the qualitative description (level 1) of instream habitat and riparian conditions surrounding the reach sampled. Scores range from 0 to 100 percent with higher scores indicative of desirable habitat conditions for aquatic life. Index only applicable to wadable streams.

Hardness of water is a physical-chemical characteristic that commonly is recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations (primarily calcium and magnesium) and is expressed as the equivalent concentration of calcium carbonate ($CaCO_3$).

High tide is the maximum height reached by each rising tide. The high-high and low-high tides are the higher and lower of the two high tides, respectively, of each tidal day. *See NOAA Web site: http://www.co-ops.nos.noaa.gov/tideglos.html*

Hilsenhoff's Biotic Index (HBI) is an indicator of organic pollution that uses tolerance values to weight taxa abundances; usually increases with pollution. It is calculated as follows:

$$HBI = sum\frac{(n)(a)}{N},$$

where n is the number of individuals of each taxon, a is the tolerance value of each taxon, and N is the total number of organisms in the sample.

Horizontal datum (See "Datum")

Hydrologic index stations referred to in this report are continuous-record gaging stations that have been selected as representative of streamflow patterns for their respective regions. Station locations are shown on index maps.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as defined by the former Office of Water Data Coordination and delineated on the State Hydrologic Unit Maps by the USGS. Each hydrologic unit is identified by an 8-digit number.

Inch (IN., in.), in reference to streamflow, as used in this report, refers to the depth to which the drainage area would be covered with water if all of the runoff for a given time period were distributed uniformly on it. (See also "Annual runoff")

Instantaneous discharge is the discharge at a particular instant of time. (See also "Discharge")

International Boundary Commission Survey Datum refers to a geodetic datum established at numerous monuments along the United States-Canada boundary by the International Boundary Commission.

Island, as used in this report, is a mid-channel bar that has permanent woody vegetation, is flooded once a year, on average, and remains stable except during large flood events.

Laboratory reporting level (LRL) generally is equal to twice the yearly determined long-term method detection level (LT-MDL). The LRL controls false negative error. The probability of falsely reporting a nondetection for a sample that contained an analyte at a concentration equal to or greater than the LRL is predicted to be less than or equal to 1 percent. The value of the LRL will be reported with a "less than" (<) remark code for samples in which the analyte was not detected. The National Water Quality Laboratory (NWQL) collects quality-control data from selected analytical methods on a continuing basis to determine LT-MDLs and to establish LRLs. These values are reevaluated annually on the basis of the most current quality-control data and, therefore, may change. The LRL replaces the term 'non-detection value' (NDV).

Land-surface datum (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

Latent heat flux (often used interchangeably with latent heat-flux density) is the amount of heat energy that converts water from liquid to vapor (evaporation) or from vapor to liquid (condensation) across a specified cross-sectional area per unit time. Usually expressed in watts per square meter.

Light-attenuation coefficient, also known as the extinction coefficient, is a measure of water clarity. Light is attenuated according to the Lambert-Beer equation:

$$I = I_o e^{-\lambda L},$$

where I_o is the source light intensity, I is the light intensity at length L (in meters) from the source, λ is the light-attenuation coefficient, and e is the base of the natural logarithm. The light-attenuation coefficient is defined as

$$\lambda = -\frac{1}{L}\log_e \frac{I}{I_o}.$$

Lipid is any one of a family of compounds that are insoluble in water and that make up one of the principal components of living cells. Lipids include fats, oils, waxes, and steroids. Many environmental contaminants such as organochlorine pesticides are lipophilic.

Long-term method detection level (LT-MDL) is a detection level derived by determining the standard deviation of a minimum of 24 method detection limit (MDL) spike-sample measurements over an extended period of time. LT-MDL data are collected on a continuous basis to assess year-to-year variations in the LT-MDL. The LT-MDL controls false positive error. The chance of falsely reporting a concentration at or greater than the LT-MDL for a sample that did not contain the analyte is predicted to be less than or equal to 1 percent.

Low tide is the minimum height reached by each falling tide. The high-low and low-low tides are the higher and lower of the two low tides, respectively, of each tidal day. *See NOAA Web site: http://www.co-ops.nos.noaa.gov/tideglos.html*

Macrophytes are the macroscopic plants in the aquatic environment. The most common macrophytes are the rooted vascular plants that usually are arranged in zones in aquatic ecosystems and restricted in the area by the extent of illumination through the water and sediment deposition along the shoreline.

Mean concentration of suspended sediment (Daily mean suspended-sediment concentration) is the time-weighted concentration of suspended sediment passing a stream cross section during a given time period. (See also "Daily mean suspended-sediment concentration" and "Suspended-sediment concentration")

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

Mean high or **low tide** is the average of all high or low tides, respectively, over a specific period.

Mean sea level is a local tidal datum. It is the arithmetic mean of hourly heights observed over the National Tidal Datum Epoch. Shorter series are specified in the name; for example, monthly mean sea level and yearly mean sea level. In order that they may be recovered when needed, such datums are referenced to fixed points known as benchmarks. (See also "Datum")

Measuring point (MP) is an arbitrary permanent reference point from which the distance to water surface in a well is measured to obtain water level.

Megahertz is a unit of frequency. One megahertz equals one million cycles per second.

Membrane filter is a thin microporous material of specific pore size used to filter bacteria, algae, and other very small particles from water.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Method detection limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99-percent confidence that the analyte concentration is greater than zero. It is determined from the analysis of a sample in a given matrix containing the analyte. At the MDL concentration, the risk of a false positive is predicted to be less than or equal to 1 percent.

Method of Cubatures is a method of computing discharge in tidal estuaries based on the conservation of mass equation.

Methylene blue active substances (MBAS) indicate the presence of detergents (anionic surfactants). The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram (UG/G, µg/g) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per kilogram (UG/KG, µg/kg) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the constituent per unit mass (kilogram) of the material analyzed. One microgram per kilogram is equivalent to 1 part per billion.

Micrograms per liter (UG/L, µg/L) is a unit expressing the concentration of chemical constituents in water as mass (micrograms) of constituent per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter. One microgram per liter is equivalent to 1 part per billion.

Microsiemens per centimeter (US/CM, µS/cm) is a unit expressing the amount of electrical conductivity of a solution as measured between opposite faces of a centimeter cube of solution at a specified temperature. Siemens is the International System of Units nomenclature. It is synonymous with mhos and is the reciprocal of resistance in ohms.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in water as the mass (milligrams) of constituent per unit volume (liter) of water. Concentration of suspended sediment also is expressed in milligrams per liter and is based on the mass of dry sediment per liter of water-sediment mixture.

Minimum reporting level (MRL) is the smallest measured concentration of a constituent that may be reliably reported by using a given analytical method.

Miscellaneous site, miscellaneous station, or miscellaneous sampling site is a site where streamflow, sediment, and/or water-quality data or water-quality or sediment samples are collected once, or more often on a random or discontinuous basis to provide better areal coverage for defining hydrologic and water-quality conditions over a broad area in a river basin.

Most probable number (MPN) is an index of the number of coliform bacteria that, more probably than any other number, would give the results shown by the laboratory examination; it is not an actual enumeration. MPN is determined from the distribution of gas-positive cultures among multiple inoculated tubes.

Multiple-plate samplers are artificial substrates of known surface area used for obtaining benthic invertebrate samples. They consist of a series of spaced, hardboard plates on an eyebolt.

Nanograms per liter (NG/L, ng/L) is a unit expressing the concentration of chemical constituents in solution as mass (nanograms) of solute per unit volume (liter) of water. One million nanograms per liter is equivalent to 1 milligram per liter.

National Geodetic Vertical Datum of 1929 (NGVD 29) is a fixed reference adopted as a standard geodetic datum for elevations determined by leveling. It formerly was called "Sea Level Datum of 1929" or "mean sea level." Although the datum was derived from the mean sea level at 26 tide stations**,** it does not necessarily represent local mean sea level at any particular place. *See NOAA Web site: http://www.ngs.noaa.gov/faq.shtml#WhatVD29VD88* (See "North American Vertical Datum of 1988")

Natural substrate refers to any naturally occurring immersed or submersed solid surface, such as a rock or tree, upon which an organism lives. (See also "Substrate")

Nekton are the consumers in the aquatic environment and consist of large, free-swimming organisms that are capable of sustained, directed mobility.

Nephelometric turbidity unit (NTU) is the measurement for reporting turbidity that is based on use of a standard suspension of formazin. Turbidity measured in NTU uses nephelometric methods that depend on passing specific light of a specific wavelength through the sample.

North American Datum of 1927 (NAD 27) is the horizontal control datum for the United States that was defined by a location and azimuth on the Clarke spheroid of 1866.

North American Datum of 1983 (NAD 83) is the horizontal control datum for the United States, Canada, Mexico, and Central America that is based on the adjustment of 250,000 points including 600 satellite Doppler stations that constrain the system to a geocentric origin. NAD 83 has been officially adopted as the legal horizontal datum for the United States by the Federal government.

North American Vertical Datum of 1988 (NAVD 88) is a fixed reference adopted as the official civilian vertical datum for elevations determined by Federal surveying and mapping activities in the United States. This datum was established in 1991 by minimum-constraint adjustment of the Canadian**,** Mexican, and United States first-order terrestrial leveling networks.

Open or **screened interval** is the length of unscreened opening or of well screen through which water enters a well, in feet below land surface.

Organic carbon (OC) is a measure of organic matter present in aqueous solution, suspension, or bottom sediment. May be reported as dissolved organic carbon (DOC), particulate organic carbon (POC), or total organic carbon (TOC).

Organic mass or **volatile mass** of a living substance is the difference between the dry mass and ash mass and represents the actual mass of the living matter. Organic mass is expressed in the same units as for ash mass and dry mass. (See also "Ash mass," "Biomass," and "Dry mass")

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

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

Organochlorine compounds are any chemicals that contain carbon and chlorine. Organochlorine compounds that are important in investigations of water, sediment, and biological quality include certain pesticides and industrial compounds.

Parameter code is a 5-digit number used in the USGS computerized data system, National Water Information System (NWIS), to uniquely identify a specific constituent or property.

Partial-record station is a site where discrete measurements of one or more hydrologic parameters are obtained over a period of time without continuous data being recorded or computed. A common example is a crest-stage gage partial-record station at which only peak stages and flows are recorded.

Particle size is the diameter, in millimeters (mm), of a particle determined by sieve or sedimentation methods. The sedimentation method uses the principle of Stokes Law to calculate sediment particle sizes. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube, sedigraph) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

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

Classification	Size (mm)	Method of analysis
Clay	>0.00024 - 0.004	Sedimentation
Silt	>0.004 - 0.062	Sedimentation
Sand	>0.062 - 2.0	Sedimentation/sieve
Gravel	>2.0 - 64.0	Sieve
Cobble	>64 - 256	Manual measurement
Boulder	>256	Manual measurement

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

Peak flow (peak stage) is an instantaneous local maximum value in the continuous time series of streamflows or stages, preceded by a period of increasing values and followed by a period of decreasing values. Several peak values ordinarily occur in a year. The maximum peak value in a year is called the annual peak; peaks lower than the annual peak are called secondary peaks. Occasionally, the annual peak may not be the maximum value for the year; in such cases, the maximum value occurs at midnight at the beginning or end of the year, on the recession from or rise toward a higher peak in the adjoining year. If values are recorded at a discrete series of times, the peak recorded value may be taken as an approximation of the true peak, which may occur between the recording instants. If the values are recorded with finite precision, a sequence of equal recorded values may occur at the peak; in this case, the first value is taken as the peak.

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

Percent shading is a measure of the amount of sunlight potentially reaching the stream. A clinometer is used to measure left and right bank canopy angles. These values are added together, divided by 180, and multiplied by 100 to compute percentage of shade.

Periodic-record station is a site where stage, discharge, sediment, chemical, physical, or other hydrologic measurements are made one or more times during a year but at a frequency insufficient to develop a daily record.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. Although primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton are useful indicators of water quality.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

pH of water is the negative logarithm of the hydrogen-ion activity. Solutions with pH less than 7.0 standard units are termed “acidic,” and solutions with a pH greater than 7.0 are termed “basic.” Solutions with a pH of 7.0 are neutral. The presence and concentration of many dissolved chemical constituents found in water are affected, in part, by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms also are affected, in part, by the hydrogen-ion activity of water.

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

Picocurie (PC, pCi) is one-trillionth (1 x 10-12) of the amount of radioactive nuclide represented by a curie (Ci). A curie is the quantity of radioactive nuclide that yields 3.7 x 1010 radioactive disintegrations per second (dps). A picocurie yields 0.037 dps, or 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers. Concentrations are expressed as a number of cells per milliliter (cells/mL) of sample.

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

Polychlorinated naphthalenes (PCNs) are industrial chemicals that are mixtures of chlorinated naphthalene compounds. They have properties and applications similar to polychlorinated biphenyls (PCBs) and have been identified in commercial PCB preparations.

Pool, as used in this report, is a small part of a stream reach with little velocity, commonly with water deeper than surrounding areas.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated (carbon method) by the plants.

Primary productivity (carbon method) is expressed as milligrams of carbon per area per unit time [mg C/(m^2/time)] for periphyton and macrophytes or per volume [mg C/(m^3/time)] for phytoplankton. The carbon method defines the amount of carbon dioxide consumed as measured by radioactive carbon (carbon-14). The carbon-14 method is of greater sensitivity than the oxygen light- and dark-bottle method and is preferred for use with unenriched water samples. Unit time may be either the hour or day, depending on the incubation period. (See also "Primary productivity")

Primary productivity (oxygen method) is expressed as milligrams of oxygen per area per unit time [mg O/(m^2/time)] for periphyton and macrophytes or per volume [mg O/(m^3/time)] for phytoplankton. The oxygen method defines production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light- and dark-bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period. (See also "Primary productivity")

Radioisotopes are isotopic forms of elements that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus; for example, ordinary chlorine is a mixture of isotopes having atomic weights of 35 and 37, and the natural mixture has an atomic weight of about 35.453. Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron. There are 275 isotopes of the 81 stable elements, in addition to more than 800 radioactive isotopes.

Reach, as used in this report, is a length of stream that is chosen to represent a uniform set of physical, chemical, and biological conditions within a segment. It is the principal sampling unit for collecting physical, chemical, and biological data.

Recoverable from bed (bottom) material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results. (See also "Bed material")

Recurrence interval, also referred to as return period, is the average time, usually expressed in years, between occurrences of hydrologic events of a specified type (such as exceedances of a specified high flow or nonexceedance of a specified low flow). The terms "return period" and "recurrence interval" do not imply regular cyclic occurrence. The actual times between occurrences vary randomly, with most of the times being less than the average and a few being substantially greater than the average. For example, the 100-year flood is the flow rate that is exceeded by the annual maximum peak flow at intervals whose average length is 100 years (that is, once in 100 years, on average); almost two-thirds of all exceedances of the 100-year flood occur less than 100 years after the previous exceedance, half occur less than 70 years after the previous exceedance, and about one-eighth occur more than 200 years after the previous exceedance. Similarly, the 7-day, 10-year low flow ($7Q_{10}$) is the flow rate below which the annual minimum 7-day-mean flow dips at intervals whose average length is 10 years (that is, once in 10 years, on average); almost two-thirds of the nonexceedances of the $7Q_{10}$ occur less than 10 years after the previous nonexceedance, half occur less than 7 years after, and about one-eighth occur more than 20 years after the previous nonexceedance. The recurrence interval for annual events is the reciprocal of the annual probability of occurrence. Thus, the 100-year flood has a 1-percent chance of being exceeded by the maximum peak flow in any year, and there is a 10-percent chance in any year that the annual minimum 7-day-mean flow will be less than the $7Q_{10}$.

Replicate samples are a group of samples collected in a manner such that the samples are thought to be essentially identical in composition.

Return period (See "Recurrence interval")

Riffle, as used in this report, is a shallow part of the stream where water flows swiftly over completely or partially submerged obstructions to produce surface agitation.

River mileage is the curvilinear distance, in miles, measured upstream from the mouth along the meandering path of a stream channel in accordance with Bulletin No. 14 (October 1968) of the Water Resources Council and typically is used to denote location along a river.

Run, as used in this report, is a relatively shallow part of a stream with moderate velocity and little or no surface turbulence.

Runoff is the quantity of water that is discharged ("runs off") from a drainage basin during a given time period. Runoff data may be presented as volumes in acre-feet, as mean discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches. (See also "Annual runoff")

Sea level, as used in this report, refers to one of the two commonly used national vertical datums (NGVD 1929 or NAVD 1988). See separate entries for definitions of these datums.

Sediment is solid material that originates mostly from disintegrated rocks; when transported by, suspended in, or deposited from water, it is referred to as "fluvial sediment." Sediment includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are affected by environmental and land-use factors. Some major factors are topography, soil characteristics, land cover, and depth and intensity of precipitation.

Sensible heat flux (often used interchangeably with latent sensible heat-flux density) is the amount of heat energy that moves by turbulent transport through the air across a specified cross-sectional area per unit time and goes to heating (cooling) the air. Usually expressed in watts per square meter.

Seven-day, 10-year low flow ($7Q_{10}$) is the discharge below which the annual 7-day minimum flow falls in 1 year out of 10 on the long-term average. The recurrence interval of the $7Q_{10}$ is 10 years; the chance that the annual 7-day minimum flow will be less than the $7Q_{10}$ is 10 percent in any given year. (See also "Annual 7-day minimum" and "Recurrence interval")

Shelves, as used in this report, are streambank features extending nearly horizontally from the flood plain to the lower limit of persistent woody vegetation.

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Sodium hazard in water is an index that can be used to evaluate the suitability of water for irrigating crops.

Soil heat flux (often used interchangeably with soil heat-flux density) is the amount of heat energy that moves by conduction across a specified cross-sectional area of soil per unit time and goes to heating (or cooling) the soil. Usually expressed in watts per square meter.

Soil-water content is the water lost from the soil upon drying to constant mass at 105 °C; expressed either as mass of water per unit mass of dry soil or as the volume of water per unit bulk volume of soil.

Specific electrical conductance (conductivity) is a measure of the capacity of water (or other media) to conduct an electrical current. It is expressed in microsiemens per centimeter at 25 °C. Specific electrical conductance is a function of the types and quantity of dissolved substances in water and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is from 55 to 75 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stable isotope ratio (per MIL) is a unit expressing the ratio of the abundance of two radioactive isotopes. Isotope ratios are used in hydrologic studies to determine the age or source of specific water, to evaluate mixing of different water, as an aid in determining reaction rates, and other chemical or hydrologic processes.

Stage (See "Gage height")

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

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

Substrate is the physical surface upon which an organism lives.

Substrate embeddedness class is a visual estimate of riffle streambed substrate larger than gravel that is surrounded or covered by fine sediment (<2 mm, sand or finer). Below are the class categories expressed as the percentage covered by fine sediment:

0	no gravel or larger substrate	3	26-50 percent
1	> 75 percent	4	5-25 percent
2	51-75 percent	5	< 5 percent

Surface area of a lake is that area (acres) encompassed by the boundary of the lake as shown on USGS topographic maps, or other available maps or photographs. Because surface area changes with lake stage, surface areas listed in this report represent those determined for the stage at the time the maps or photographs were obtained.

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

Surrogate is an analyte that behaves similarly to a target analyte, but that is highly unlikely to occur in a sample. A surrogate is added to a sample in known amounts before extraction and is measured with the same laboratory procedures used to measure the target analyte. Its purpose is to monitor method performance for an individual sample.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is defined operationally as the material retained on a 0.45-micrometer filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative suspended water-sediment sample that is retained on a 0.45-micrometer membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment, and, thus, the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results. Determinations of "suspended, recoverable" constituents are made either by directly analyzing the suspended mate-rial collected on the filter or, more commonly, by difference, on the basis of determinations of (1) dissolved and (2) total recoverable concentrations of the constituent. (See also "Suspended")

Suspended sediment is the sediment maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid. (See also "Sediment")

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 foot above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L). The analytical technique uses the mass of all of the sediment and the net weight of the water-sediment mixture in a sample to compute the suspended-sediment concentration. (See also "Sediment" and "Suspended sediment")

Suspended-sediment discharge (tons/d) is the rate of sediment transport, as measured by dry mass or volume, that passes a cross section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge (ft^3/s) x 0.0027. (See also "Sediment," "Suspended sediment," and "Suspended-sediment concentration")

Suspended-sediment load is a general term that refers to a given characteristic of the material in suspension that passes a point during a specified period of time. The term needs to be qualified, such as "annual suspended-sediment load" or "sand-size suspended-sediment load," and so on. It is not synonymous with either suspended-sediment discharge or concentration. (See also "Sediment")

Suspended solids, total residue at 105 °C concentration is the concentration of inorganic and organic material retained on a filter, expressed as milligrams of dry material per liter of water (mg/L). An aliquot of the sample is used for this analysis.

Suspended, total is the total amount of a given constituent in the part of a water-sediment sample that is retained on a 0.45-micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. Knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total." Determinations of "suspended, total" constituents are made either by directly analyzing portions of the suspended material collected on the filter or, more commonly, by difference, on the basis of determinations of (1) dissolved and (2) total concentrations of the constituent. (See also "Suspended")

Synoptic studies are short-term investigations of specific water-quality conditions during selected seasonal or hydro-logic periods to provide improved spatial resolution for critical water-quality conditions. For the period and conditions sampled, they assess the spatial distribution of selected water-quality conditions in relation to causative factors, such as land use and contaminant sources.

Taxa (Species) richness is the number of species (taxa) present in a defined area or sampling unit.

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

Kingdom:	Animal
Phylum:	Arthropeda
Class:	Insecta
Order:	Ephemeroptera
Family:	Ephemeridae
Genus:	*Hexagenia*
Species:	*Hexagenia limbata*

Thalweg is the line formed by connecting points of minimum streambed elevation (deepest part of the channel).

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table descriptions and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water resulting from the mixing of flow proportionally to the duration of the concentration.

Tons per acre-foot (T/acre-ft) is the dry mass (tons) of a constituent per unit volume (acre-foot) of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY, tons/d) is a common chemical or sediment discharge unit. It is the quantity of a substance in solution, in suspension, or as bedload that passes a stream section during a 24-hour period. It is equivalent to 2,000 pounds per day, or 0.9072 metric ton per day.

Total is the amount of a given constituent in a representative whole-water (unfiltered) sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determined at least 95 percent of the constituent in the sample.)

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. This group includes coliforms that inhabit the intestine of warmblooded animals and those that inhabit soils. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas formation within 48 hours at 35 °C. In the laboratory, these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35 °C plus or minus 1.0 °C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milliliters of sample. (See also "Bacteria")

Total discharge is the quantity of a given constituent, measured as dry mass or volume, that passes a stream cross section per unit of time. When referring to constituents other than water, this term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total in bottom material is the amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

Total length (fish) is the straight-line distance from the anterior point of a fish specimen's snout, with the mouth closed, to the posterior end of the caudal (tail) fin, with the lobes of the caudal fin squeezed together.

Total load refers to all of a constituent in transport. When referring to sediment, it includes suspended load plus bed load.

Total organism count is the number of organisms collected and enumerated in any particular sample. (See also "Organism count/volume")

Total recoverable is the amount of a given constituent in a whole-water sample after a sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data for whole-water samples, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures may produce different analytical results.

Total sediment discharge is the mass of suspended-sediment plus bed-load transport, measured as dry weight, that passes a cross section in a given time. It is a rate and is reported as tons per day. (See also "Bedload," "Bedload discharge," "Sediment," "Suspended sediment," and "Suspended-sediment concentration")

Total sediment load or **total load** is the sediment in transport as bedload and suspended-sediment load. The term may be qualified, such as "annual suspended-sediment load" or "sand-size suspended-sediment load," and so on. It differs from total sediment discharge in that load refers to the material, whereas discharge refers to the quantity of material, expressed in units of mass per unit time. (See also "Sediment," "Suspended-sediment load," and "Total load")

Transect, as used in this report, is a line across a stream perpendicular to the flow and along which measurements are taken, so that morphological and flow characteristics along the line are described from bank to bank. Unlike a cross section, no attempt is made to determine known elevation points along the line.

Turbidity is the reduction in the transparency of a solution because of the presence of suspended and some dissolved substances. The measurement technique records the collective optical properties of the solution that cause light to be scattered and attenuated rather than transmitted in straight lines; the higher the intensity of scattered or attenuated light, the higher the value of the turbidity. Turbidity is expressed in nephelometric turbidity units (NTU). Depending on the method used, the turbidity units as NTU can be defined as the intensity of light of a specified wavelength scattered or attenuated by suspended particles or absorbed at a method specified angle, usually 90 degrees, from the path of the incident light. Currently approved methods for the measurement of turbidity in the USGS include those that conform to USEPA Method 180.1, ASTM D1889-00, and ISO 7027. Measurements of turbidity by these different methods and different instruments are unlikely to yield equivalent values.

Ultraviolet (UV) absorbance (absorption) at 254 or 280 nanometers is a measure of the aggregate concentration of the mixture of UV absorbing organic materials dissolved in the analyzed water, such as lignin, tannin, humic substances, and various aromatic compounds. UV absorbance (absorption) at 254 or 280 nanometers is measured in UV absorption units per centimeter of path length of UV light through a sample.

Unconfined aquifer is an aquifer whose upper surface is a water table free to fluctuate under atmospheric pressure. (See "Water-table aquifer")

Vertical datum (See "Datum")

Volatile organic compounds (VOCs) are organic compounds that can be isolated from the water phase of a sample by purging the water sample with inert gas, such as helium, and, subsequently, analyzed by gas chromatography. Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. They often are components of fuels, solvents, hydraulic fluids, paint thinners, and dry-cleaning agents commonly used in urban settings. VOC contamination of drinking-water supplies is a human-health concern because many are toxic and are known or suspected human carcinogens.

Water table is that surface in a ground-water body at which the water pressure is equal to the atmospheric pressure.

Water-table aquifer is an unconfined aquifer within which the water table is found.

Water year in USGS reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 2002, is called the "2002 water year."

Watershed (See "Drainage basin")

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports. (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976.)

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

Wet mass is the mass of living matter plus contained water. (See also "Biomass" and "Dry mass")

Wet weight refers to the weight of animal tissue or other substance including its contained water. (See also "Dry weight")

WSP is used as an acronym for "Water-Supply Paper" in reference to previously published reports.

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

TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS OF THE U.S. GEOLOGICAL SURVEY

The USGS publishes a series of manuals, the Techniques of Water-Resources Investigations, describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, section A of book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

Reports in the Techniques of Water-Resources Investigations series, which are listed below, are online at *http://water.usgs.gov/pubs/twri/*. Printed copies are for sale by the USGS, Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office), telephone 1-888-ASK-USGS. Please telephone 1-888-ASK-USGS for current prices, and refer to the title, book number, chapter number, and mention the "U.S. Geological Survey Techniques of Water-Resources Investigations." Products can then be ordered by telephone, or online at http://www.usgs.gov/sales.html, or by FAX to (303)236-469 of an order form available online at *http://mac.usgs.gov/isb/pubs/forms/*. Prepayment by major credit card or by a check or money order payable to the "U.S. Geological Survey" is required.

Book 1. Collection of Water Data by Direct Measurement

Section D. Water Quality

1-D1. *Water temperature—influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J.F. Ficke, and G. F. Smoot: USGS–TWRI book 1, chap. D1. 1975. 65 p.

1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W.W. Wood: USGS–TWRI book 1, chap. D2. 1976. 24 p.

Book 2. Collection of Environmental Data

Section D. Surface Geophysical Methods

2-D1. *Application of surface geophysics to ground-water investigations,* by A.A. R. Zohdy, G.P. Eaton, and D.R. Mabey: USGS–TWRI book 2, chap. D1. 1974. 116 p.

2-D2. *Application of seismic-refraction techniques to hydrologic studies,* by F.P. Haeni: USGS–TWRI book 2, chap. D2. 1988. 86 p.

Section E. Subsurface Geophysical Methods

2-E1. *Application of borehole geophysics to water-resources investigations,* by W.S. Keys and L.M. MacCary: USGS–TWRI book 2, chap. E1. 1971. 126 p.

2-E2. *Borehole geophysics applied to ground-water investigations,* by W.S. Keys: USGS–TWRI book 2, chap. E2. 1990. 150 p.

Section F. Drilling and Sampling Methods

2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W.E. Teasdale: USGS–TWRI book 2, chap. F1. 1989. 97 p.

Book 3. Applications of Hydraulics

Section A. Surface-Water Techniques

3-A1. *General field and office procedures for indirect discharge measurements,* by M.A. Benson and Tate Dalrymple: USGS–TWRI book 3, chap. A1. 1967. 30 p.

3-A2. *Measurement of peak discharge by the slope-area method,* by Tate Dalrymple and M.A. Benson: USGS–TWRI book 3, chap. A2. 1967. 12 p.

3-A3. *Measurement of peak discharge at culverts by indirect methods,* by G.L. Bodhaine: USGS–TWRI book 3, chap. A3. 1968. 60 p.

3-A4. *Measurement of peak discharge at width contractions by indirect methods,* by H.F. Matthai: USGS-TWRI book 3, chap. A4. 1967. 44 p.

3-A5. *Measurement of peak discharge at dams by indirect methods,* by Harry Hulsing: USGS–TWRI book 3. chap. A5. 1967. 29 p.

3-A6. *General procedure for gaging streams,* by R.W. Carter and Jacob Davidian: USGS–TWRI book 3, chap. A6. 1968. 13 p.

3-A7. *Stage measurement at gaging stations,* by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A7. 1968. 28 p.

3-A8. *Discharge measurements at gaging stations,* by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A8. 1969. 65 p.

3-A9. *Measurement of time of travel in streams by dye tracing,* by F.A. Kilpatrick and J.F. Wilson, Jr.: USGS–TWRI book 3, chap. A9. 1989. 27 p.

3-Al0. *Discharge ratings at gaging stations,* by E.J. Kennedy: USGS–TWRI book 3, chap. A10. 1984. 59 p.

3-A11. *Measurement of discharge by the moving-boat method,* by G.F. Smoot and C.E. Novak: USGS–TWRI book 3, chap. A11. 1969. 22 p.

3-A12. *Fluorometric procedures for dye tracing*, Revised, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS–TWRI book 3, chap. A12. 1986. 34 p.

3-A13. *Computation of continuous records of streamflow*, by E.J. Kennedy: USGS–TWRI book 3, chap. A13. 1983. 53 p.

3-A14. *Use of flumes in measuring discharge,* by F.A. Kilpatrick and V.R. Schneider: USGS–TWRI book 3, chap. A14. 1983. 46 p.

3-A15. *Computation of water-surface profiles in open channels,* by Jacob Davidian: USGS–TWRI book 3, chap. A15. 1984. 48 p.

3-A16. *Measurement of discharge using tracers*, by F.A. Kilpatrick and E.D. Cobb: USGS–TWRI book 3, chap. A16. 1985. 52 p.

3-A17. *Acoustic velocity meter systems,* by Antonius Laenen: USGS–TWRI book 3, chap. A17. 1985. 38 p.

3-A18. *Determination of stream reaeration coefficients by use of tracers,* by F.A. Kilpatrick, R.E. Rathbun, Nobuhiro Yotsukura, G.W. Parker, and L.L. DeLong: USGS–TWRI book 3, chap. A18. 1989. 52 p.

3-A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS–TWRI book 3, chap. A19. 1990. 31 p.

3-A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F.A. Kilpatrick: USGS–TWRI book 3, chap. A20. 1993. 38 p.

3-A21 *Stream-gaging cableways,* by C. Russell Wagner: USGS–TWRI book 3, chap. A21. 1995. 56 p.

Section B. Ground-Water Techniques

3-B1. *Aquifer-test design, observation, and data analysis,* by R.W. Stallman: USGS–TWRI book 3, chap. B1. 1971. 26 p.

3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G.D. Bennett: USGS–TWRI book 3, chap. B2. 1976. 172 p.

3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J.E. Reed: USGS–TWRI book 3, chap. B3. 1980. 106 p.

3-B4. *Regression modeling of ground-water flow,* by R.L. Cooley and R.L. Naff: USGS–TWRI book 3, chap. B4. 1990. 232 p.

3-B4. *Supplement 1. Regression modeling of ground-water flow --Modifications to the computer code for nonlinear regression solution of steady-state ground-water flow problems,* by R.L. Cooley: USGS–TWRI book 3, chap. B4. 1993. 8 p.

3-B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems—An introduction*, by O.L. Franke, T.E. Reilly, and G.D. Bennett: USGS–TWRI book 3, chap. B5. 1987. 15 p.

3-B6. *The principle of superposition and its application in ground-water hydraulics,* by T.E. Reilly, O.L. Franke, and G.D. Bennett: USGS–TWRI book 3, chap. B6. 1987. 28 p.

3-B7. *Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uniform flow,* by E.J. Wexler: USGS–TWRI book 3, chap. B7. 1992. 190 p.

3-B8. *System and boundary conceptualization in ground-water flow simulation,* by T.E. Reilly: USGS–TWRI book 3, chap. B8. 2001. 29 p.

Section C. Sedimentation and Erosion Techniques

3-C1. *Fluvial sediment concepts,* by H.P. Guy: USGS–TWRI book 3, chap. C1. 1970. 55 p.

3-C2. *Field methods for measurement of fluvial sediment*, by T.K. Edwards and G.D. Glysson: USGS–TWRI book 3, chap. C2. 1999. 89 p.

3-C3. *Computation of fluvial-sediment discharge,* by George Porterfield: USGS–TWRI book 3, chap. C3. 1972. 66 p.

Book 4. Hydrologic Analysis and Interpretation

Section A. Statistical Analysis

4-A1. *Some statistical tools in hydrology*, by H.C. Riggs: USGS–TWRI book 4, chap. A1. 1968. 39 p.

4-A2. *Frequency curves,* by H.C. Riggs: USGS–TWRI book 4, chap. A2. 1968. 15 p.

4–A3. *Statistical methods in water resources*, by D.R. Helsel and R.M. Hirsch: USGS–TWRI book 4, chap. A3. 1991. Available only online at http://water.usgs.gov/pubs/twri/twri4a3/. (Accessed August 30, 2002.)

Section B. Surface Water

4-B1. *Low-flow investigations,* by H.C. Riggs: USGS–TWRI book 4, chap. B1. 1972. 18 p.

4-B2. *Storage analyses for water supply*, by H.C. Riggs and C.H. Hardison: USGS–TWRI book 4, chap. B2. 1973. 20 p.

4-B3. *Regional analyses of streamflow characteristics,* by H.C. Riggs: USGS–TWRI book 4, chap. B3. 1973. 15 p.

Section D. Interrelated Phases of the Hydrologic Cycle

4-D1. *Computation of rate and volume of stream depletion by wells*, by C.T. Jenkins: USGS–TWRI book 4, chap. D1. 1970. 17 p.

Book 5. Laboratory Analysis

Section A. Water Analysis

5-A1. *Methods for determination of inorganic substances in water and fluvial sediments,* by M.J. Fishman and L.C. Friedman, editors: USGS–TWRI book 5, chap. A1. 1989. 545 p.

5-A2. *Determination of minor elements in water by emission spectroscopy,* by P.R. Barnett and E.C. Mallory, Jr.: USGS–TWRI book 5, chap. A2. 1971. 31 p.

5-A3. *Methods for the determination of organic substances in water and fluvial sediments*, edited by R.L. Wershaw, M.J. Fishman, R.R. Grabbe, and L.E. Lowe: USGS–TWRI book 5, chap. A3. 1987. 80 p.

5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples,* by L.J. Britton and P.E. Greeson, editors: USGS–TWRI book 5, chap. A4. 1989. 363 p.

5-A5. *Methods for determination of radioactive substances in water and fluvial sediments,* by L.L. Thatcher, V.J. Janzer, and K.W. Edwards: USGS–TWRI book 5, chap. A5. 1977. 95 p.

5-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments,* by L.C. Friedman and D.E. Erdmann: USGS–TWRI book 5, chap. A6. 1982. 181 p.

Section C. Sediment Analysis

5-C1. *Laboratory theory and methods for sediment analysis*, by H.P. Guy: USGS–TWRI book 5, chap. C1. 1969. 58 p.

Book 6. Modeling Techniques

Section A. Ground Water

6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M.G. McDonald and A.W. Harbaugh: USGS–TWRI book 6, chap. A1. 1988. 586 p.

6-A2. *Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model,* by S.A. Leake and D.E. Prudic: USGS–TWRI book 6, chap. A2. 1991. 68 p.

6-A3. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 1: Model Description and User's Manual,* by L.J. Torak: USGS–TWRI book 6, chap. A3. 1993. 136 p.

6-A4. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 2: Derivation of finite-element equations and comparisons with analytical solutions,* by R.L. Cooley: USGS–TWRI book 6, chap. A4. 1992. 108 p.

6-A5. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 3: Design philosophy and programming details,* by L.J. Torak: USGS–TWRI book 6, chap. A5, 1993. 243 p.

6-A6. *A coupled surface-water and ground-water flow model (MODBRANCH) for simulation of stream-aquifer interaction*, by Eric D. Swain and Eliezer J. Wexler: USGS–TWRI book 6, chap. A5,1996. 125 p.

6–A7. *User's guide to SEAWAT: A computer program for simulation of three-dimensional variable-density ground-water flow*, by Weixing Guo and Christian D. Langevin: USGS–TWRI book 6, chap. A7. 2002. 77 p.

Book 7. Automated Data Processing and Computations

Section C. Computer Programs

7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments,* by P.C. Trescott, G.F. Pinder, and S.P. Larson: USGS–TWRI book 7, chap. C1. 1976. 116 p.

7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L.F. Konikow and J.D. Bredehoeft: USGS–TWRI book 7, chap. C2. 1978. 90 p.

7-C3. *A model for simulation of flow in singular and interconnected channels,* by R.W. Schaffranek, R.A. Baltzer, and D.E. Goldberg: USGS–TWRI book 7, chap. C3. 1981. 110 p.

Book 8. Instrumentation

Section A. Instruments for Measurement of Water Level

8-A1. *Methods of measuring water levels in deep wells,* by M.S. Garber and F.C. Koopman: USGS–TWRI book 8, chap. A1. 1968. 23 p.

8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J.D. Craig: USGS–TWRI book 8, chap. A2. 1983. 57 p.

Section B. Instruments for Measurement of Discharge

8-B2. *Calibration and maintenance of vertical-axis type current meters,* by G.F. Smoot and C.E. Novak: USGS–TWRI book 8, chap. B2. 1968. 15 p.

Book 9. Handbooks for Water-Resources Investigations

Section A. National Field Manual for the Collection of Water-Quality Data

9-A1. *National Field Manual for the Collection of Water-Quality Data: Preparations for Water Sampling*, by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A1. 1998. 47 p.

9-A2. *National Field Manual for the Collection of Water-Quality Data: Selection of Equipment for Water Sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A2. 1998. 94 p.

9-A3. *National Field Manual for the Collection of Water-Quality Data: Cleaning of Equipment for Water Sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A3. 1998. 75 p.

9-A4. *National Field Manual for the Collection of Water-Quality Data: Collection of Water Samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A4. 1999. 156 p.

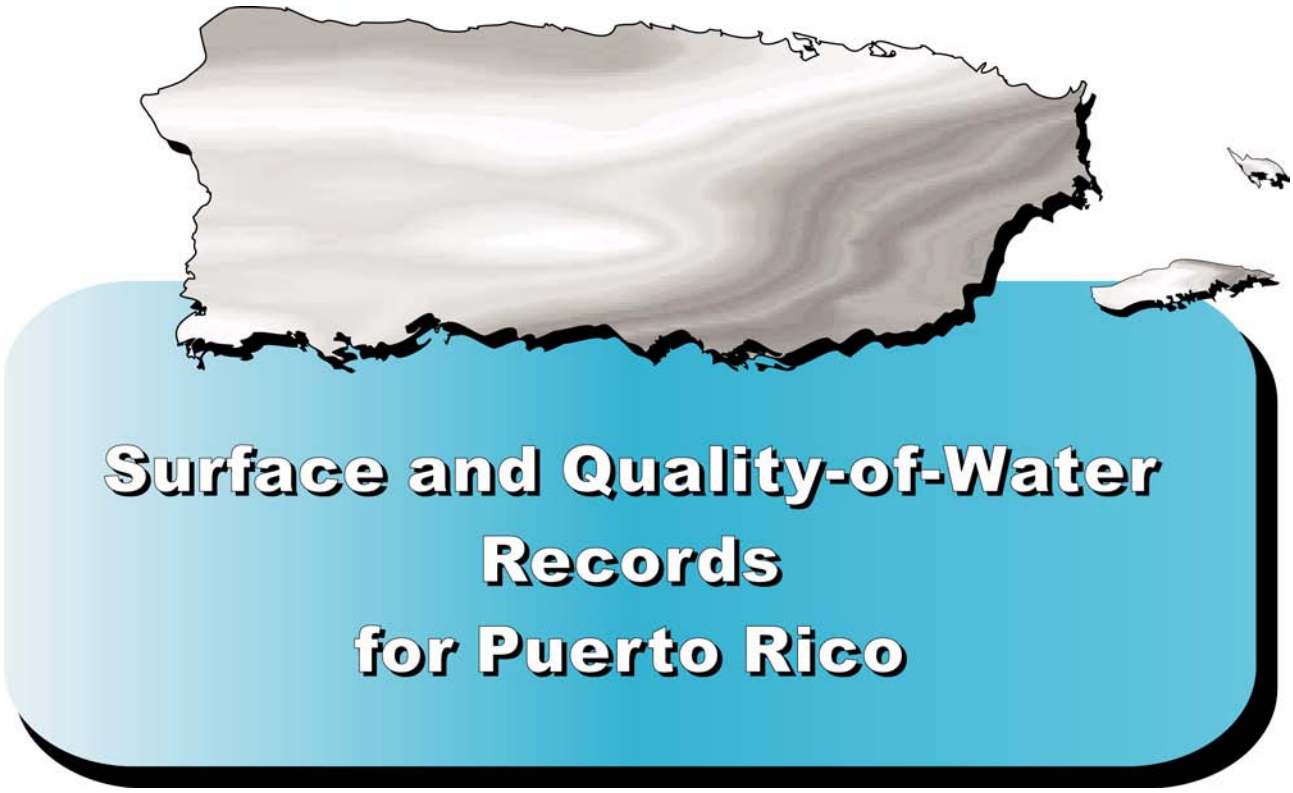
9-A5. *National Field Manual for the Collection of Water-Quality Data: Processing of Water Samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A5. 1999, 149 p.

9-A6. *National Field Manual for the Collection of Water-Quality Data: Field Measurements*, edited by F.D. Wilde and D.B. Radtke: USGS–TWRI book 9, chap. A6. 1998. Variously paginated.

9-A7. *National Field Manual for the Collection of Water-Quality Data: Biological Indicators*, edited by D.N. Myers and F.D. Wilde: USGS–TWRI book 9, chap. A7. 1997 and 1999. Variously paginated.

9-A8. *National Field Manual for the Collection of Water-Quality Data: Bottom-material samples*, by D.B. Radtke: USGS–TWRI book 9, chap. A8. 1998. 48 p.

9-A9. *National Field Manual for the Collection of Water-Quality Data: Safety in Field Activities*, by S.L. Lane and R.G. Fay: USGS–TWRI book 9, chap. A9. 1998. 60 p.


Surface and Quality-of-Water
Records
for Puerto Rico

THIS PAGE IS INTENTIONALLY BLANK

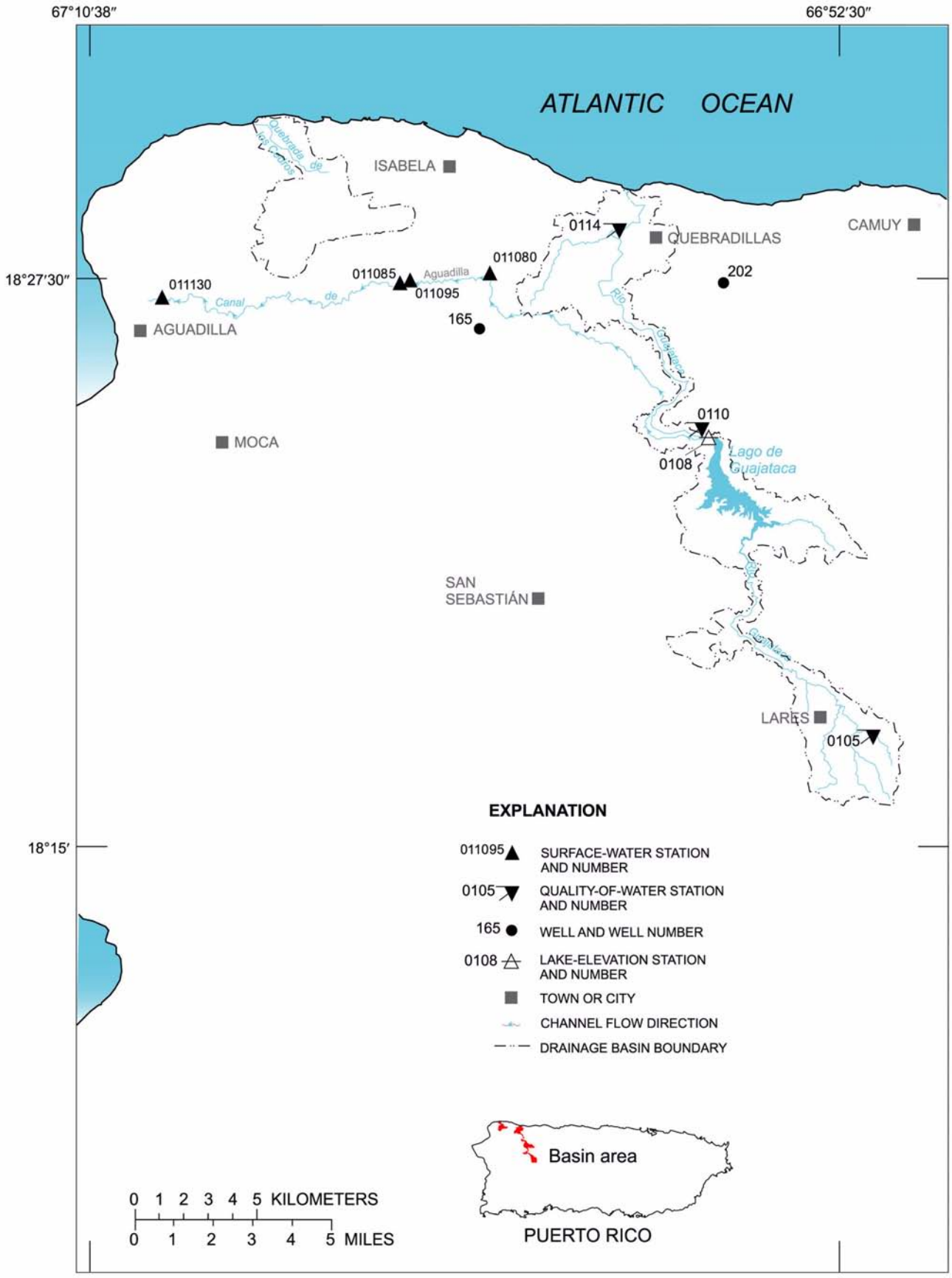


Figure 10. Río Guajataca basin.

50010500 RIO GUAJATACA AT LARES, PR—Continued

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--3.16 mi^2 (8.18 km^2).

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV													
20...	0950	24	9.5	8.1	7.5	188	21.5	72	21.6	4.36	1.97	.5	8.80
MAR													
03...	1200	2.1	2.1	8.8	7.8	260	21.6	--	--	--	--	--	--
JUN													
16...	1433	2.7	2.3	7.7	7.8	251	25.2	--	--	--	--	--	--
AUG													
12...	0820	3.6	50	7.7	7.5	202	22.3	77	23.7	4.27	3.12	.4	8.70

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
NOV													
20...	70	9.78	<.2	29.0	6.4	--	124	7.93	<10	<.20	.06	2.10	<.01
MAR													
03...	97	--	--	--	--	<.1	--	--	--	<.20	<.01	1.20	<.01
JUN													
16...	98	--	--	--	--	--	--	--	<10	<.20	.01	1.50	<.01
AUG													
12...	74	9.63	<.2	22.3	7.1	--	129	1.26	25	--	.03	--	--

Date	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)
NOV													
20...	.05	<10	E1,300	39,000	--	--	--	--	--	--	--	--	--
MAR													
03...	.05	--	280	4,700	--	--	--	--	--	--	--	--	--
JUN													
16...	.06	<10	E900	E11,000	--	--	--	--	--	--	--	--	--
AUG													
12...	.07	10	E1,600	E8,000	<2	25.7	20	<.2	<.8	M	<.01	770	<1.0

50010500 RIO GUAJATACA AT LARES, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
NOV 20...	--	--	--	--	--	--	--
MAR 03...	--	<.02	--	--	--	<.10	<16
JUN 16...	--	--	--	--	--	--	--
AUG 12...	36.1	<.02	<3	<.3	E4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50010800 LAGO GUAJATACA AT DAMSITE NEAR QUEBRADILLAS, PR

LOCATION.--Lat 18°24'02", long 66°55'25", Hydrologic Unit 21010002, on right bank, in a concrete intake tower at Damsite, 5.2 mi (8.4 km) southeast from Quebradillas Plaza, 0.5 mi (0.8 km) northeast from Iglesia San Antonio de Padua and 2.8 mi (4.5 km) from Escuela Segunda Unidad Baldorioty de Castro.

DRAINAGE AREA.--24.6 mi^2 (63.71 km^2).

PERIOD OF RECORD.--April 1995 to current year.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago Guajataca was completed in 1928. The dam is a semihydraulic earthfill structure about 123 ft (37 m) high, a top width of 31 ft (9.5 m) at crest elevation of 664 ft (202.5 m), a base width of 623 ft (190 m), a crest length of 1,036 ft (316 m) and has a maximum storage capacity of 49,200 acre-feet (60.6 hm^3). The Guajataca Dam is owned by the Puerto Rico Electric Power Authority (PREPA) and provides water for the municipalities of Aguadilla, Isabela, Moca, Aguada, and Quebradillas although its primary purpose is for agricultural irrigation for the flatlands of the area. Gage-height and precipitation satellite telemetry at station. New capacity table based on U.S. Geological Survey Water-Resources Investigations Report 00-4044, January 1999.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation 648.3 ft (197.60 m), September 23, 1998; minimum elevation, 608.07 ft (185.34 m) May 17, 1998.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 647.19 ft (197.26 m), September 17; minimum elevation, 626.56 ft (190.98 m), April 18.

Capacity Table
(based on data from U.S. Geological Survey Water-Resources Investigations Report 00-4044, 1999)
(Elevation in ft, capacity in acre-ft)

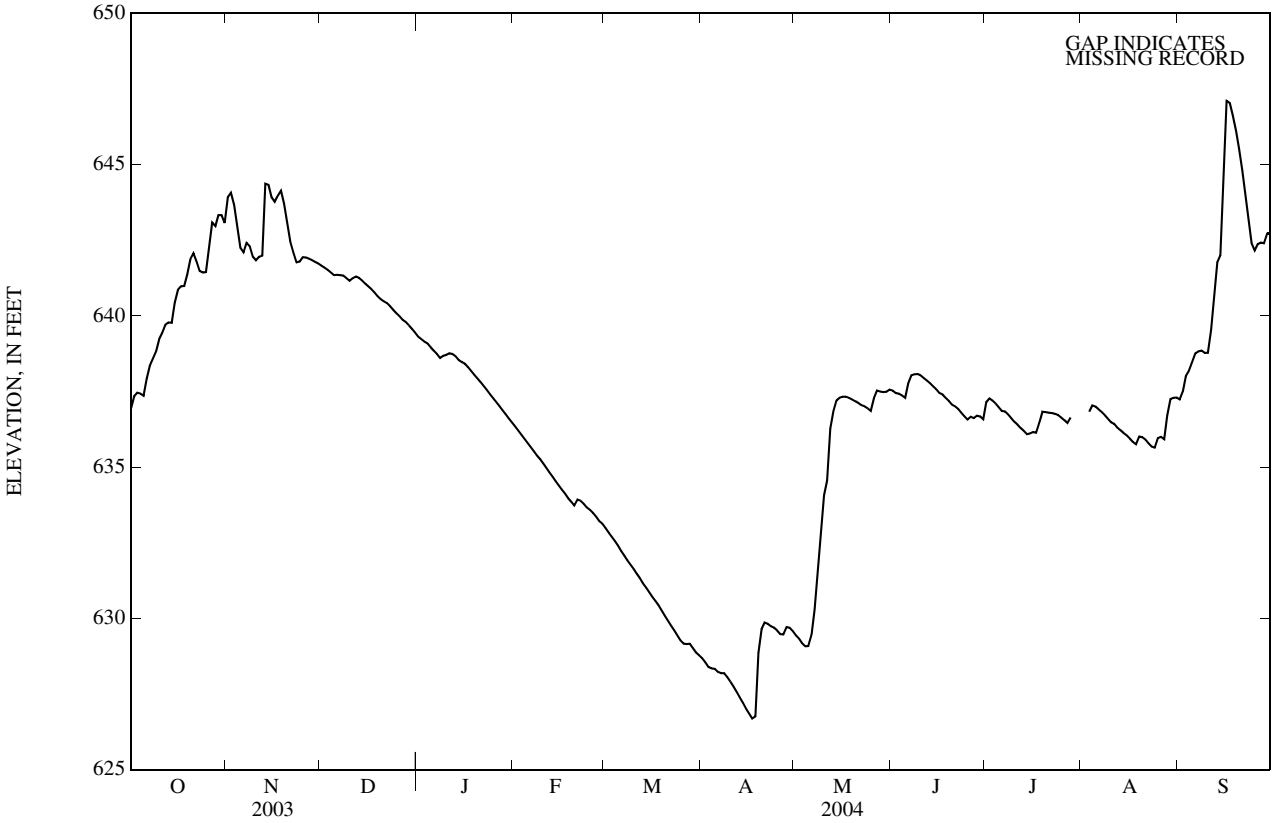
Elevation	Contents	Elevation	Contents
557	0	616	13,393
577	916	636	26,332
597	5,253	646	34,277

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	636.95	643.93	641.66	639.31	636.35	632.99	628.68	629.44	637.53	637.15	A	637.24
2	637.35	644.07	641.59	639.23	636.21	632.84	628.55	629.33	637.45	637.27	A	637.51
3	637.46	643.67	641.52	639.15	636.07	632.70	628.39	629.18	637.43	637.20	636.83	638.02
4	637.43	643.01	641.43	639.09	635.94	632.56	628.35	629.08	637.37	637.10	637.04	638.20
5	637.36	642.25	641.35	638.96	635.80	632.41	628.33	629.09	637.29	636.98	637.00	638.48
6	637.93	642.10	641.36	638.85	635.67	632.23	628.23	629.46	637.76	636.86	636.91	638.76
7	638.35	642.41	641.35	638.74	635.53	632.08	628.19	630.29	638.03	636.84	636.82	638.83
8	638.59	642.30	641.33	638.61	635.39	631.92	628.19	631.51	638.07	636.74	636.72	638.85
9	638.82	641.96	641.25	638.68	635.27	631.78	628.06	632.88	638.08	636.62	636.60	638.78
10	639.23	641.84	641.16	638.71	635.13	631.64	627.91	634.07	638.03	636.50	636.48	638.78
11	639.44	641.95	641.24	638.76	634.98	631.48	627.75	634.55	637.94	636.41	636.43	639.53
12	639.71	641.99	641.30	638.74	634.83	631.33	627.57	636.27	637.86	636.29	636.31	640.59
13	639.78	644.37	641.26	638.66	634.69	631.16	627.39	636.83	637.77	636.20	636.22	641.77
14	639.77	644.33	641.17	638.54	634.54	631.02	627.21	637.20	637.67	636.09	636.13	642.00
15	640.44	643.92	641.07	638.47	634.40	630.87	627.02	637.29	637.57	636.11	636.05	644.91
16	640.86	643.77	640.97	638.42	634.26	630.71	626.85	637.33	637.45	636.16	635.95	647.11
17	640.98	643.97	640.88	638.30	634.13	630.58	626.69	637.33	637.40	636.14	635.83	647.04
18	640.99	644.14	640.77	638.18	633.98	630.43	626.76	637.29	637.29	636.47	635.75	646.62
19	641.37	643.71	640.65	638.05	633.86	630.26	628.86	637.24	637.19	636.83	636.01	646.12
20	641.88	643.06	640.55	637.93	633.73	630.09	629.65	637.18	637.07	636.82	635.99	645.52
21	642.07	642.46	640.48	637.81	633.93	629.93	629.86	637.12	637.01	636.80	635.91	644.81
22	641.79	642.09	640.42	637.68	633.89	629.76	629.82	637.05	636.92	636.79	635.79	644.04
23	641.48	641.77	640.32	637.55	633.79	629.61	629.74	637.01	636.80	636.76	635.68	643.24
24	641.43	641.80	640.20	637.41	633.67	629.44	629.69	636.94	636.68	636.72	635.64	642.41
25	641.45	641.94	640.09	637.28	633.59	629.28	629.60	636.86	636.57	636.64	635.96	642.16
26	642.34	641.93	639.99	637.15	633.49	629.17	629.48	637.28	636.66	636.55	636.00	642.37
27	643.09	641.89	639.87	637.02	633.36	629.15	629.47	637.53	636.62	636.46	635.92	642.42
28	642.97	641.84	639.80	636.88	633.22	629.16	629.71	637.50	636.70	636.64	636.71	642.40
29	643.33	641.78	639.69	636.75	633.13	629.02	629.69	637.48	636.68	A	637.25	642.72
30	643.33	641.73	639.57	636.61	---	628.87	629.58	637.49	636.58	A	637.29	642.72
31	643.07	---	639.45	636.48	---	628.78	---	637.56	---	A	637.30	---
MAX	643.33	644.37	641.66	639.31	636.35	632.99	629.86	637.56	638.08	---	---	647.11
MIN	636.95	641.73	639.45	636.48	633.13	628.78	626.69	629.08	636.57	---	---	637.24

A No gage-height record

50010800 LAGO GUAJATACA AT DAMSITE NEAR QUEBRADILLAS, PR—Continued



50011000 CANAL PRINCIPAL DE DIVERSIONES AT LAGO DE GUAJATACA, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1958-64, 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV													
18...	1700	60	5.7	1.2	7.1	315	24.7	150	55.2	3.34	1.94	.2	4.93
FEB													
25...	1205	108	5.7	2.8	7.5	311	25.1	150	54.3	3.76	2.17	.2	6.12
JUN													
14...	1315	108	<2.0	.8	7.2	316	25.7	--	--	--	--	--	--
AUG													
09...	1445	108	6.4	1.0	7.3	317	26.6	150	54.5	3.50	2.09	.2	5.83

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
NOV													
18...	140	6.56	<.2	7.6	8.3	--	172	--	<10	<.20	.01	.610	<.01
FEB													
25...	139	7.93	<.2	7.0	8.3	<.1	173	50.5	<10	.40	.08	<.020	<.01
JUN													
14...	139	--	--	--	--	--	--	--	<10	.20	.04	.060	<.01
AUG													
09...	144	8.20	<.2	7.3	8.6	--	177	51.5	<10	--	.13	--	--

Date	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)
NOV													
18...	--	--	--	.02	<10	E32	200	--	--	--	--	--	--
FEB													
25...	.32	--	--	<.02	<10	E4	E320	<2	18.1	10	<.2	<.8	<4
JUN													
14...	.16	.26	1.2	<.02	<10	E2	320	--	--	--	--	--	--
AUG													
09...	--	--	--	.01	<10	E18	140	E1	17.3	17	<.2	<.8	<4

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
NOV										
18...	--	--	--	--	--	--	--	--	--	--
FEB										
25...	<.01	30	<1.0	65.7	<.02	<3	<.3	<4	<.10	<16
JUN										
14...	--	--	--	--	--	--	--	--	--	--
AUG										
09...	<.01	130	<1.0	191	<.02	<3	<.3	<4	E.05	<16

50011080 CANAL DE RIEGO DE MOCA BELOW FOREBAY, PR

LOCATION.--Lat 18°27'31", long 67°00'43", Hydrologic Unit 21010002, on right side of irrigation canal near Road 494, about 1.6 mi (2.6 km) south from road intersection between Highways 2 and 112 at Mora, 3.2 mi (5.1 km) south from Isabela, and 0.3 mi (0.5 km) northeast from Iglesia Arenales Altos.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--January to September 2004.

GAGE.--Water-stage recorder. Altitude of gage is 541 ft (165 m), from topographic map.

REMARKS.--Records fair. Regulation at all stages by diversions from Lago Guajataca upstream from gage.

EXTREMES OBSERVED FOR CURRENT PERIOD.--Maximum discharge, 61 ft^3/s (1.73 m^3/s), April 29, gage height, 2.30 ft (0.70 m), but could be higher during period at no gage-height record; no flow many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

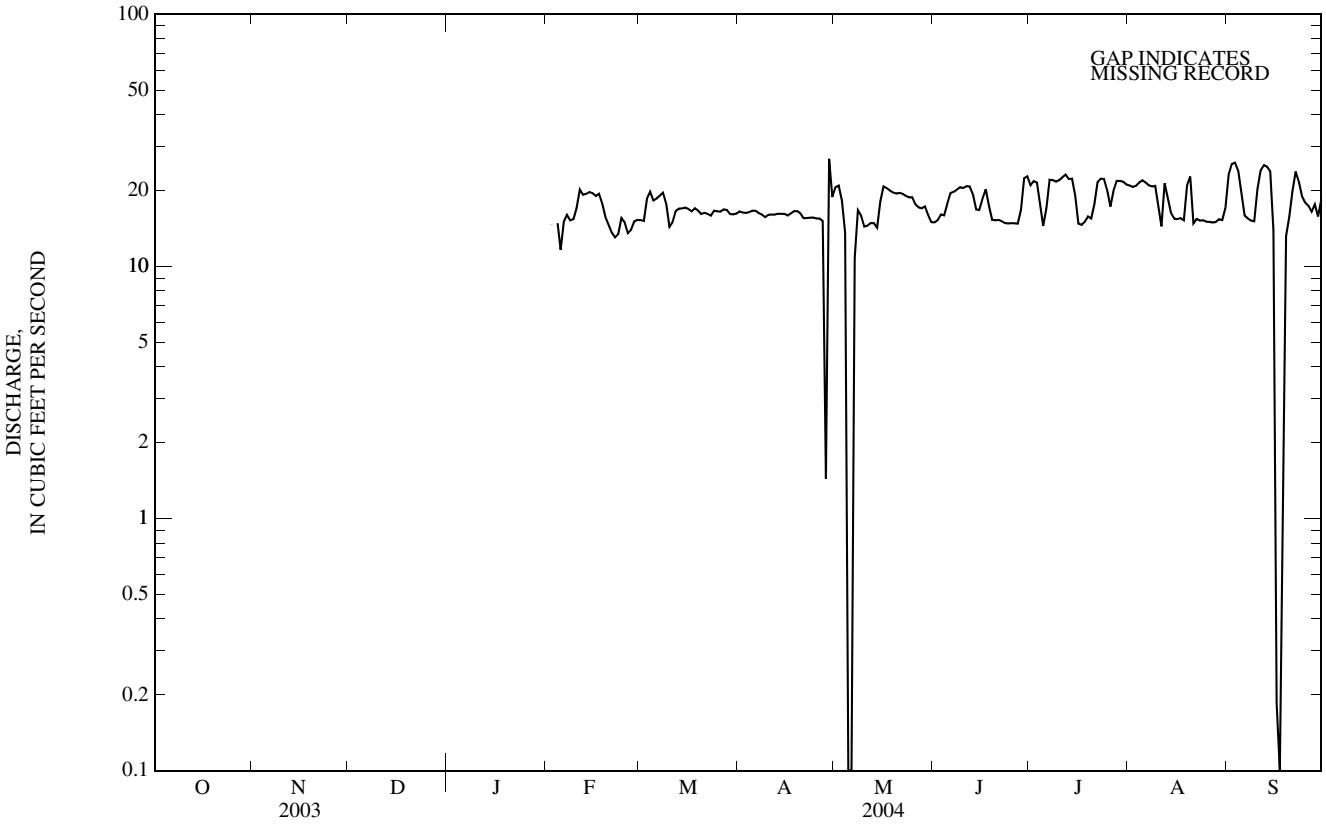
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	A	15.3	16.5	20.6	15.0	21.0	20.9	23.1
2	---	---	---	---	14.6	15.1	16.4	20.9	15.3	21.8	20.7	25.5
3	---	---	---	---	A	18.6	16.3	18.3	16.1	21.5	20.9	25.8
4	---	---	---	---	14.9	19.8	16.4	13.6	15.9	17.8	21.5	24.0
5	---	---	---	---	11.7	18.3	16.6	0.000	17.8	14.5	22.0	19.7
6	---	---	---	---	15.1	18.6	16.6	0.000	19.6	17.0	21.5	15.9
7	---	---	---	---	16.0	19.1	16.3	10.8	19.8	22.1	21.0	15.5
8	---	---	---	---	15.2	19.6	16.0	16.7	20.2	22.0	20.7	15.2
9	---	---	---	---	15.4	17.7	15.7	15.9	20.6	21.7	20.9	15.1
10	---	---	---	---	17.1	14.4	16.0	14.4	20.5	22.0	17.3	20.2
11	---	---	---	---	20.2	15.0	16.1	14.5	20.8	22.5	14.4	24.0
12	---	---	---	---	19.2	16.6	16.1	14.9	20.8	23.1	21.4	25.2
13	---	---	---	---	19.4	17.0	16.2	14.8	19.3	22.2	18.7	24.9
14	---	---	---	---	19.7	17.0	16.2	14.2	16.8	22.3	16.3	23.8
15	---	---	---	---	19.5	17.1	16.2	18.1	16.8	19.1	15.5	13.9
16	---	---	---	---	19.0	16.9	15.9	20.8	18.6	14.8	15.4	0.185
17	---	---	---	---	19.4	16.6	16.2	20.4	20.2	14.6	15.5	0.000
18	---	---	---	---	17.8	17.0	16.6	20.0	17.4	15.1	15.3	0.501
19	---	---	---	---	15.7	16.7	16.6	19.6	15.3	15.8	20.9	13.2
20	---	---	---	---	14.6	16.2	16.3	19.5	15.2	15.5	22.7	15.7
21	---	---	---	---	13.6	16.3	15.5	19.6	15.3	17.7	14.8	19.9
22	---	---	---	---	13.0	16.2	15.6	19.4	15.1	21.6	15.4	23.8
23	---	---	---	---	13.5	15.9	15.6	19.1	14.9	22.3	15.2	21.7
24	---	---	---	---	15.6	16.6	15.6	18.8	14.8	22.2	15.3	19.0
25	---	---	---	---	15.0	16.5	15.5	18.8	14.9	20.1	15.0	17.9
26	---	---	---	---	13.6	16.5	15.5	17.6	14.8	17.3	15.0	17.4
27	---	---	---	---	14.0	16.8	15.1	17.1	14.8	20.0	14.9	16.5
28	---	---	---	A	15.1	16.8	1.44	17.0	16.8	21.8	15.0	17.6
29	---	---	---	A	15.3	16.2	26.7	17.3	22.4	21.9	15.4	15.8
30	---	---	---	A	---	16.1	18.9	16.0	22.8	21.7	15.3	18.4
31	---	---	---	A	---	16.2	---	15.0	---	21.1	17.1	---
TOTAL	---	---	---	---	---	522.7	480.64	503.700	528.6	614.1	551.9	529.386
MEAN	---	---	---	---	---	16.9	16.0	16.2	17.6	19.8	17.8	17.6
MAX	---	---	---	---	---	19.8	26.7	20.9	22.8	23.1	22.7	25.8
MIN	---	---	---	---	---	14.4	1.44	0.000	14.8	14.5	14.4	0.000
AC-FT	---	---	---	---	---	1,040	953	999	1,050	1,220	1,090	1,050

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2004 - 2004, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	16.9	16.0	16.2	17.6	19.8	17.8	17.6
MAX	---	---	---	---	---	16.9	16.0	16.2	17.6	19.8	17.8	17.6
(WY)	---	---	---	---	---	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)
MIN	---	---	---	---	---	16.9	16.0	16.2	17.6	19.8	17.8	17.6
(WY)	---	---	---	---	---	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)

A No gage-height record

50011080 CANAL DE RIEGO DE MOCA BELOW FOREBAY, PR—Continued



50011085 CANAL MOCA ABV LAGO REGULADOR, PR

LOCATION.--Lat 18°27'27", long 67°01'45", Hydrologic Unit 21010002, on right side of irrigation canal about .43 mi (0.69 km) west from Road 494, about 1.3 mi (2.1 km) south from road intersection between Highways 2 and 112 at Mora and 3.8 mi (6.1 km) south from Isabela.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--February to September 2004.

GAGE.--Water-stage recorder. Altitude of gage is 541 ft (165 m), from topographic map.

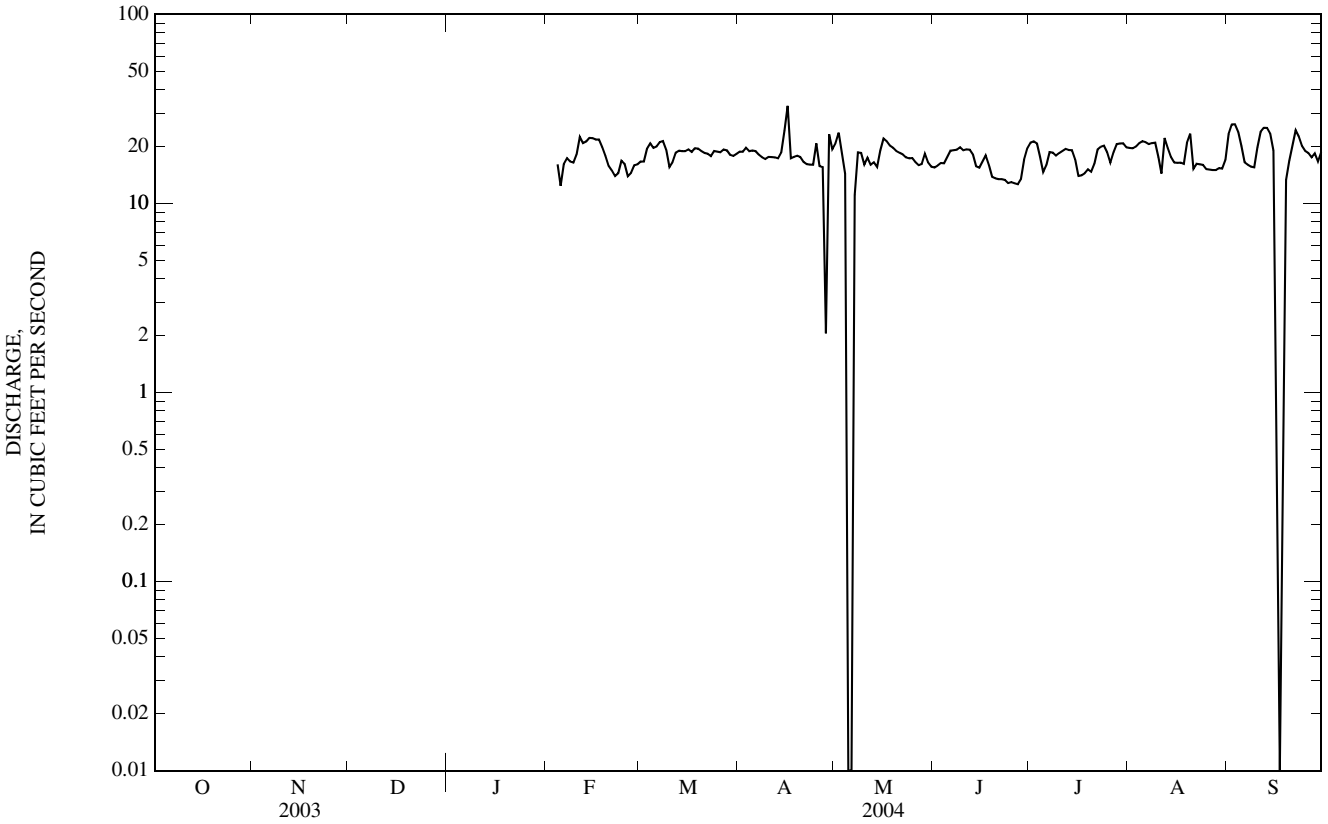
REMARKS.--Records fair. Regulation at all stages by diversions from Lago Guajataca upstream from gage.

EXTREMES OBSERVED FOR CURRENT PERIOD.--Maximum discharge, 118 ft^3/s (3.34 m^3/s), September 15, gage height, 2.73 ft (0.83 m), but could be higher during period of no gage-height record. Channel overflows after 2.69 ft (0.82 m) and 118 ft^3/s (3.34 m^3/s). No gage-height discharge relation defined after this level; no flow many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	17	19	21	15	21	20	23
2	---	---	---	---	---	17	19	24	16	21	20	26
3	---	---	---	---	---	20	20	19	16	21	20	26
4	---	---	---	---	16	21	19	14	16	18	21	24
5	---	---	---	---	12	20	19	0.00	18	15	21	20
6	---	---	---	---	16	20	19	0.00	19	16	21	16
7	---	---	---	---	17	21	18	11	19	19	21	16
8	---	---	---	---	17	21	18	19	19	19	21	16
9	---	---	---	---	16	19	17	19	20	18	21	16
10	---	---	---	---	18	16	18	16	19	18	18	20
11	---	---	---	---	22	17	18	17	19	19	14	24
12	---	---	---	---	21	19	18	16	19	19	22	25
13	---	---	---	---	21	19	17	17	18	19	20	25
14	---	---	---	---	22	19	19	16	16	19	18	23
15	---	---	---	---	22	19	24	19	15	17	16	19
16	---	---	---	---	22	19	33	22	17	14	16	0.52
17	---	---	---	---	22	19	17	21	18	14	16	0.00
18	---	---	---	---	20	20	18	20	16	14	16	0.06
19	---	---	---	---	18	20	18	20	14	15	21	13
20	---	---	---	---	16	19	18	19	14	15	23	17
21	---	---	---	---	15	19	17	19	13	16	15	20
22	---	---	---	---	14	18	16	18	13	19	16	24
23	---	---	---	---	14	18	16	18	13	20	16	23
24	---	---	---	---	17	19	16	17	13	20	16	20
25	---	---	---	---	16	19	21	17	13	19	15	19
26	---	---	---	---	14	19	16	17	13	16	15	18
27	---	---	---	---	14	19	16	16	13	19	15	18
28	---	---	---	---	16	19	2.1	16	13	21	15	18
29	---	---	---	---	16	18	23	18	17	21	15	17
30	---	---	---	---	---	18	19	16	20	21	15	19
31	---	---	---	---	---	18	---	16	---	20	17	---
TOTAL	---	---	---	---	---	586	548.1	518.00	484	563	556	545.58
MEAN	---	---	---	---	---	18.9	18.3	16.7	16.1	18.2	17.9	18.2
MAX	---	---	---	---	---	21	33	24	20	21	23	26
MIN	---	---	---	---	---	16	2.1	0.00	13	14	14	0.00
AC-FT	---	---	---	---	---	1,160	1,090	1,030	960	1,120	1,100	1,080

50011085 CANAL MOCA ABV LAGO REGULADOR, PR—Continued



50011095 CANAL DE RIEGO DE MOCA BELOW HWY 112, MOCA, PR

LOCATION.--Lat 18°27'23", long 67°02'06", Hydrologic Unit 21010002, on right side of irrigation canal about 120 ft downstream from Highway 112, 0.9 mi (1.4 km) south from road intersection between Highways 2 and 112 at Mora, 2.2 mi (3.5 km) southeast from the U.S. Naval Reservation, 2.3 mi (3.7 km) northeast from Escuela Aceitunas.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--February to September 2004.

GAGE.--Water stage recorder. Altitude of gage is 525 ft (160 m), from topographic map.

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

EXTREMES OBSERVED FOR CURRENT PERIOD.--Maximum discharge, undetermined, September 15, 2005, gage height 2.63 ft (0.80); minimum daily discharge 0.0 ft^3/s (0.00 m^3) May 6, 2004.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

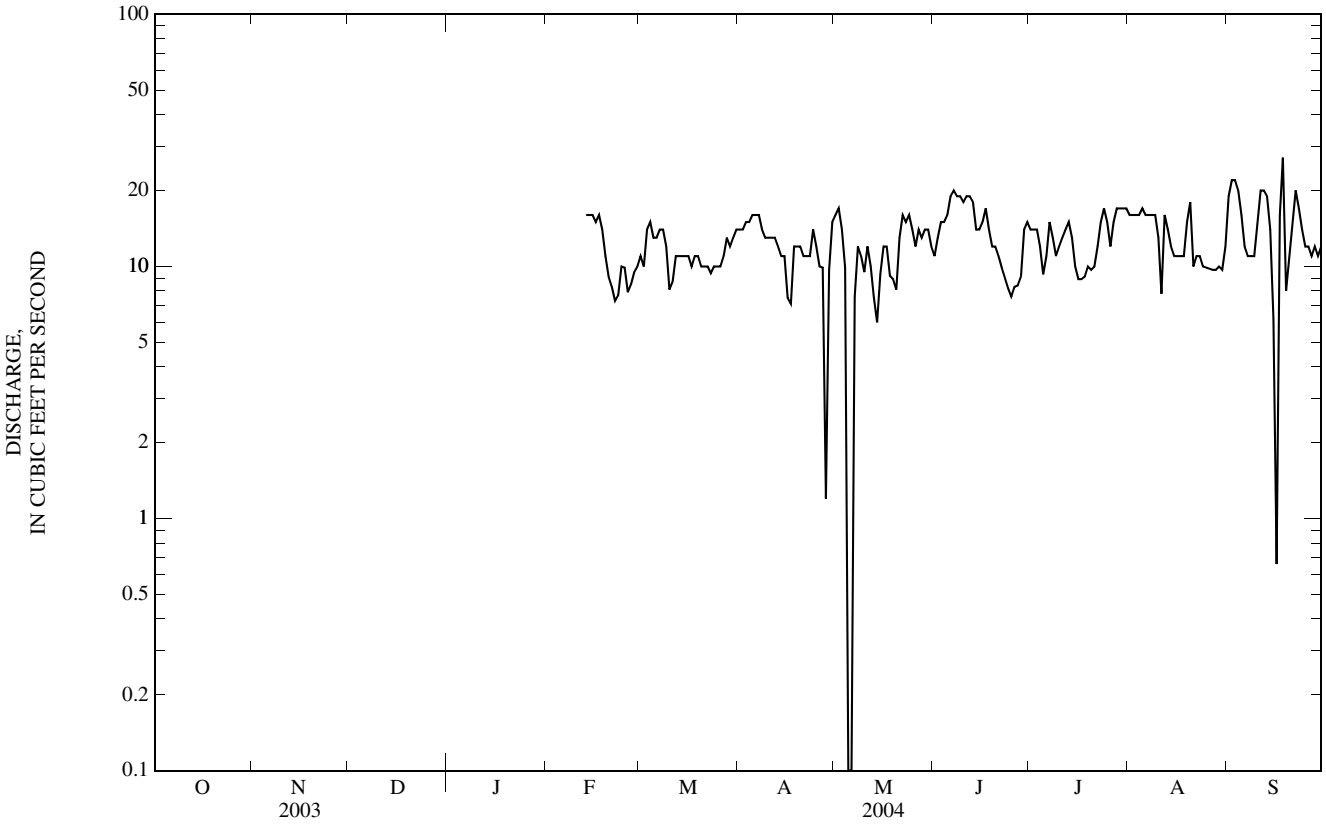
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	11	14	16	11	14	16	19
2	---	---	---	---	---	10	14	17	13	14	16	>22
3	---	---	---	---	---	14	15	14	15	14	16	>22
4	---	---	---	---	---	15	15	9.9	15	12	16	20
5	---	---	---	---	---	13	16	0.00	16	9.3	17	16
6	---	---	---	---	---	13	16	0.00	19	11	16	12
7	---	---	---	---	---	14	16	7.6	20	15	16	11
8	---	---	---	---	---	14	14	12	19	13	16	11
9	---	---	---	---	---	12	13	11	19	11	16	11
10	---	---	---	---	---	8.1	13	9.5	18	12	13	15
11	---	---	---	---	---	8.7	13	>12	19	13	7.8	20
12	---	---	---	---	---	11	13	>10	19	14	16	20
13	---	---	---	---	16	11	12	7.5	>18	15	14	19
14	---	---	---	---	16	11	11	6.0	14	13	12	14
15	---	---	---	---	16	11	11	9.3	14	10	11	>6.2
16	---	---	---	---	15	11	7.5	12	15	8.9	11	0.66
17	---	---	---	---	16	10	7.1	12	17	8.9	11	16
18	---	---	---	---	14	11	12	9.2	14	9.1	11	27
19	---	---	---	---	11	11	12	8.9	12	10	15	8.0
20	---	---	---	---	9.1	10	12	8.1	12	9.7	18	11
21	---	---	---	---	8.3	10	11	13	11	10	10	15
22	---	---	---	---	7.3	10	11	16	9.9	12	11	20
23	---	---	---	---	7.7	9.4	11	15	9.0	15	11	17
24	---	---	---	---	10	10	14	16	8.2	17	10	14
25	---	---	---	---	9.9	10	12	14	7.6	15	9.9	12
26	---	---	---	---	7.9	10	10	12	8.3	12	9.8	12
27	---	---	---	---	8.5	11	9.9	14	8.4	15	9.7	11
28	---	---	---	---	9.5	13	1.2	13	9.1	17	9.7	12
29	---	---	---	---	10	12	9.7	14	14	17	10	11
30	---	---	---	---	---	13	15	>14	15	17	9.7	12
31	---	---	---	---	---	14	---	12	---	17	12	---
TOTAL	---	---	---	---	---	352.2	361.4	345.00	419.5	400.9	397.6	436.86
MEAN	---	---	---	---	---	11.4	12.0	11.1	14.0	12.9	12.8	14.6
MAX	---	---	---	---	---	15	16	17	20	17	18	27
MIN	---	---	---	---	---	8.1	1.2	0.00	7.6	8.9	7.8	0.66
AC-FT	---	---	---	---	---	699	717	684	832	795	789	867

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2004 - 2004, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	11.4	12.0	11.1	14.0	12.9	12.8	14.6
MAX	---	---	---	---	---	11.4	12.0	11.1	14.0	12.9	12.8	14.6
(WY)	---	---	---	---	---	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)
MIN	---	---	---	---	---	11.4	12.0	11.1	14.0	12.9	12.8	14.6
(WY)	---	---	---	---	---	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)

> Actual value is known to be greater than the value shown

50011095 CANAL DE RIEGO DE MOCA BELOW HWY 112, MOCA, PR—Continued



50011130 CANAL MOCA (M216) ABV AGUADILLA PLANT, PR

LOCATION.--Lat 18°27'00", long 67°08'26", Hydrologic Unit 21010002, 0.25 mi (0.4 km) upstream from Aguadilla Filtration Plant intake, 0.80 mi (1.3 km) south from Cerro Vigí, 0.75 mi (1.2 km) from Aguadilla town church.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--February to September 2004.

GAGE.--Water-stage recorder. Altitude of gage is 456 ft (150 m), from topographic map.

REMARKS.--Records fair. Controlled by Lago Guajataca.

EXTREMES OBSERVED FOR CURRENT PERIOD.--Maximum discharge, 72 ft^3/s (2.039 m^3/s), March 8, gage-height 2.68 ft (0.812 m), minimum daily discharge 0.01 ft^3/s (0.00 m^3/s) May 6, 2004, but could have been lower on periods of no gage-height record.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

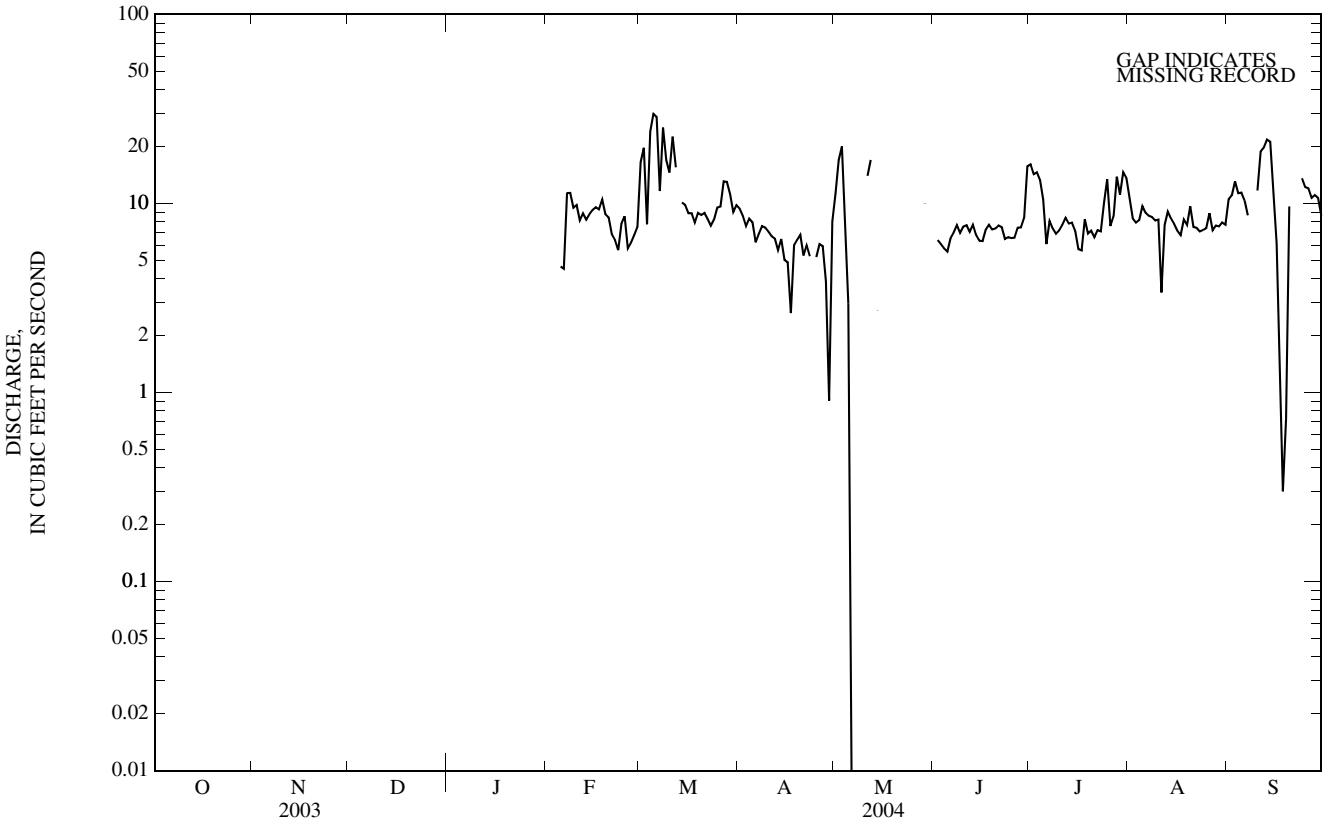
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	17	9.4	11	A	16	11	11
2	---	---	---	---	---	20	8.6	17	6.4	14	8.3	11
3	---	---	---	---	A	7.8	7.6	20	6.1	15	7.9	13
4	---	---	---	---	A	24	8.3	6.5	5.8	13	8.2	11
5	---	---	---	---	---	4.6	30	8.0	2.9	5.6	10	9.7	11
6	---	---	---	---	---	4.5	29	6.2	0.01	6.5	6.1	8.9	10
7	---	---	---	---	---	11	12	6.9	A	7.0	8.1	8.6	8.7
8	---	---	---	---	---	11	25	7.6	A	7.7	7.4	8.5	A
9	---	---	---	---	---	9.5	17	7.5	A	7.0	6.9	8.1	A
10	---	---	---	---	---	9.8	15	7.1	A	7.5	7.2	8.2	12
11	---	---	---	---	---	8.1	23	6.7	14	7.7	7.7	3.4	19
12	---	---	---	---	---	8.9	16	6.5	17	7.1	8.4	7.7	20
13	---	---	---	---	---	8.2	---	5.6	A	7.7	7.8	9.1	22
14	---	---	---	---	---	8.8	10	6.5	2.7	6.8	7.9	8.3	21
15	---	---	---	---	---	9.2	9.8	5.0	A	6.4	7.2	7.8	11
16	---	---	---	---	---	9.5	8.9	4.9	A	6.3	5.7	7.2	6.1
17	---	---	---	---	---	9.3	8.9	2.6	A	7.3	5.6	6.8	1.7
18	---	---	---	---	---	10	7.9	6.0	A	7.7	8.2	8.2	0.30
19	---	---	---	---	---	8.7	8.9	6.4	A	7.3	6.9	7.7	0.73
20	---	---	---	---	---	8.4	8.7	6.8	A	7.4	7.2	9.7	9.6
21	---	---	---	---	---	6.9	8.9	5.3	A	7.6	6.6	7.5	A
22	---	---	---	---	---	6.4	8.3	6.0	A	7.5	7.2	7.4	A
23	---	---	---	---	---	5.7	7.6	5.3	A	6.5	7.1	7.1	A
24	---	---	---	---	---	7.8	8.2	A	A	6.6	10	7.2	14
25	---	---	---	---	---	8.5	9.5	5.2	A	6.6	13	7.4	12
26	---	---	---	---	---	5.8	9.6	6.1	A	6.6	7.6	8.9	12
27	---	---	---	---	---	6.2	13	6.0	A	7.4	8.6	7.2	11
28	---	---	---	---	---	6.8	13	3.9	A	7.5	14	7.6	11
29	---	---	---	---	---	7.5	11	0.90	10	8.4	11	7.6	11
30	---	---	---	---	---	---	9.0	8.0	A	16	15	7.9	8.6
31	---	---	---	---	---	---	9.8	---	A	---	14	7.7	---
TOTAL	---	---	---	---	---	---	---	---	---	---	290.4	246.8	---
MEAN	---	---	---	---	---	---	---	---	---	---	9.37	7.96	---
MAX	---	---	---	---	---	---	---	---	---	---	16	11	---
MIN	---	---	---	---	---	---	---	---	---	---	5.6	3.4	---
AC-FT	---	---	---	---	---	---	---	---	---	---	576	490	---

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2004 - 2004, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	---	---	---	---	9.37	7.96	---
MAX	---	---	---	---	---	---	---	---	---	9.37	7.96	---
(WY)	---	---	---	---	---	---	---	---	---	(2004)	(2004)	---
MIN	---	---	---	---	---	---	---	---	---	9.37	7.96	---
(WY)	---	---	---	---	---	---	---	---	---	(2004)	(2004)	---

A No gage-height record

50011130 CANAL MOCA (M216) ABV AGUADILLA PLANT, PR—Continued



50011400 RIO GUAJATACA ABOVE MOUTH NEAR QUEBRADILLAS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°28'31", long 66°57'46", Hydrologic Unit 21010002, on left bank at ford 1.7 mi (2.7 km) upstream from bridge on Highway 2, 1.6 mi (2.6 km) west of Quebradillas Plaza, 2.1 mi (3.4 km) upstream from the Atlantic Ocean, and 6.6 mi (10.6 km) downstream from Lago Guajataca.

DRAINAGE AREA.--Indeterminate.

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
09...	1540	28	5.0	7.6	7.5	426	24.4	200	71.2	5.28	1.39	.3	11.1
FEB													
25...	0800	--	3.7	4.7	7.5	544	23.9	270	92.4	9.29	.91	.4	14.9
JUN													
14...	1445	7.5	3.3	6.5	7.4	600	25.4	--	--	--	--	--	--
AUG													
09...	1215	6.5	5.0	5.1	7.5	608	25.2	260	87.1	10.7	1.32	.7	25.0

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
09...	184	19.4	<.2	6.6	6.6	--	232	--	10	<.20	.01	--	1.40
FEB													
25...	234	25.7	<.2	6.7	4.9	<.1	295	--	<10	<.20	.02	3.09	3.10
JUN													
14...	220	--	--	--	--	--	--	--	<10	<.20	.02	--	2.80
AUG													
09...	224	47.1	<.2	6.8	8.4	--	333	5.85	<10	--	.02	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)
DEC													
09...	<.01	.02	<10	E170	E9,000	--	--	--	--	--	--	--	--
FEB													
25...	.01	<.02	<10	100	E9,600	<2	9.0	24	<.2	1.2	M	<.01	20
JUN													
14...	<.01	<.02	<10	E160	3,900	--	--	--	--	--	--	--	--
AUG													
09...	--	<.01	<10	E140	2,500	<2	9.6	33	<.2	1.3	<4	<.01	70

50011400 RIO GUAJATACA ABOVE MOUTH NEAR QUEBRADILLAS, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC 09...	--	--	--	--	--	--	--	--
FEB 25...	<1.0	9.5	<.02	<3	<.3	<4	<.10	<16
JUN 14...	--	--	--	--	--	--	--	--
AUG 09...	<1.0	15.4	<.02	<3	<.3	<4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

THIS PAGE IS INTENTIONALLY BLANK

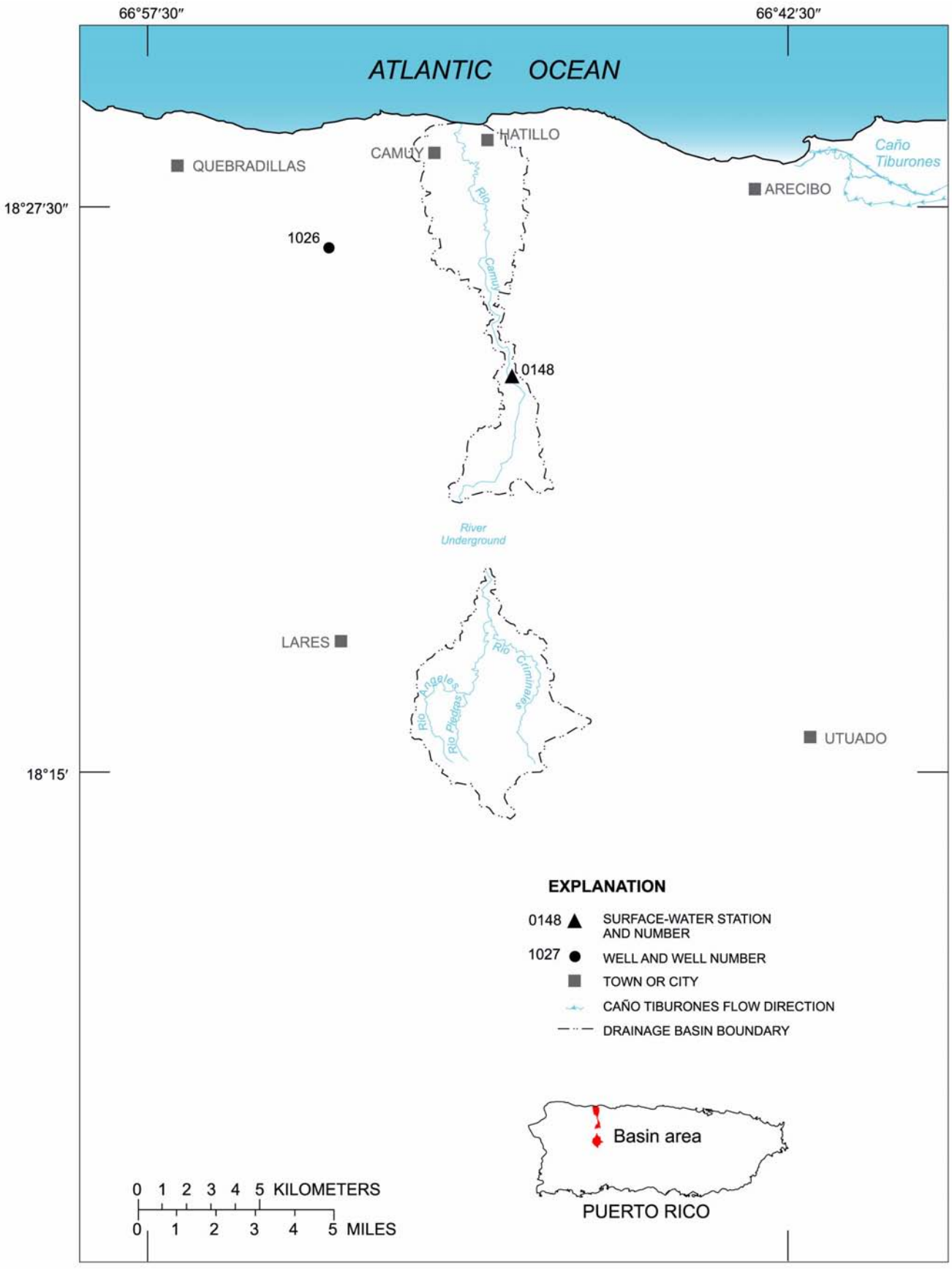


Figure 11. Río Camuy basin.

50014800 RIO CAMUY NEAR BAYANEY, PR

LOCATION.--Lat 18°23'48", long 66°49'04", Hydrologic Unit 21010002, on left bank at Highway 488, 1.4 mi (2.2 km) southeast of school at Santiago, 0.9 mi (1.4 km) northwest from Escuela Manuel A. Rivera at Bayaney and 9.1 mi (14.6 km) upstream from mouth.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--May 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 341 ft (104 m), from topographic map.

REMARKS.--Records good. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

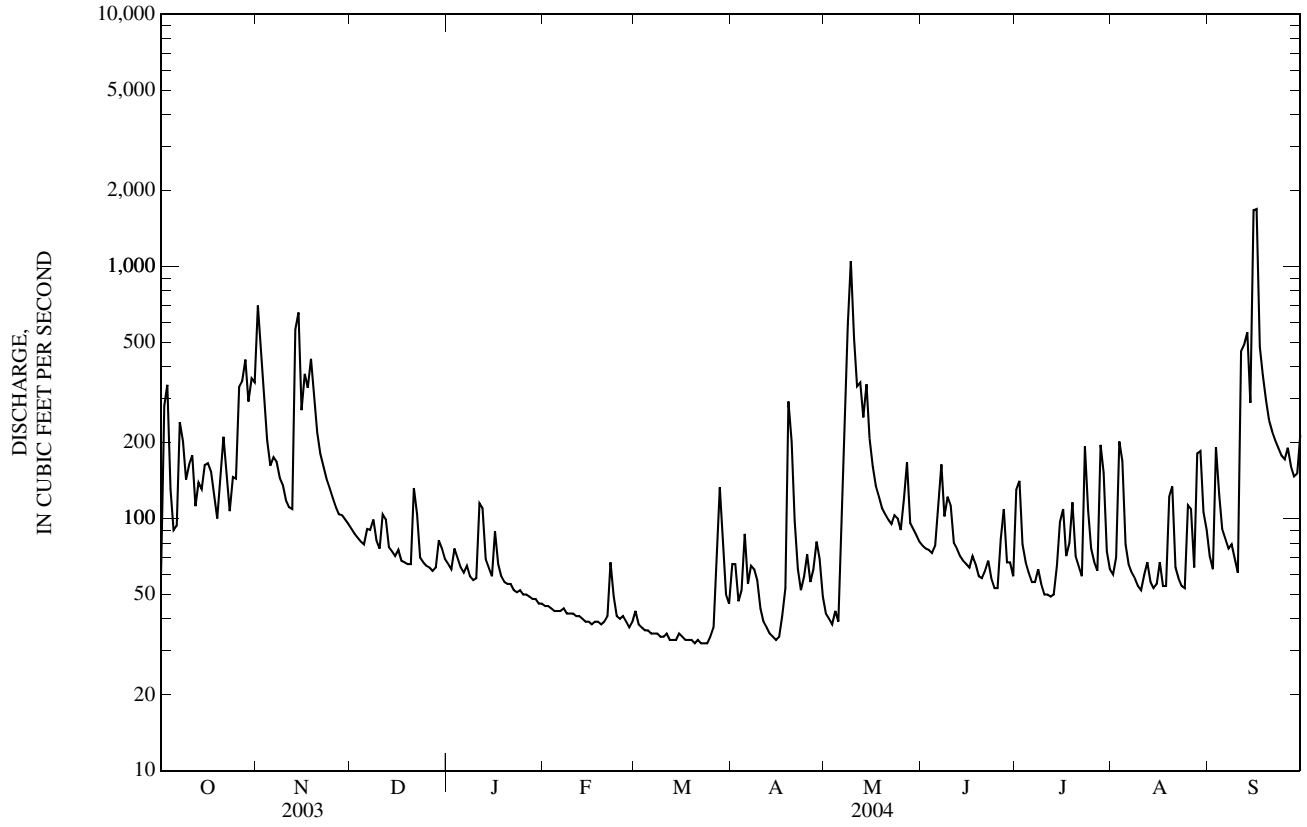
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	700	91	66	45	43	66	42	78	130	60	71
2	280	464	87	63	45	38	66	40	76	141	70	63
3	339	301	84	76	44	37	47	38	75	79	202	192
4	131	204	81	70	43	36	52	43	73	67	169	125
5	90	162	79	64	43	36	87	39	78	61	79	91
6	94	175	91	61	43	35	55	85	110	56	66	83
7	241	168	90	65	44	35	65	202	164	56	61	76
8	202	145	99	59	42	35	63	586	102	63	58	79
9	143	136	82	57	42	34	57	1,050	122	55	54	69
10	164	118	76	58	42	34	44	520	113	50	52	61
11	178	111	104	115	41	35	39	334	80	50	60	461
12	112	109	99	110	41	33	37	346	76	49	67	489
13	139	562	77	69	40	33	35	252	71	50	56	548
14	131	656	74	64	39	33	34	341	68	65	53	288
15	163	269	71	59	39	35	33	208	66	97	55	1,670
16	166	375	75	89	38	34	34	161	64	109	67	1,690
17	154	330	68	66	39	33	41	135	71	71	54	481
18	125	430	67	59	39	33	53	122	66	80	54	370
19	100	306	66	56	38	33	291	110	59	116	122	294
20	150	219	66	55	39	32	202	104	58	71	134	245
21	211	181	132	55	41	33	98	99	62	65	64	221
22	144	161	104	52	67	32	63	95	68	59	58	204
23	107	144	70	51	49	32	52	103	58	193	54	190
24	146	132	67	52	41	32	59	100	53	108	53	178
25	144	121	65	50	40	34	72	90	53	76	113	172
26	333	111	64	50	41	37	56	120	83	67	109	191
27	351	104	62	49	39	70	63	167	109	62	64	161
28	427	103	64	48	37	133	81	96	67	196	181	147
29	291	99	82	48	39	78	69	91	67	152	185	151
30	360	95	76	46	---	50	49	86	59	74	106	215
31	347	---	69	46	---	46	---	81	---	63	90	---
TOTAL	6,024	7,191	2,482	1,928	1,220	1,274	2,063	5,886	2,349	2,631	2,670	9,276
MEAN	194	240	80.1	62.2	42.1	41.1	68.8	190	78.3	84.9	86.1	309
MAX	427	700	132	115	67	133	291	1,050	164	196	202	1,690
MIN	61	95	62	46	37	32	33	38	53	49	52	61

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2004, BY WATER YEAR (WY)

MEAN	196	143	76.3	58.6	49.4	46.7	93.4	166	111	73.2	95.1	189
MAX	427	310	179	163	96.4	93.7	289	624	322	109	187	726
(WY)	(1986)	(2002)	(2000)	(1997)	(1996)	(1999)	(2002)	(1986)	(1999)	(1989)	(1998)	(1998)
MIN	81.6	53.4	30.2	33.1	29.1	23.7	28.0	43.2	42.7	37.2	47.9	61.8
(WY)	(1988)	(1998)	(2001)	(1991)	(1998)	(1994)	(1994)	(1989)	(1997)	(2003)	(1993)	(1997)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1984 - 2004	
ANNUAL TOTAL	34,725		44,994			
ANNUAL MEAN	95.1		123		108	
HIGHEST ANNUAL MEAN					179	1986
LOWEST ANNUAL MEAN					61.5	1994
HIGHEST DAILY MEAN	700	Nov 1	1,690	Sep 16	9,010	Sep 22, 1998
LOWEST DAILY MEAN	28	Mar 17	32	Mar 20	16	Mar 18, 1994
ANNUAL SEVEN-DAY MINIMUM	29	Mar 12	32	Mar 18	17	Mar 16, 1994
MAXIMUM PEAK FLOW			5,130	Sep 15	11,600	Sep 22, 1998
MAXIMUM PEAK STAGE			16.46	Sep 15	21.69	Sep 22, 1998
INSTANTANEOUS LOW FLOW			31	Mar 20	15	Mar 22, 1994
10 PERCENT EXCEEDS	184		242		210	
50 PERCENT EXCEEDS	63		71		68	
90 PERCENT EXCEEDS	33		39		33	

50014800 RIO CAMUY NEAR BAYANEY, PR—Continued



THIS PAGE IS INTENTIONALLY BLANK

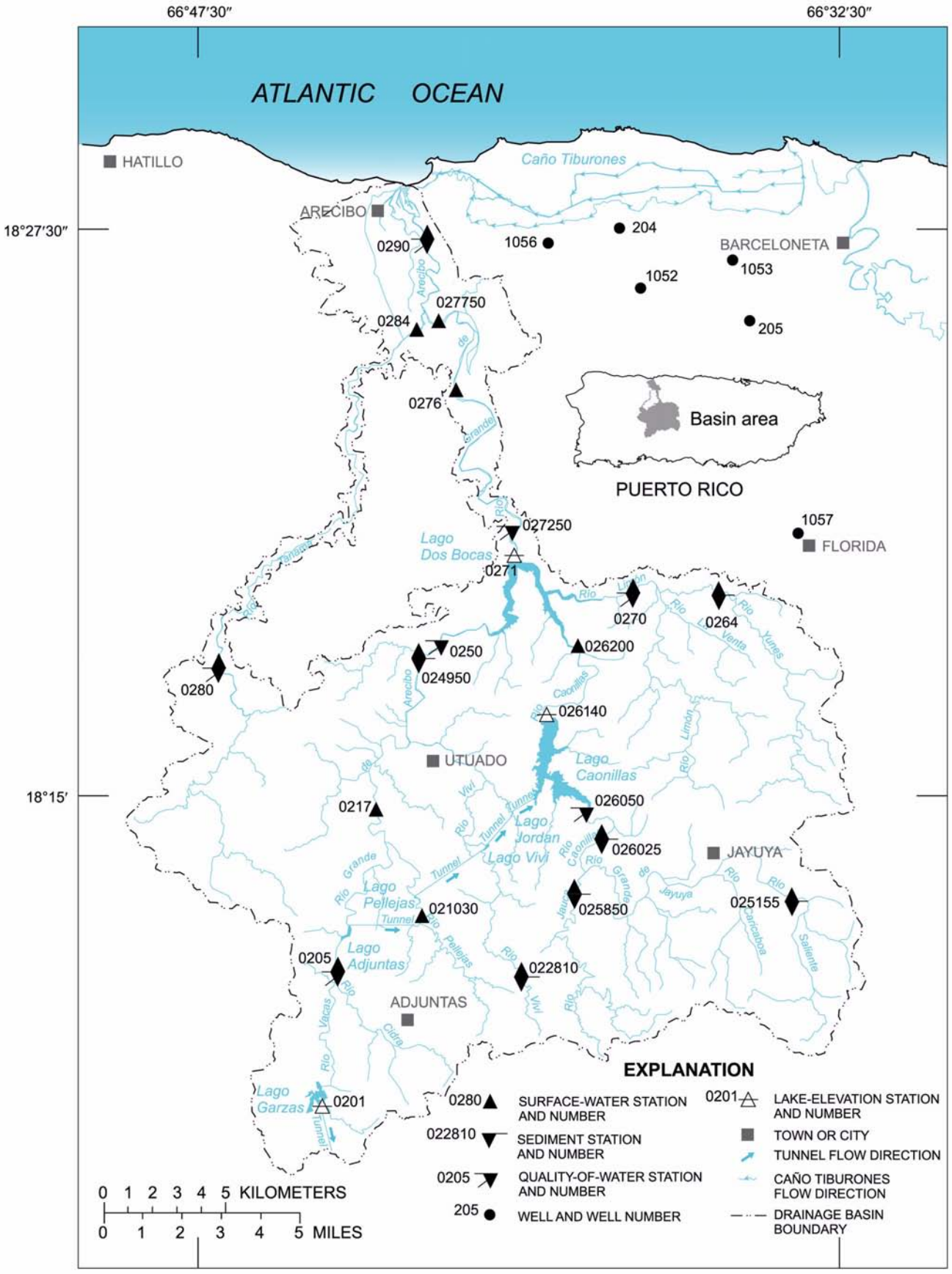


Figure 12. Río Grande de Arecibo basin.

50020100 LAGO GARZAS NEAR ADJUNTAS, PR

LOCATION.--Lat 18°08'20", long 66°44'29", Hydrologic Unit 21010002, in power gate tower of Garzas Dam on Río Vacas, 1.7 mi (2.7 km) upstream from Río Garzas, and 2.2 mi (3.5 km) southwest of Adjuntas.

DRAINAGE AREA.--6.14 mi^2 (15.9 km^2).

PERIOD OF RECORD.--January 1988 to May 1989, March 1993 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,400.00 ft (731.52 m) above mean sea level. Prior to May 25, 1988, at datum 2,376.80 ft (724.45 m), May 25 to July 13, 1988, at datum 2,338.08 ft (712.65 m), July 14, 1988 to May 25, 1989, at datum 2,337.82 ft (712.56 m), above mean sea level.

REMARKS.--Lake is formed by earthfill dam completed in 1943. Outflow from lake controlled by vertical-lift sluice gate and fixed-crest concrete spillway. Spillway elevation, 2,415.00 ft (736.09 m). Lake is used for irrigation and power production. Operated by Puerto Rico Electric Power Authorithy. Gage-height and precipitation satellite telemetry at station. New capacity table based on U.S. Geological Survey Water-Resources Investigations Report 99-4143, September 1996.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation 2,418.28 ft (737.09 m), September 22, 1998; minimum elevation, 2,364.79 ft (720.79 m), August 23, 1988.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 2,416.56 ft (736.57 m), November 13; minimum elevation, 2,401.97 ft (732.12 m), September 5.

Capacity Table
(based on data from U.S. Geological Survey Water-Resources Investigations Report 99-4143, 1996)
(Elevation in ft, capacity in acre-ft)

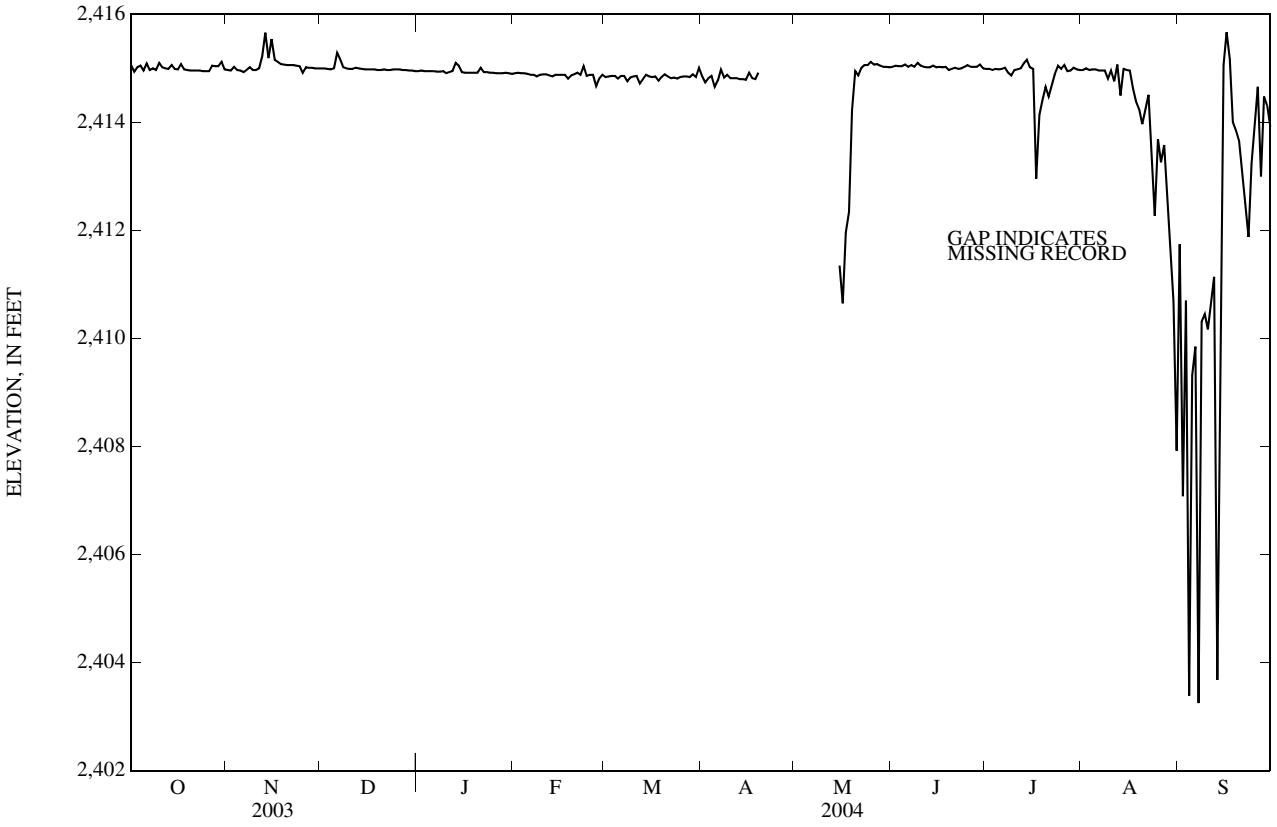
Elevation	Contents	Elevation	Contents
2,317	0	2,376	1,419
2,336	243	2,399	2,700
2,359	794	2,415	4,143

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,415.06	2,414.97	2,415.00	2,414.95	2,414.91	2,414.84	2,414.85	A	2,415.03	2,414.99	2,414.97	2,411.74
2	2,414.94	2,414.96	2,415.00	2,414.96	2,414.92	2,414.85	2,414.74	A	2,415.05	2,414.99	2,415.00	2,407.08
3	2,415.02	2,415.03	2,414.99	2,414.95	2,414.91	2,414.86	2,414.82	A	2,415.04	2,414.97	2,414.97	2,410.70
4	2,415.05	2,414.97	2,414.98	2,414.95	2,414.91	2,414.86	2,414.86	A	2,415.04	2,414.99	2,414.98	2,403.39
5	2,414.96	2,414.96	2,415.00	2,414.95	2,414.90	2,414.81	2,414.66	A	2,415.07	2,414.98	2,414.98	2,409.32
6	2,415.09	2,414.93	2,415.29	2,414.95	2,414.88	2,414.86	2,414.78	A	2,415.03	2,414.99	2,414.96	2,409.85
7	2,414.97	2,414.97	2,415.17	2,414.94	2,414.88	2,414.86	2,414.98	A	2,415.06	2,415.01	2,414.96	2,403.25
8	2,415.00	2,415.02	2,415.02	2,414.94	2,414.85	2,414.76	2,414.83	A	2,415.03	2,414.92	2,414.96	2,410.31
9	2,414.97	2,414.97	2,415.00	2,414.95	2,414.88	2,414.83	2,414.88	A	2,415.10	2,414.87	2,414.81	2,410.45
10	2,415.10	2,414.97	2,414.99	2,414.91	2,414.89	2,414.85	2,414.82	A	2,415.05	2,414.97	2,414.96	2,410.17
11	2,415.02	2,415.00	2,414.99	2,414.93	2,414.89	2,414.86	2,414.82	A	2,415.03	2,414.98	2,414.76	2,410.67
12	2,415.00	2,415.23	2,415.01	2,414.95	2,414.87	2,414.72	2,414.82	A	2,415.02	2,415.00	2,415.07	2,411.14
13	2,414.99	2,415.66	2,415.00	2,415.10	2,414.85	2,414.80	2,414.80	A	2,415.02	2,415.09	2,414.50	2,403.68
14	2,415.06	2,415.19	2,414.99	2,415.05	2,414.88	2,414.88	2,414.80	A	2,415.05	2,415.16	2,414.99	2,407.55
15	2,414.99	2,415.54	2,414.98	2,414.93	2,414.88	2,414.85	2,414.79	2,411.35	2,415.02	2,415.02	2,414.97	2,415.06
16	2,414.98	2,415.16	2,414.98	2,414.92	2,414.88	2,414.84	2,414.92	2,410.65	2,415.03	2,414.99	2,414.96	2,415.67
17	2,415.08	2,415.12	2,414.98	2,414.92	2,414.88	2,414.85	2,414.82	2,411.96	2,415.02	2,412.96	2,414.63	2,415.17
18	2,414.98	2,415.08	2,414.98	2,414.92	2,414.81	2,414.77	2,414.80	2,412.34	2,415.03	2,414.14	2,414.39	2,414.01
19	2,414.97	2,415.07	2,414.97	2,414.92	2,414.87	2,414.84	2,414.92	2,414.23	2,414.97	2,414.41	2,414.24	2,413.85
20	2,414.96	2,415.06	2,414.97	2,414.92	2,414.89	2,414.89	A	2,414.95	2,414.99	2,414.66	2,413.97	2,413.66
21	2,414.96	2,415.06	2,414.98	2,415.01	2,414.92	2,414.85	A	2,414.87	2,415.01	2,414.48	2,414.25	2,413.11
22	2,414.96	2,415.06	2,414.97	2,414.93	2,414.88	2,414.82	A	2,415.01	2,414.99	2,414.70	2,414.51	2,412.51
23	2,414.96	2,415.05	2,414.97	2,414.93	2,415.04	2,414.83	A	2,415.06	2,415.00	2,414.90	2,413.40	2,411.88
24	2,414.95	2,415.04	2,414.98	2,414.92	2,414.86	2,414.81	A	2,415.06	2,415.03	2,415.05	2,412.27	2,413.24
25	2,414.95	2,414.92	2,414.98	2,414.92	2,414.88	2,414.84	A	2,415.12	2,415.06	2,414.99	2,413.69	2,413.98
26	2,414.95	2,415.02	2,414.98	2,414.91	2,414.88	2,414.85	A	2,415.07	2,415.03	2,415.06	2,413.26	2,414.66
27	2,415.05	2,415.01	2,414.97	2,414.91	2,414.67	2,414.85	A	2,415.08	2,415.03	2,414.95	2,413.58	2,413.00
28	2,415.04	2,415.01	2,414.97	2,414.91	2,414.81	2,414.84	A	2,415.05	2,415.03	2,414.96	2,412.76	2,414.48
29	2,415.04	2,415.00	2,414.96	2,414.92	2,414.88	2,414.89	A	2,415.03	2,415.07	2,415.01	2,411.84	2,414.31
30	2,415.12	2,415.00	2,414.96	2,414.91	---	2,414.84	A	2,415.03	2,415.00	2,414.98	2,410.69	2,413.92
31	2,414.98	---	2,414.95	2,414.90	---	2,415.01	---	2,415.02	---	2,414.97	2,407.92	---
MAX	2,415.12	2,415.66	2,415.29	2,415.10	2,415.04	2,415.01	---	---	2,415.10	2,415.16	2,415.07	2,415.67
MIN	2,414.94	2,414.92	2,414.95	2,414.90	2,414.67	2,414.72	---	---	2,414.97	2,412.96	2,407.92	2,403.25

A No gage-height record

50020100 LAGO GARZAS NEAR ADJUNTAS, PR—Continued



50020500 RIO GRANDE DE ARECIBO NEAR ADJUNTAS, PR

LOCATION.--Lat 18°10'54", long 66°44'12", Hydrologic Unit 21010002, at Highway 135 bridge junction with Highway 10, 1.4 mi (2.2 km) south from Lago Adjuntas and 1.5 mi (2.4 km) northwest of Adjuntas Plaza.

DRAINAGE AREA.--12.7 mi^2 (32.9 km^2), this does not include 6.0 mi^2 (15.6 km^2) above Lago Garzas.

Water-Discharge Records

PERIOD OF RECORD.--November 1946 to April 1950 (operated by the Puerto Rico Water Resources Authority), March 2000 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,443 ft (440 m), from topographic map.

REMARKS.--Records poor. Flow affected by Lago Garzas, 2.63 mi (4.23 km) and sewage treatment plant 1.1 mi (1.77 km) upstream from gage. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	395	124	80	52	35	36	59	20	70	52	34	82
2	111	103	76	56	37	30	27	23	66	40	68	44
3	229	230	73	53	37	29	21	21	61	36	41	36
4	375	128	70	50	35	29	31	25	58	34	37	36
5	165	91	66	49	34	25	27	22	57	34	39	32
6	464	132	263	49	33	24	20	20	57	33	35	30
7	218	93	600	47	31	27	168	41	57	36	32	426
8	147	257	275	46	31	24	75	117	53	35	30	e98
9	117	127	167	47	30	19	69	42	65	26	27	e62
10	619	104	134	45	32	24	43	30	63	26	21	e49
11	e439	105	103	51	33	25	33	35	49	31	28	e43
12	e180	962	112	64	32	24	30	42	45	36	133	e136
13	133	2,340	91	148	24	17	29	42	43	381	48	e79
14	343	647	104	208	29	33	27	165	45	284	82	e53
15	239	608	80	100	32	29	25	117	42	108	45	663
16	151	537	77	56	31	25	51	56	37	55	36	530
17	246	337	76	49	31	25	63	38	37	42	28	356
18	180	273	74	46	28	29	34	32	34	28	19	468
19	114	224	70	44	24	23	95	78	32	27	18	163
20	99	194	68	42	29	58	56	316	29	26	18	93
21	92	171	101	61	50	35	27	153	29	25	17	70
22	84	188	68	57	38	26	51	92	29	25	19	60
23	81	158	64	46	98	28	124	232	28	27	178	53
24	75	184	65	42	78	29	91	272	29	69	36	44
25	77	133	68	39	40	26	39	687	47	58	383	41
26	68	107	63	39	36	33	27	198	41	72	238	38
27	96	106	61	38	31	32	24	166	38	55	176	35
28	361	99	66	38	21	43	22	121	33	36	84	34
29	140	92	69	39	41	91	21	96	180	40	54	32
30	368	86	60	39	---	45	20	85	69	41	44	32
31	277	---	54	36	---	75	---	76	---	36	40	---
TOTAL	6,683	8,940	3,398	1,776	1,061	1,018	1,429	3,460	1,523	1,854	2,088	3,918
MEAN	216	298	110	57.3	36.6	32.8	47.6	112	50.8	59.8	67.4	131
MAX	619	2,340	600	208	98	91	168	687	180	381	383	663
MIN	68	86	54	36	21	17	20	20	28	25	17	30
AC-FT	13,260	17,730	6,740	3,520	2,100	2,020	2,830	6,860	3,020	3,680	4,140	7,770
CFSM	17.0	23.5	8.63	4.51	2.88	2.59	3.75	8.79	4.00	4.71	5.30	10.3
IN.	19.58	26.19	9.95	5.20	3.11	2.98	4.19	10.13	4.46	5.43	6.12	11.48

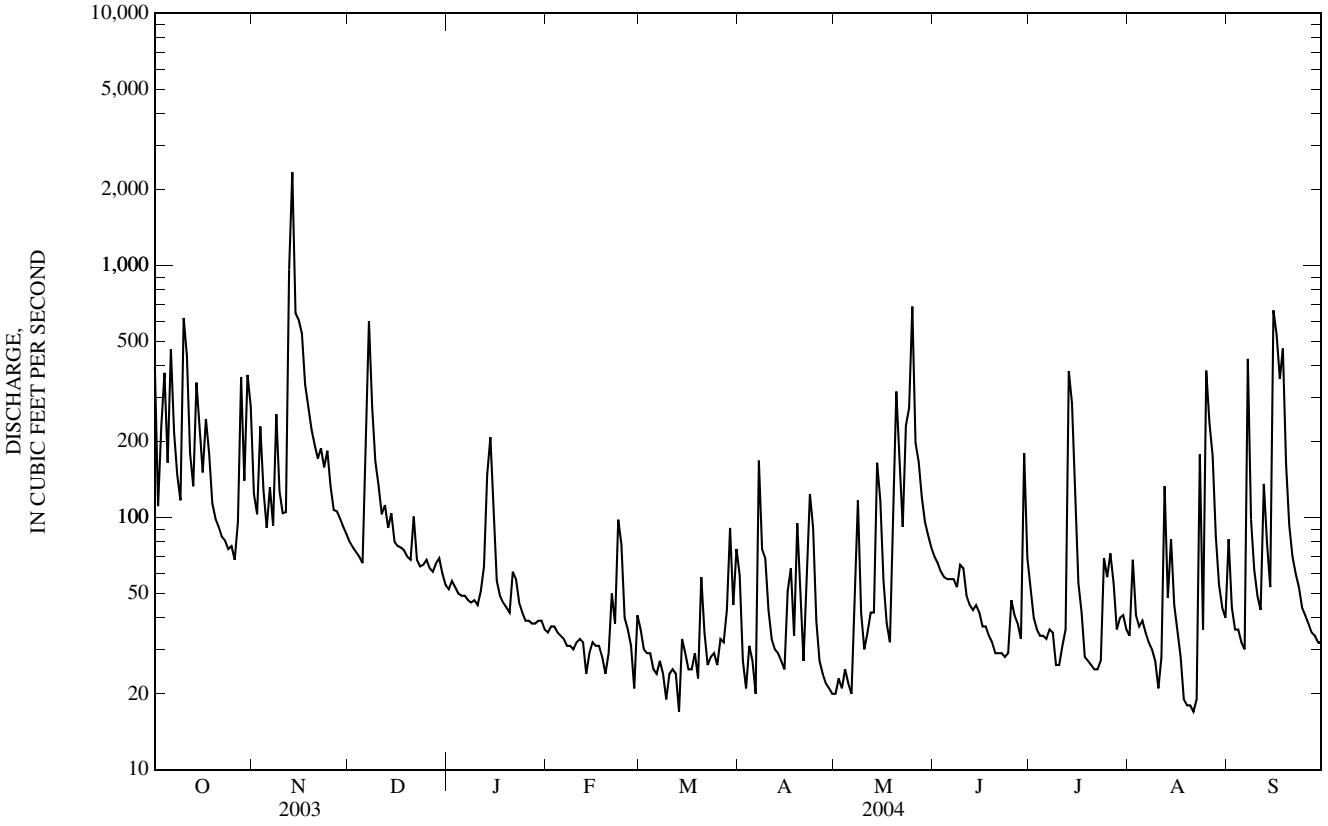
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2004, BY WATER YEAR (WY)

MEAN	97.1	85.3	50.3	27.9	28.8	17.3	35.8	48.0	30.0	29.9	47.7	96.5
MAX	216	298	110	57.3	56.9	32.8	95.1	112	50.8	59.8	94.5	132
(WY)	(2004)	(2004)	(2004)	(2004)	(1950)	(2004)	(2002)	(2004)	(2004)	(2004)	(2000)	(2003)
MIN	48.6	27.3	30.8	19.7	14.8	10.2	10.4	12.2	14.7	14.7	22.5	55.8
(WY)	(2002)	(1950)	(1947)	(1948)	(2002)	(2001)	(1948)	(1948)	(2001)	(2003)	(2003)	(1947)

50020500 RIO GRANDE DE ARECIBO NEAR ADJUNTAS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1947 - 2004	
ANNUAL TOTAL	31,692.0		37,148			
ANNUAL MEAN	86.8		101		53.0	
HIGHEST ANNUAL MEAN					101	2004
LOWEST ANNUAL MEAN					39.5	2002
HIGHEST DAILY MEAN	2,340	Nov 13	2,340	Nov 13	2,340	Nov 13, 2003
LOWEST DAILY MEAN	6.8	Aug 5	17	Mar 13	6.8	Mar 31, 2001
ANNUAL SEVEN-DAY MINIMUM	8.0	Jun 28	22	Apr 27	7.1	Mar 27, 2001
MAXIMUM PEAK FLOW			10,400	Sep 7	12,000	May 6, 2001
MAXIMUM PEAK STAGE			14.40	Sep 7	15.49	May 6, 2001
ANNUAL RUNOFF (AC-FT)	62,860		73,680		38,380	
ANNUAL RUNOFF (CFSM)	6.84		7.99		4.17	
ANNUAL RUNOFF (INCHES)	92.83		108.81		56.67	
10 PERCENT EXCEEDS	222		229		109	
50 PERCENT EXCEEDS	30		50		28	
90 PERCENT EXCEEDS	10		26		11	

e Estimated



50020500 RIO GRANDE DE ARECIBO NEAR ADJUNTAS, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--12.7 mi^2 (32.9 km^2), this does not include 6.0 mi^2 (15.5 km^2) above Lago Garzas.

PERIOD OF RECORD.--Water years 1969-74, 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
10...	1415	117	2.5	8.2	7.5	185	22.1	77	20.1	6.53	1.56	.5	9.22
FEB													
27...	0815	34	5.6	8.3	7.7	237	20.2	98	26.3	7.82	1.68	.5	12.0
JUN													
23...	1225	28	<2.0	7.9	8.3	248	26.3	--	--	--	--	--	--
AUG													
11...	1329	31	3.9	8.8	8.4	231	27.8	66	18.3	4.92	1.05	.4	8.31

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
10...	72	8.97	<.2	24.9	7.0	--	122	38.3	<10	<.20	.03	--	1.00
FEB													
27...	93	11.8	<.2	26.1	6.5	<.1	148	13.8	<10	<.20	.06	.91	.940
JUN													
23...	97	--	--	--	--	--	--	--	<10	<.20	.05	.70	.740
AUG													
11...	93	11.2	<.2	25.1	6.6	--	134	11.0	<10	--	.02	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)
DEC													
10...	<.01	.06	<10	450	--	--	--	--	--	--	--	--	--
FEB													
27...	.03	.06	<10	E670	E12,000	<2	16.5	10	<.2	<.8	M	<.01	50
JUN													
23...	.04	.08	<10	E91	7,100	--	--	--	--	--	--	--	--
AUG													
11...	--	.06	<10	E100	980	<2	13.4	15	<.2	<.8	<4	<.01	110

50020500 RIO GRANDE DE ARECIBO NEAR ADJUNTAS, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC								
10...	--	--	--	--	--	--	--	--
FEB								
27...	<1.0	15.3	<.02	<3	<.3	<4	<.10	<16
JUN								
23...	--	--	--	--	--	--	--	--
AUG								
11...	<1.0	15.1	<.02	<3	<.3	E3	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50021030 RIO PELLEJAS ABOVE CENTRAL PELLEJAS, PR

LOCATION.--Lat 18°12'17", long 66°42'13", Hydrologic Unit 21010002, 0.2 mi (0.3 km) southeast from Escuela Lucas Valdivieso, 3.0 mi (4.8 km) north from Adjuntas Hospital and 2.0 mi (3.2 km) west from Lago Adjuntas.

DRAINAGE AREA.--2.99 mi^2 (7.74 km^2).

PERIOD OF RECORD.--May 2000 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,148 ft (350 m), from topographic map.

REMARKS.--Records poor. Flow regulated by Lago Adjuntas with tunnel system outflow about 0.4 mi (0.6 km) upstream gage. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	68	38	25	17	14	17	11	21	29	11	21
2	54	65	37	26	19	13	13	11	20	19	17	13
3	87	70	37	25	18	12	13	12	20	15	13	12
4	69	63	36	24	16	12	13	13	19	14	15	12
5	60	62	36	24	16	12	13	13	19	14	13	11
6	70	64	56	24	16	12	13	11	19	14	12	11
7	61	62	102	23	16	13	36	23	19	15	11	70
8	58	76	49	22	15	13	17	98	18	14	11	20
9	58	62	39	22	15	13	20	33	21	13	11	13
10	88	61	36	22	15	12	13	25	19	13	11	12
11	87	61	35	25	14	12	11	27	17	14	11	12
12	61	105	35	29	14	12	11	33	16	14	22	27
13	58	287	34	52	14	12	11	26	16	36	12	14
14	163	e119	36	40	14	13	10	89	17	38	15	13
15	77	e94	33	26	14	13	10	41	16	24	11	155
16	66	e81	33	21	13	12	11	31	15	15	11	126
17	66	e69	32	20	14	13	14	26	15	13	10	52
18	63	e60	31	19	13	14	12	25	15	18	10	55
19	60	e55	31	19	13	13	37	27	14	13	10	41
20	60	e51	30	21	13	19	16	59	14	12	9.9	29
21	63	49	32	25	15	13	14	26	14	12	9.8	25
22	59	60	e29	19	14	11	41	23	14	12	16	23
23	59	50	e32	23	15	12	21	39	14	14	33	22
24	59	58	29	20	18	15	18	53	14	15	13	21
25	65	46	28	18	14	13	14	77	16	13	18	20
26	62	43	27	18	14	14	12	32	15	28	22	20
27	70	42	26	18	13	16	12	40	14	16	21	19
28	78	40	28	18	13	21	12	28	13	13	16	19
29	65	39	28	19	18	20	11	24	25	12	15	20
30	89	39	28	18	---	15	11	23	19	12	12	20
31	72	---	26	17	---	18	---	22	---	11	12	---
TOTAL	2,177	2,101	1,109	722	433	427	477	1,021	508	515	434.7	928
MEAN	70.2	70.0	35.8	23.3	14.9	13.8	15.9	32.9	16.9	16.6	14.0	30.9
MAX	163	287	102	52	19	21	41	98	25	38	33	155
MIN	54	39	26	17	13	11	10	11	13	11	9.8	11
AC-FT	4,320	4,170	2,200	1,430	859	847	946	2,030	1,010	1,020	862	1,840
CFSM	10.3	10.3	5.24	3.41	2.19	2.02	2.33	4.82	2.48	2.43	2.05	4.53
IN.	11.86	11.44	6.04	3.93	2.36	2.33	2.60	5.56	2.77	2.80	2.37	5.05

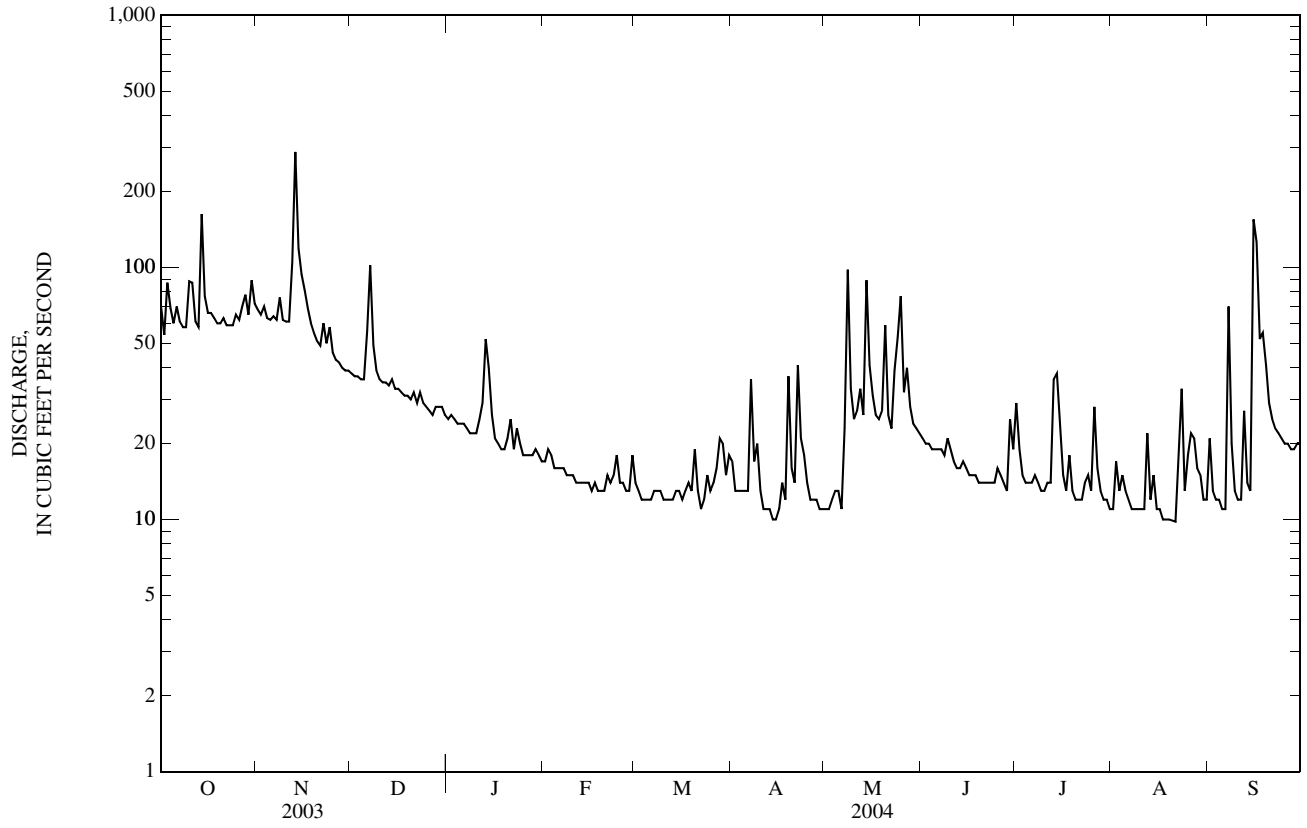
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2004, BY WATER YEAR (WY)

MEAN	41.8	38.1	31.7	24.4	21.9	18.8	22.8	27.1	27.2	24.5	22.5	35.4
MAX	70.2	70.0	41.1	32.0	31.9	23.2	37.1	34.6	57.2	36.7	33.7	49.0
(WY)	(2004)	(2004)	(2003)	(2003)	(2003)	(2002)	(2002)	(2001)	(2000)	(2000)	(2000)	(2000)
MIN	15.2	21.2	19.5	12.0	14.9	13.8	15.9	17.4	12.0	16.6	14.0	24.9
(WY)	(2002)	(2003)	(2002)	(2002)	(2004)	(2004)	(2004)	(2003)	(2003)	(2004)	(2004)	(2001)

50021030 RIO PELLEJAS ABOVE CENTRAL PELLEJAS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2000 - 2004	
ANNUAL TOTAL	11,920.5		10,852.7			
ANNUAL MEAN	32.7		29.7		26.6	
HIGHEST ANNUAL MEAN					30.3	2001
LOWEST ANNUAL MEAN					21.8	2002
HIGHEST DAILY MEAN	287	Nov 13	287	Nov 13	287	Nov 13, 2003
LOWEST DAILY MEAN	8.6	Jun 16	9.8	Aug 21	8.6	Jun 16, 2003
ANNUAL SEVEN-DAY MINIMUM	9.0	Jun 11	10	Aug 15	9.0	Jun 11, 2003
MAXIMUM PEAK FLOW			2,990	Nov 13	2,990	Nov 13, 2003
MAXIMUM PEAK STAGE			10.20	Nov 13	10.20	Nov 13, 2003
ANNUAL RUNOFF (AC-FT)	23,640		21,530		19,290	
ANNUAL RUNOFF (CFSM)	4.78		4.34		3.90	
ANNUAL RUNOFF (INCHES)	64.93		59.11		52.98	
10 PERCENT EXCEEDS	64		63		46	
50 PERCENT EXCEEDS	23		19		22	
90 PERCENT EXCEEDS	13		12		13	

e Estimated



50021700 RIO GRANDE DE ARECIBO ABOVE UTUADO, PR

LOCATION.--Lat 18°14'39", long 66°43'20", Hydrologic Unit 21010001, 0.4 mi (0.6 km) southwest from Escuela Segunda Unidad Salto Arriba, 2.2 mi (3.5 km) southwest from Utuado Plaza, 1.1 mi (1.8 km) west from Escuela Arenas Abajo and 1.0 mi (1.7 km) northwest from Escuela Puente Blanco.

DRAINAGE AREA.--36.0 mi^2 (93.2 km^2).

PERIOD OF RECORD.--August 1989 to May 1999, monthly measurements and peak flow above 5,000 ft^3/s (142 m^3/s), June 1999 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 508 ft (155 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Flow regulated by Lago Adjuntas 2.55 mi (4.10 km). Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	392	106	104	70	42	42	89	46	152	e115	104	190
2	231	85	99	72	42	35	43	45	145	100	135	98
3	295	107	95	70	43	33	37	50	137	81	118	54
4	227	95	89	66	41	33	40	46	130	72	97	49
5	134	70	85	66	41	32	44	49	120	73	106	45
6	285	75	256	65	40	29	37	45	126	68	91	39
7	139	74	802	63	38	29	171	77	e128	72	78	819
8	88	129	316	60	38	31	111	532	e123	74	73	286
9	88	95	188	60	38	27	84	164	131	60	72	169
10	275	85	152	60	39	29	59	115	147	52	52	114
11	244	73	135	65	38	30	42	95	113	61	70	94
12	116	801	142	83	38	34	39	135	102	52	185	302
13	93	3,720	132	164	34	28	39	103	e108	354	127	182
14	285	1,150	139	195	33	35	37	373	96	300	191	125
15	156	832	116	119	37	43	35	184	99	172	115	1,830
16	101	1,000	107	67	36	34	39	118	89	109	77	1,910
17	102	512	102	56	35	32	72	87	88	104	61	981
18	110	377	99	54	34	35	55	75	84	131	39	1,110
19	74	298	95	52	29	32	186	96	80	111	37	481
20	67	254	91	52	33	49	110	310	71	73	35	299
21	76	227	159	62	48	48	65	151	72	62	34	251
22	63	328	99	62	46	33	163	98	73	54	65	199
23	59	259	87	57	54	34	161	191	e91	56	206	169
24	56	294	84	52	80	37	117	287	e91	101	75	139
25	124	221	85	47	44	32	82	830	e110	128	283	119
26	75	158	82	46	37	36	66	268	e105	153	282	110
27	75	133	78	45	37	42	56	252	e100	139	318	99
28	223	126	83	45	29	65	53	210	e95	92	174	90
29	116	116	90	44	40	83	50	175	e230	86	133	80
30	228	110	79	46	---	63	47	162	e130	92	84	77
31	187	---	72	42	---	60	---	154	---	85	72	---
TOTAL	4,784	11,910	4,342	2,107	1,164	1,205	2,229	5,523	3,366	3,282	3,589	10,510
MEAN	154	397	140	68.0	40.1	38.9	74.3	178	112	106	116	350
MAX	392	3,720	802	195	80	83	186	830	230	354	318	1,910
MIN	56	70	72	42	29	27	35	45	71	52	34	39
AC-FT	9,490	23,620	8,610	4,180	2,310	2,390	4,420	10,950	6,680	6,510	7,120	20,850
CFSM	4.29	11.0	3.89	1.89	1.11	1.08	2.06	4.95	3.12	2.94	3.22	9.73
IN.	4.94	12.31	4.49	2.18	1.20	1.25	2.30	5.71	3.48	3.39	3.71	10.86

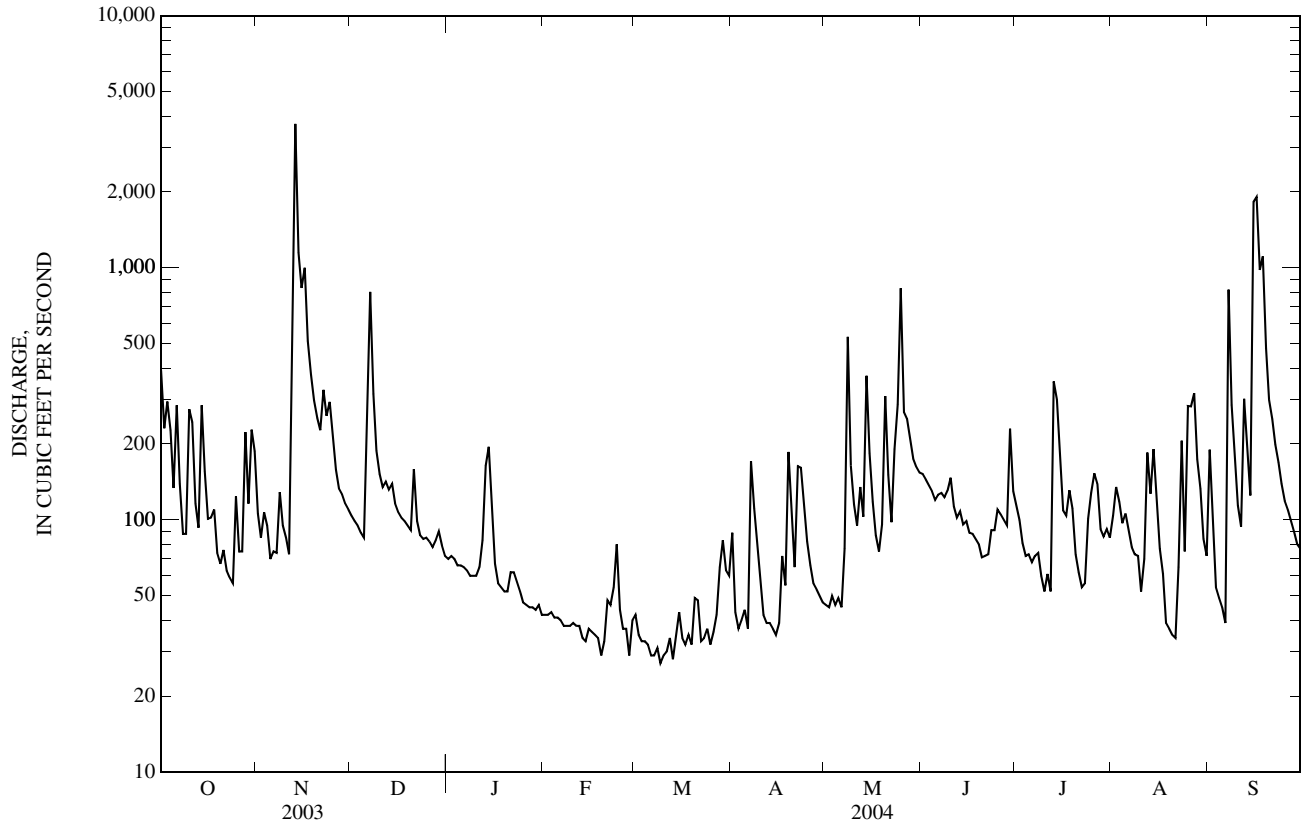
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2004, BY WATER YEAR (WY)

MEAN	142	184	74.2	28.4	20.4	13.5	68.6	98.1	55.4	35.7	72.9	175
MAX	239	397	140	68.0	40.1	38.9	173	178	112	106	135	350
(WY)	(2001)	(2004)	(2004)	(2004)	(2004)	(2004)	(2002)	(2004)	(2004)	(2004)	(2000)	(2004)
MIN	71.5	79.3	43.4	8.38	6.06	4.55	9.58	50.3	10.2	6.42	9.55	70.6
(WY)	(2002)	(2003)	(2001)	(2001)	(2001)	(2001)	(2000)	(2002)	(2001)	(2003)	(2003)	(2002)

50021700 RIO GRANDE DE ARECIBO ABOVE UTUADO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1999 - 2004	
ANNUAL TOTAL	30,888.4		54,011			
ANNUAL MEAN	84.6		148		79.2	
HIGHEST ANNUAL MEAN					148	2004
LOWEST ANNUAL MEAN					43.7	2003
HIGHEST DAILY MEAN	3,720	Nov 13	3,720	Nov 13	3,720	Nov 13, 2003
LOWEST DAILY MEAN	3.2	Jul 24	27	Mar 9	3.2	Jul 24, 2003
ANNUAL SEVEN-DAY MINIMUM	3.5	Jul 20	30	Mar 5	3.5	Jul 20, 2003
MAXIMUM PEAK FLOW			13,700	Nov 13	45,600	Sep 22, 1998
MAXIMUM PEAK STAGE			12.30	Nov 13	19.72	Sep 22, 1998
INSTANTANEOUS LOW FLOW			23	Mar 9		
ANNUAL RUNOFF (AC-FT)	61,270		107,100		57,390	
ANNUAL RUNOFF (CFSM)	2.35		4.10		2.20	
ANNUAL RUNOFF (INCHES)	31.92		55.81		29.90	
10 PERCENT EXCEEDS	222		270		172	
50 PERCENT EXCEEDS	24		87		37	
90 PERCENT EXCEEDS	4.1		37		5.6	

e Estimated



50022810 RIO VIVI BELOW HACIENDA EL PROGRESO, PR

LOCATION.--Lat 18°11'21", long 66°40'20", Hydrologic Unit 21010001, 4.05 mi (6.52 km) east from Lago Adjuntas Dam, 2.90 mi (4.66 km) south of Lago Viví Dam, 3.80 mi (6.11 km) northeast from Adjuntas Plaza, 2.76 mi (4.44 km) northwest from Escuela de San Patricio.

DRAINAGE AREA.--2.99 mi^2 (7.74 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 2000 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,710 ft (521 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	119	e21	6.7	5.4	5.7	8.6	e4.1	10	22	5.3	10
2	4.8	51	e20	7.1	6.1	5.1	5.9	4.6	9.8	8.9	6.8	6.3
3	4.6	43	e19	6.5	5.5	4.8	5.5	4.5	9.3	6.9	8.0	5.3
4	5.5	26	e20	6.2	5.2	4.7	10	5.1	9.0	6.4	6.0	7.9
5	4.7	19	e20	6.0	5.1	4.6	6.7	4.6	8.6	6.1	12	5.1
6	e9.6	20	e62	5.9	5.1	4.5	7.4	3.9	9.2	5.8	5.9	4.8
7	5.9	14	92	5.6	4.9	4.5	20	5.4	9.4	8.9	5.0	63
8	4.9	16	31	5.4	4.8	4.4	8.8	23	8.4	6.1	4.8	12
9	5.2	12	21	5.3	4.9	4.3	11	11	15	5.6	4.6	7.8
10	50	11	18	5.1	4.9	4.4	6.8	6.7	9.6	5.5	4.6	7.2
11	32	11	16	5.5	4.7	4.4	5.8	7.7	8.2	6.7	9.2	6.8
12	9.8	125	22	e8.2	4.5	4.3	5.4	7.9	7.7	6.6	16	6.6
13	7.4	451	14	e59	4.5	4.2	5.1	e6.6	7.3	47	5.9	6.6
14	42	140	14	53	4.3	4.9	4.9	e33	13	21	12	6.7
15	12	109	12	15	4.3	4.3	4.7	e25	7.6	9.1	5.4	203
16	8.0	84	12	9.7	4.1	4.1	8.9	e11	6.9	6.5	4.7	185
17	12	54	11	8.6	4.3	4.1	7.8	e8.0	6.7	5.7	4.4	56
18	8.0	48	11	8.0	e4.1	5.0	5.7	e8.0	6.4	5.9	4.3	68
19	6.0	39	10	7.6	e4.0	4.4	40	9.7	6.1	5.3	4.4	33
20	5.3	32	9.7	7.4	4.0	6.8	7.9	48	5.9	4.9	4.3	25
21	6.3	26	12	7.1	4.5	4.6	5.1	9.3	5.9	4.9	4.0	22
22	5.4	26	e9.9	6.9	4.2	4.0	19	7.8	5.8	4.6	6.4	19
23	4.8	44	e8.9	7.4	20	4.0	6.7	24	5.5	10	22	18
24	4.3	e55	12	6.7	7.6	6.3	14	18	5.3	10	5.9	16
25	4.0	e29	9.8	6.3	5.6	4.6	6.2	91	6.7	6.3	26	15
26	3.7	e27	9.1	6.2	6.0	4.6	5.2	23	5.7	37	14	14
27	3.8	e26	e8.1	6.1	5.3	4.8	e4.7	33	5.3	11	23	13
28	e31	e25	e8.4	5.9	4.9	6.1	e4.5	18	5.1	6.8	21	e13
29	e13	e24	e8.9	6.2	7.6	18	e4.3	13	19	6.2	7.5	e12
30	55	e23	e7.6	5.7	---	7.5	e4.1	12	8.4	5.8	6.3	e11
31	18	---	7.2	5.6	---	16	---	11	---	5.6	5.8	---
TOTAL	392.9	1,729	557.6	311.9	160.4	174.0	260.7	497.9	246.8	309.1	275.5	879.1
MEAN	12.7	57.6	18.0	10.1	5.53	5.61	8.69	16.1	8.23	9.97	8.89	29.3
MAX	55	451	92	59	20	18	40	91	19	47	26	203
MIN	3.7	11	7.2	5.1	4.0	4.0	4.1	3.9	5.1	4.6	4.0	4.8
AC-FT	779	3,430	1,110	619	318	345	517	988	490	613	546	1,740
CFSM	4.24	19.3	6.02	3.36	1.85	1.88	2.91	5.37	2.75	3.33	2.97	9.80
IN.	4.89	21.51	6.94	3.88	2.00	2.16	3.24	6.19	3.07	3.85	3.43	10.94

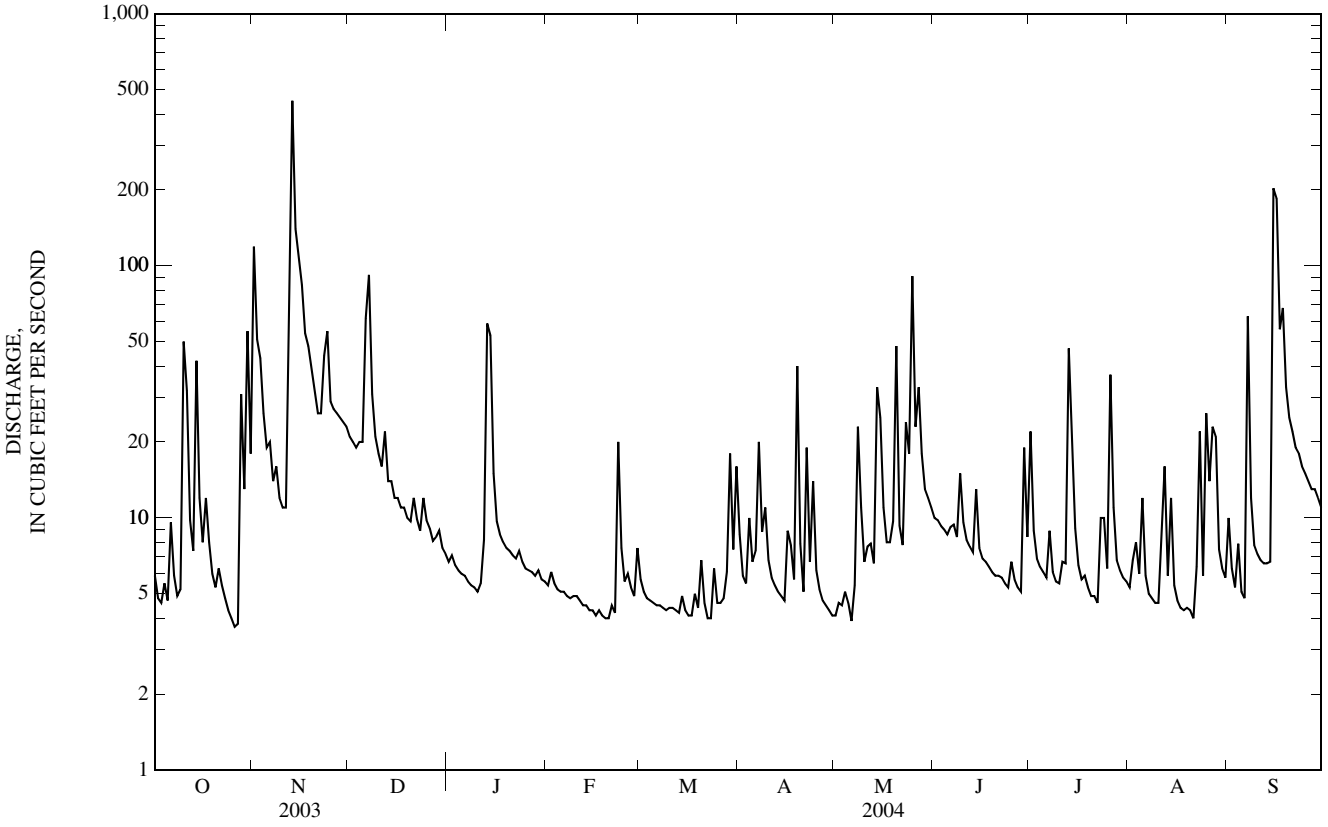
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

MEAN	10.3	27.2	13.4	5.67	4.20	3.51	9.35	10.3	5.34	6.32	6.14	15.7
MAX	12.7	57.6	18.0	10.1	5.53	5.61	16.4	16.1	8.23	9.97	8.89	29.3
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2002)	(2004)	(2004)	(2004)	(2004)	(2004)
MIN	8.11	6.56	6.72	3.12	2.45	2.45	3.10	7.00	3.69	1.81	1.64	5.03
(WY)	(2003)	(2003)	(2003)	(2001)	(2001)	(2001)	(2001)	(2002)	(2003)	(2003)	(2003)	(2002)

50022810 RIO VIVI BELOW HACIENDA EL PROGRESO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2001 - 2004	
ANNUAL TOTAL	4,046.5		5,794.9			
ANNUAL MEAN	11.1		15.8		9.85	
HIGHEST ANNUAL MEAN					15.8	2004
LOWEST ANNUAL MEAN					5.54	2003
HIGHEST DAILY MEAN	451	Nov 13	451	Nov 13	451	Nov 13, 2003
LOWEST DAILY MEAN	1.1	Aug 24	3.7	Oct 26	1.1	Aug 24, 2003
ANNUAL SEVEN-DAY MINIMUM	1.2	Aug 19	4.2	Feb 14	1.2	Aug 19, 2003
MAXIMUM PEAK FLOW			2,610	Nov 13	2,610	Nov 13, 2003
MAXIMUM PEAK STAGE			9.32	Nov 13	9.32	Nov 13, 2003
INSTANTANEOUS LOW FLOW					1.6	Mar 17, 2001
ANNUAL RUNOFF (AC-FT)	8,030		11,490		7,140	
ANNUAL RUNOFF (CFSM)	3.71		5.30		3.30	
ANNUAL RUNOFF (INCHES)	50.34		72.10		44.77	
10 PERCENT EXCEEDS	26		31		19	
50 PERCENT EXCEEDS	3.2		7.2		5.2	
90 PERCENT EXCEEDS	1.6		4.5		2.6	

e Estimated



50022810 RIO VIVI BELOW HACIENDA EL PROGRESO, PR—Continued

WATER-QUALITY RECORD

PERIOD OF RECORD.--December 2000 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: December 2000 to current year.

INSTRUMENTATION.--USDH-48 and automatic sediment sampler since 2000.

REMARKS.-- Sediment samples were collected by a local observer on a weekly basis. During high flow events sediment samples were collected with automatic sediment sampler.

EXTREMES OBSERVED FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 5,860 mg/L November 13, 2003; Minimum daily mean, 1 mg/L several years.
SEDIMENT LOADS: Maximum daily mean, 10,800 tons (9,800 tonnes) November 13, 2003; Minimum daily mean, <0.01 ton (<0.01 tonne) several years.

EXTREMES OBSERVED FOR CURRENT YEAR 2003.--
SEDIMENT CONCENTRATION: Maximum daily mean, 967 mg/L April 18, 2003; Minimum daily mean, 1 mg/L January 5, 6, 2003.
SEDIMENT LOADS: Maximum daily mean, 778 tons (706 tonnes) April 18, 2003; Minimum daily mean, <0.01 ton (<0.01 tonne) January 6, 2003.

EXTREMES OBSERVED FOR CURRENT YEAR 2004.--
SEDIMENT CONCENTRATION: Maximum daily mean, 5,860 mg/L November 13, 2003; Minimum daily mean, 1 mg/L several days.
SEDIMENT LOADS: Maximum daily mean, 10,800 tons (9,800 tonnes) November 13, 2003; Minimum daily mean, 0.01 ton (0.01 tonne) March 16, 2004.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		OCTOBER			NOVEMBER			DECEMBER	
1	6.9	2	0.03	9.2	22	1.0	e4.0	---	e0.06
2	e5.7	e3	e0.04	4.9	8	0.10	e4.0	---	e0.06
3	4.4	4	0.04	4.9	7	0.09	e4.1	---	e0.06
4	8.8	4	0.09	4.2	6	0.07	e5.0	---	e0.10
5	5.3	4	0.06	5.8	8	0.13	e4.0	e6	e0.06
6	3.7	4	0.04	4.3	11	0.12	3.3	6	0.06
7	4.0	4	0.04	3.7	13	0.13	3.2	6	0.06
8	15	451	69	3.6	14	0.13	4.9	7	0.09
9	7.4	8	0.16	16	148	36	3.4	7	0.06
10	20	524	141	11	77	7.5	3.0	5	0.04
11	6.3	12	0.20	5.7	13	0.21	3.0	3	0.03
12	4.6	11	0.14	12	60	4.7	2.9	2	0.01
13	4.2	11	0.12	8.3	27	0.58	2.9	4	0.03
14	9.1	122	11	5.8	15	0.23	2.8	7	0.05
15	9.3	162	15	5.3	14	0.21	2.8	10	0.07
16	5.8	18	0.28	11	43	3.6	2.9	13	0.10
17	5.2	16	0.22	5.8	29	0.46	54	504	421
18	13	207	34	e10	e43	e3.6	8.8	34	1.2
19	5.3	20	0.29	e9.0	---	e0.58	4.5	17	0.20
20	11	130	14	e6.2	e14	e0.20	3.9	16	0.16
21	35	367	154	e10	---	e3.6	3.6	15	0.15
22	8.0	32	0.79	e5.0	---	e0.21	35	341	184
23	5.4	11	0.17	e4.5	---	e0.12	9.9	8	0.20
24	4.6	6	0.07	e3.9	---	e0.12	5.4	7	0.10
25	4.2	4	0.04	e3.5	---	e0.06	4.4	6	0.08
26	4.1	4	0.04	e3.6	---	e0.06	4.4	6	0.07
27	3.8	3	0.03	e5.1	---	e0.21	4.0	5	0.06
28	3.7	3	0.03	e4.6	---	e0.12	3.7	4	0.04
29	8.2	69	7.8	e5.4	---	e0.21	3.6	3	0.03
30	4.3	24	0.28	e4.5	---	e0.12	3.5	2	0.02
31	15	160	21	---	---	---	3.4	2	0.02
TOTAL	251.3	---	470.00	196.8	---	64.47	208.3	---	608.27

50022810 RIO VIVI BELOW HACIENDA EL PROGRESO,PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	3.4	2	0.02	2.8	9	0.07	2.5	6	0.04
2	e3.4	e2	e0.02	26	302	157	2.5	5	0.04
3	e3.2	e2	e0.02	23	316	65	2.5	5	0.03
4	3.2	2	0.01	6.3	43	0.92	2.4	5	0.03
5	3.2	1	0.01	16	301	44	2.4	6	0.04
6	3.3	1	0.00	e7.6	e13	e0.24	2.4	9	0.06
7	3.2	2	0.01	e4.3	e11	e0.13	2.3	13	0.08
8	3.0	2	0.02	3.8	9	0.09	2.2	12	0.07
9	3.1	3	0.02	3.4	7	0.06	2.2	11	0.07
10	3.6	4	0.04	3.3	5	0.04	2.2	10	0.06
11	3.2	6	0.05	3.2	9	0.07	2.1	10	0.06
12	2.9	7	0.06	3.1	14	0.12	2.2	9	0.05
13	2.9	9	0.07	3.0	14	0.12	2.2	8	0.05
14	2.9	8	0.06	3.0	12	0.09	2.4	8	0.05
15	2.8	6	0.04	2.9	9	0.07	2.6	7	0.05
16	2.8	4	0.03	2.9	7	0.05	e2.8	e7	e0.05
17	2.7	4	0.03	3.0	5	0.04	e2.8	e6	e0.04
18	2.9	4	0.03	2.9	3	0.03	e2.8	e6	e0.04
19	2.9	5	0.04	2.8	3	0.02	2.9	5	0.04
20	2.8	5	0.04	2.8	2	0.02	3.0	4	0.03
21	2.8	4	0.03	2.8	2	0.01	e2.7	e4	e0.03
22	2.8	4	0.03	2.7	2	0.01	2.8	4	0.03
23	5.1	7	0.10	2.7	2	0.01	e2.9	e3	e0.03
24	7.7	9	0.25	2.7	2	0.01	e2.8	e3	e0.02
25	17	103	12	2.6	3	0.02	3.6	3	0.03
26	8.3	40	1.7	2.7	4	0.03	6.5	4	0.06
27	3.7	8	0.08	2.8	6	0.04	4.2	4	0.04
28	3.1	8	0.07	2.6	6	0.04	3.6	4	0.04
29	2.9	8	0.06	---	---	---	e3.0	e4	e0.03
30	2.8	8	0.06	---	---	---	e2.8	e3	e0.02
31	2.9	9	0.07	---	---	---	e2.6	e4	e0.03
TOTAL	120.5	---	15.07	147.7	---	268.35	86.9	---	1.34
		APRIL			MAY			JUNE	
1	e3.2	e7	e0.06	2.8	8	0.06	8.4	9	0.19
2	3.7	6	0.06	2.8	7	0.05	e5.9	e6	e0.09
3	26	207	117	2.8	6	0.04	4.5	4	0.05
4	4.1	8	0.09	2.7	5	0.03	4.0	4	0.04
5	41	424	256	2.8	3	0.03	21	138	66
6	6.4	5	0.10	2.8	4	0.03	5.2	5	0.08
7	3.5	4	0.04	3.4	6	0.06	3.4	4	0.04
8	3.0	5	0.04	3.3	8	0.07	3.1	4	0.03
9	3.0	5	0.04	3.0	10	0.08	3.1	3	0.03
10	2.9	6	0.05	2.8	13	0.10	2.9	3	0.02
11	3.3	6	0.05	3.0	15	0.12	2.8	2	0.02
12	6.1	6	0.09	2.9	17	0.13	2.8	2	0.02
13	3.9	5	0.06	2.8	15	0.11	2.7	2	0.01
14	3.1	5	0.04	3.2	11	0.09	2.7	2	0.01
15	2.8	3	0.02	3.4	7	0.06	2.6	2	0.01
16	3.2	2	0.02	3.2	6	0.05	2.6	2	0.01
17	22	108	24	7.9	11	0.46	2.5	2	0.01
18	75	967	778	4.1	15	0.17	3.0	2	0.02
19	11	98	3.8	3.2	14	0.13	4.2	7	0.11
20	4.8	9	0.11	3.7	14	0.13	2.6	10	0.07
21	3.6	7	0.07	26	125	29	2.4	11	0.07
22	5.7	7	0.10	60	597	644	2.3	11	0.07
23	4.5	6	0.08	19	122	7.0	2.2	11	0.07
24	7.4	23	1.6	12	21	0.74	2.1	11	0.07
25	6.2	9	0.15	11	4	0.11	2.1	12	0.07
26	4.0	7	0.08	11	3	0.11	2.0	12	0.07
27	3.4	6	0.05	6.8	6	0.11	2.0	11	0.06
28	3.2	4	0.04	5.3	10	0.14	1.9	10	0.05
29	3.0	5	0.04	4.7	14	0.18	1.9	9	0.04
30	2.9	6	0.05	5.1	15	0.21	1.8	10	0.05
31	---	---	---	5.0	12	0.16	---	---	---
TOTAL	275.9	---	1,181.93	232.5	---	683.76	110.7	---	67.48

50022810 RIO VIVI BELOW HACIENDA EL PROGRESO,PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	2.0	14	0.07	e1.4	---	e0.02	2.2	3	0.02
2	2.1	10	0.06	e1.3	---	e0.02	2.0	3	0.02
3	1.9	6	0.03	e1.3	---	e0.02	6.7	52	4.8
4	1.9	5	0.03	e1.3	---	e0.02	1.9	11	0.06
5	2.2	5	0.03	e1.3	---	e0.02	1.4	10	0.04
6	1.9	6	0.03	e1.5	e8	e0.04	1.3	9	0.03
7	1.7	6	0.03	e1.6	e10	e0.05	3.8	8	0.08
8	1.8	5	0.03	1.4	11	0.04	2.0	7	0.04
9	1.8	4	0.02	1.3	11	0.04	1.5	6	0.03
10	e1.7	e3	e0.02	1.2	12	0.04	1.5	5	0.02
11	e1.8	---	e0.02	1.7	12	0.05	33	367	126
12	e1.8	---	e0.02	1.4	12	0.04	11	29	0.83
13	e2.0	---	e0.03	5.3	29	0.88	7.1	10	0.21
14	e1.9	---	e0.03	2.0	8	0.04	4.5	7	0.08
15	e2.0	---	e0.03	1.6	7	0.03	65	494	134
16	e2.0	---	e0.03	1.4	6	0.02	14	12	0.50
17	e2.3	---	e0.03	1.3	6	0.02	6.6	7	0.12
18	e1.7	---	e0.03	1.5	5	0.02	6.3	6	0.11
19	e1.6	---	e0.02	1.4	5	0.02	37	552	326
20	e1.5	---	e0.02	1.3	5	0.02	8.0	68	1.6
21	e1.6	---	e0.02	1.2	4	0.01	12	118	11
22	e1.5	---	e0.02	1.3	4	0.01	5.7	14	0.22
23	e1.5	---	e0.02	1.2	4	0.01	4.8	12	0.15
24	e1.4	---	e0.02	1.1	5	0.01	4.5	11	0.14
25	e1.6	---	e0.02	1.2	5	0.02	15	129	21
26	e1.6	---	e0.02	3.2	4	0.04	7.8	39	0.81
27	e2.2	---	e0.06	1.6	4	0.02	5.6	37	0.56
28	e2.1	---	e0.06	1.6	3	0.01	4.8	34	0.44
29	e2.1	---	e0.06	1.6	3	0.01	4.5	32	0.40
30	e1.5	---	e0.02	2.7	3	0.02	4.3	31	0.35
31	e1.4	---	e0.02	1.7	3	0.01	---	---	---
TOTAL	56.1	---	0.95	50.9	---	1.62	285.8	---	629.66
YEAR	2,023.4	3,992.90							

e Estimated

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

SILT AND CLAY PERCENT OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
OCT					
21...	1524	237	96	2,800	1,790

50022810 RIO VIVI BELOW HACIENDA EL PROGRESO,PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003—CONTINUED

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, falldia nat wat percent <.002mm (70326)	Suspnd. sediment, falldia nat wat percent <.004mm (70327)	Suspnd. sediment, falldia nat wat percent <.008mm (70328)	Suspnd. sediment, falldia nat wat percent <.016mm (70329)	Suspnd. sediment, falldia nat wat percent <.031mm (70330)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspnd. sediment, sieve diametr percent <.125mm (70332)	Suspnd. sediment, sieve diametr percent <.25mm (70333)	Suspnd. sediment, sieve diametr percent <.5 mm (70334)	Suspnd. sediment, sieve diametr percent <1 mm (70335)	Suspended sediment concentration mg/L (80154)
OCT 10...	1354	178	32	42	55	71	82	89	96	98	99	99	5,310

Date	Suspended sediment discharge, tons/d (80155)
OCT 10...	2,550

50022810 RIO VIVI BELOW HACIENDA EL PROGRESO,PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		OCTOBER			NOVEMBER			DECEMBER	
1	5.9	24	0.37	119	1,800	3,150	e21	e4	e0.51
2	4.8	13	0.17	51	111	20	e20	e5	e0.55
3	4.6	11	0.13	43	271	64	e19	e5	e0.57
4	5.5	11	0.16	26	77	5.6	e20	e6	e0.51
5	4.7	10	0.13	19	6	0.32	e20	e5	e0.51
6	e9.6	e43	e3.6	20	8	0.53	e62	e654	e148
7	5.9	8	0.13	14	7	0.28	92	924	629
8	4.9	5	0.07	16	6	0.27	31	23	2.2
9	5.2	2	0.03	12	13	0.40	21	5	0.30
10	50	249	71	11	22	0.64	18	4	0.20
11	32	152	39	11	26	0.79	16	4	0.19
12	9.8	19	0.50	125	2,260	2,140	22	66	12
13	7.4	13	0.26	451	5,860	10,800	14	12	0.46
14	42	570	534	140	516	299	14	10	0.35
15	12	26	1.3	109	1,410	1,000	12	9	0.29
16	8.0	32	1.3	84	840	274	12	7	0.24
17	12	39	2.8	54	52	7.6	11	5	0.16
18	8.0	7	0.17	48	39	5.1	11	4	0.10
19	6.0	4	0.07	39	30	3.1	10	3	0.08
20	5.3	3	0.05	32	12	1.0	9.7	3	0.08
21	6.3	5	0.08	26	8	0.59	12	3	0.10
22	5.4	7	0.11	26	9	0.60	e9.9	e4	e0.09
23	4.8	10	0.12	44	244	139	e8.9	e7	e0.17
24	4.3	10	0.11	e55	e7	e1.3	12	8	0.25
25	4.0	10	0.10	e29	e10	e1.5	9.8	7	0.20
26	3.7	9	0.09	e27	e11	e1.5	9.1	7	0.17
27	3.8	9	0.09	e26	e11	e1.4	e8.1	e7	e0.15
28	e31	e152	e39	e25	e9	e1.1	e8.4	e6	e0.14
29	e13	e69	e8.4	e24	e8	e0.90	e8.9	e6	e0.14
30	55	789	630	e23	e6	e0.75	e7.6	e6	e0.13
31	18	120	9.1	---	---	---	7.2	6	0.12
TOTAL	392.9	---	1,342.44	1,729	---	17,921.27	557.6	---	797.96
		JANUARY			FEBRUARY			MARCH	
1	6.7	6	0.12	5.4	9	0.13	5.7	21	0.33
2	7.1	7	0.12	6.1	12	0.20	5.1	19	0.26
3	6.5	7	0.12	5.5	6	0.09	4.8	18	0.24
4	6.2	7	0.11	5.2	10	0.14	4.7	18	0.23
5	6.0	7	0.11	5.1	15	0.21	4.6	15	0.18
6	5.9	8	0.13	5.1	14	0.19	4.5	11	0.13
7	5.6	9	0.13	4.9	10	0.13	4.5	7	0.08
8	5.4	10	0.14	4.8	6	0.08	4.4	3	0.04
9	5.3	9	0.12	4.9	2	0.03	4.3	4	0.05
10	5.1	7	0.10	4.9	2	0.02	4.4	7	0.09
11	5.5	6	0.08	4.7	3	0.03	4.4	10	0.12
12	e8.2	e4	e0.10	4.5	4	0.05	4.3	9	0.10
13	e59	e707	e763	4.5	4	0.05	4.2	6	0.07
14	53	418	200	4.3	4	0.05	4.9	3	0.05
15	15	14	0.60	4.3	4	0.05	4.3	1	0.02
16	9.7	9	0.24	4.1	4	0.05	4.1	1	0.01
17	8.6	11	0.25	4.3	6	0.07	4.1	2	0.02
18	8.0	12	0.27	e4.1	e9	e0.10	5.0	2	0.03
19	7.6	14	0.28	e4.0	e10	e0.11	4.4	2	0.02
20	7.4	13	0.26	4.0	9	0.09	6.8	2	0.04
21	7.1	12	0.23	4.5	6	0.08	4.6	2	0.02
22	6.9	11	0.21	4.2	4	0.05	4.0	2	0.03
23	7.4	10	0.20	20	145	50	4.0	10	0.11
24	6.7	9	0.16	7.6	70	1.4	6.3	19	0.34
25	6.3	8	0.14	5.6	66	0.99	4.6	15	0.18
26	6.2	7	0.12	6.0	62	0.99	4.6	20	0.25
27	6.1	6	0.09	5.3	53	0.76	4.8	28	0.36
28	5.9	4	0.07	4.9	42	0.56	6.1	36	0.58
29	6.2	3	0.05	7.6	31	0.62	18	153	37
30	5.7	2	0.02	---	---	---	7.5	13	0.28
31	5.6	4	0.07	---	---	---	16	128	26
TOTAL	311.9	---	967.64	160.4	---	57.32	174.0	---	67.26

50022810 RIO VIVI BELOW HACIENDA EL PROGRESO,PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		APRIL			MAY			JUNE	
1	8.6	15	0.38	e4.1	e8	e0.08	10	3	0.07
2	5.9	13	0.20	4.6	7	0.09	9.8	3	0.09
3	5.5	16	0.24	4.5	7	0.08	9.3	4	0.10
4	10	20	0.54	5.1	6	0.08	9.0	4	0.10
5	6.7	23	0.40	4.6	6	0.07	8.6	4	0.09
6	7.4	23	0.45	3.9	5	0.05	9.2	4	0.10
7	20	140	30	5.4	5	0.07	9.4	4	0.10
8	8.8	30	0.78	23	169	31	8.4	4	0.09
9	11	19	0.57	11	35	1.5	15	102	15
10	6.8	16	0.30	6.7	17	0.31	9.6	4	0.11
11	5.8	13	0.21	7.7	12	0.24	8.2	2	0.04
12	5.4	10	0.15	7.9	7	0.14	7.7	2	0.04
13	5.1	7	0.10	e6.6	e5	e0.08	7.3	2	0.04
14	4.9	4	0.06	e33	e232	e67	13	46	9.2
15	4.7	2	0.02	e25	e169	e31	7.6	15	0.30
16	8.9	5	0.13	e11	e35	e1.5	6.9	14	0.25
17	7.8	9	0.18	e8.0	e21	e0.45	6.7	13	0.23
18	5.7	13	0.20	e8.0	e21	e0.40	6.4	12	0.21
19	40	485	310	9.7	12	0.34	6.1	10	0.17
20	7.9	77	1.8	48	820	522	5.9	8	0.13
21	5.1	54	0.74	9.3	27	0.73	5.9	6	0.10
22	19	170	27	7.8	21	0.45	5.8	6	0.10
23	6.7	15	0.29	24	114	14	5.5	7	0.10
24	14	11	0.42	18	110	12	5.3	7	0.10
25	6.2	10	0.17	91	1,230	922	6.7	6	0.11
26	5.2	9	0.13	23	14	0.85	5.7	5	0.08
27	e4.7	e9	e0.12	33	232	67	5.3	4	0.06
28	e4.5	e9	e0.11	18	11	0.51	5.1	3	0.04
29	e4.3	e9	e0.10	13	8	0.28	19	224	53
30	e4.1	e8	e0.09	12	5	0.18	8.4	18	0.41
31	---	---	---	11	3	0.08	---	---	---
TOTAL	260.7	---	375.88	497.9	---	1,674.56	246.8	---	80.56

50022810 RIO VIVI BELOW HACIENDA EL PROGRESO,PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	22	199	51	5.3	4	0.06	10	14	0.37
2	8.9	10	0.25	6.8	5	0.09	6.3	13	0.22
3	6.9	9	0.17	8.0	4	0.09	5.3	13	0.18
4	6.4	8	0.13	6.0	4	0.06	7.9	13	0.28
5	6.1	6	0.10	12	3	0.11	5.1	13	0.18
6	5.8	6	0.10	5.9	4	0.06	4.8	13	0.17
7	8.9	7	0.16	5.0	5	0.06	63	702	1,240
8	6.1	7	0.11	4.8	6	0.07	12	118	4.4
9	5.6	6	0.09	4.6	7	0.08	7.8	11	0.24
10	5.5	5	0.08	4.6	7	0.09	7.2	10	0.19
11	6.7	4	0.07	9.2	7	0.17	6.8	8	0.15
12	6.6	3	0.06	16	516	117	6.6	7	0.12
13	47	585	829	5.9	10	0.17	6.6	5	0.10
14	21	238	29	12	177	17	6.7	6	0.12
15	9.1	25	0.65	5.4	5	0.07	203	3,800	6,170
16	6.5	16	0.28	4.7	4	0.05	185	1,960	1,350
17	5.7	11	0.18	4.4	4	0.05	56	426	77
18	5.9	7	0.11	4.3	4	0.05	68	534	388
19	5.3	3	0.04	4.4	4	0.05	33	5	0.45
20	4.9	2	0.02	4.3	4	0.05	25	4	0.28
21	4.9	1	0.02	4.0	4	0.04	22	5	0.29
22	4.6	2	0.02	6.4	4	0.07	19	6	0.32
23	10	92	8.1	22	255	90	18	8	0.40
24	10	56	3.5	5.9	7	0.11	16	9	0.39
25	6.3	4	0.07	26	333	142	15	9	0.38
26	37	385	266	14	40	2.7	14	10	0.37
27	11	11	0.33	23	198	60	13	10	0.35
28	6.8	7	0.12	21	133	24	e13	e9	e0.30
29	6.2	5	0.08	7.5	17	0.35	e12	e8	e0.24
30	5.8	3	0.05	6.3	15	0.25	e11	e8	e0.26
31	5.6	4	0.05	5.8	14	0.23	---	---	---
TOTAL	309.1	---	1,189.94	275.5	---	455.18	879.1	---	9,235.75
YEAR	5,794.9	34,165.76							

e Estimated

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

SILT AND CLAY PERCENT OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
JAN 14...	1848	267	93	2,450	1,770

50022810 RIO VIVI BELOW HACIENDA EL PROGRESO,PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, falldia nat wat percent <.002mm (70326)	Suspnd. sediment, falldia nat wat percent <.004mm (70327)	Suspnd. sediment, falldia nat wat percent <.008mm (70328)	Suspnd. sediment, falldia nat wat percent <.016mm (70329)	Suspnd. sediment, falldia nat wat percent <.031mm (70330)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspnd. sediment, sieve diametr percent <.125mm (70332)	Suspnd. sediment, sieve diametr percent <.25mm (70333)	Suspnd. sediment, sieve diametr percent <.5 mm (70334)	Suspnd. sediment, sieve diametr percent <1 mm (70335)	Suspended sediment concentration mg/L (80154)
JAN													
13...	1923	539	28	37	51	63	74	80	94	98	99	--	6,400
JUL													
13...	1449	327	26	36	50	64	77	83	94	98	99	100	7,700

Date	Suspended sediment discharge, tons/d (80155)
JAN	
13...	9,310
JUL	
13...	6,800

50024950 RIO GRANDE DE ARECIBO BELOW UTUADO, PR

LOCATION.--Lat 18°18'07", long 66°42'15", Hydrologic Unit 21010001, 2.4 mi (3.9 km) north of Utuado Plaza, 3.4 mi (5.5 km) southwest from Lago Dos Bocas Dam, 3.5 mi (5.6 km) northwest from Lago Caonillas Dam.

DRAINAGE AREA.--65.6 mi^2 (170 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1996 to September 1998, June 1999 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 295.28 ft (90 m), from topographic map.

REMARKS.--Records fair except for estimated mean daily discharge, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	301	444	203	148	90	103	186	101	228	174	87	126
2	414	320	194	152	90	e80	95	97	179	132	110	108
3	377	249	186	148	95	e75	78	106	157	109	123	82
4	387	218	179	139	88	e76	91	116	163	100	101	76
5	269	144	173	137	85	e72	88	112	144	98	104	77
6	618	174	408	139	85	e67	140	102	149	93	95	83
7	376	169	964	133	82	e68	194	179	140	101	85	580
8	241	200	673	129	80	e70	252	1,280	142	101	82	283
9	197	178	446	128	80	e67	155	799	166	88	80	178
10	451	240	371	147	81	e67	143	811	182	81	73	141
11	468	172	370	141	79	e72	95	473	135	87	87	206
12	221	827	341	185	78	e77	82	461	124	94	176	287
13	174	4,170	332	235	e74	e72	77	338	119	403	175	238
14	315	1,870	311	391	e73	e75	72	706	117	373	145	199
15	491	1,040	293	319	e78	82	69	520	123	304	126	1,750
16	317	1,620	253	183	e75	e69	100	360	115	151	93	2,170
17	257	798	229	145	e75	61	193	251	112	114	84	844
18	259	700	208	131	e73	64	152	212	108	194	75	851
19	144	524	191	122	e65	65	542	212	105	140	85	431
20	243	420	179	121	e70	70	292	468	101	98	69	288
21	217	357	298	140	e110	94	168	322	104	92	64	232
22	149	517	243	132	101	63	245	212	101	89	72	204
23	117	407	200	120	e79	59	293	335	98	97	212	188
24	124	442	187	125	e171	72	242	447	96	103	133	175
25	184	334	194	108	105	74	197	957	108	134	292	165
26	226	274	181	104	85	93	485	419	122	127	301	189
27	157	257	171	101	e83	112	211	336	106	147	200	157
28	356	238	181	99	e68	212	143	332	104	103	185	148
29	386	223	191	97	e104	152	119	226	194	94	138	146
30	689	214	173	98	---	146	106	191	163	96	109	144
31	713	---	158	92	---	117	---	174	---	90	102	---
TOTAL	9,838	17,740	8,681	4,589	2,502	2,646	5,305	11,655	4,005	4,207	3,863	10,746
MEAN	317	591	280	148	86.3	85.4	177	376	134	136	125	358
MAX	713	4,170	964	391	171	212	542	1,280	228	403	301	2,170
MIN	117	144	158	92	65	59	69	97	96	81	64	76
AC-FT	19,510	35,190	17,220	9,100	4,960	5,250	10,520	23,120	7,940	8,340	7,660	21,310
CFSM	4.84	9.01	4.27	2.26	1.31	1.30	2.69	5.73	2.03	2.07	1.90	5.46
IN.	5.58	10.06	4.92	2.60	1.42	1.50	3.01	6.61	2.27	2.38	2.19	6.09

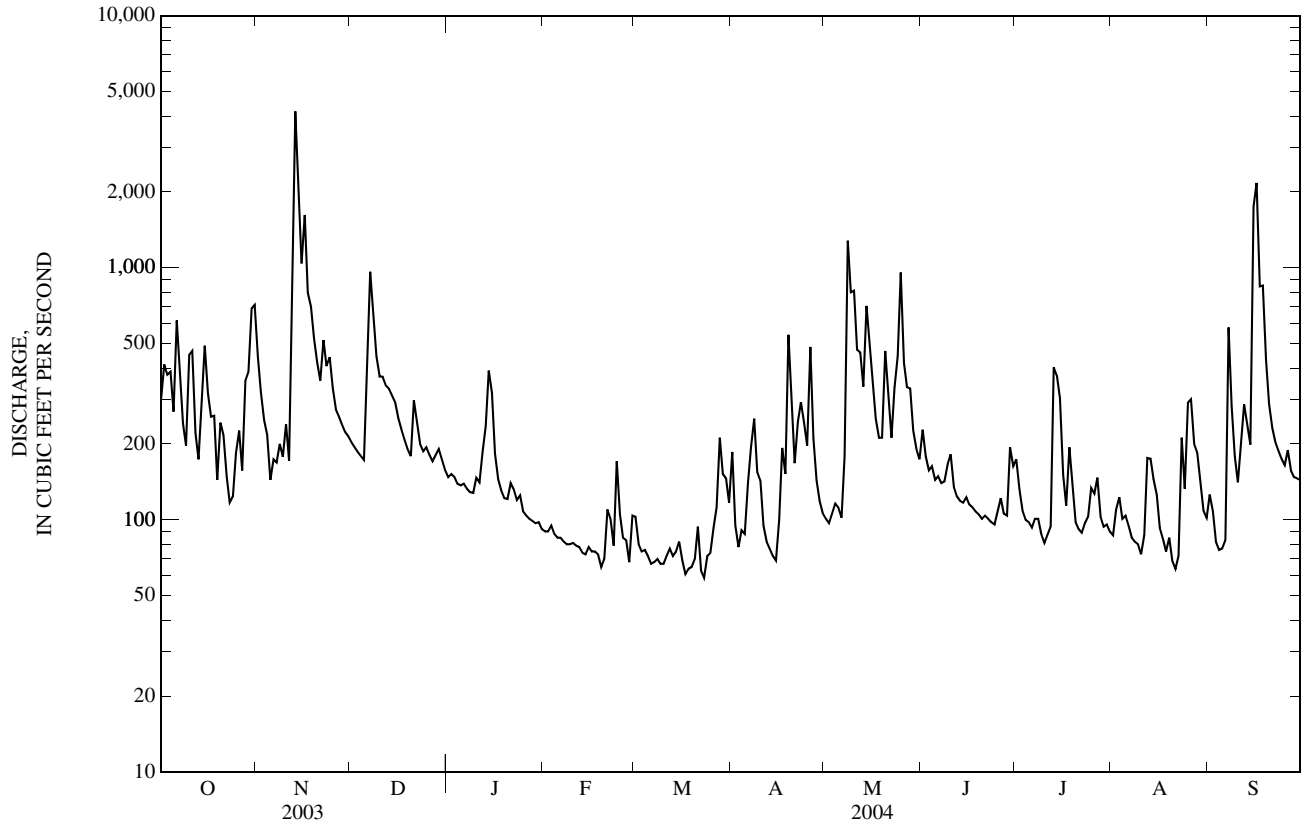
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2004, BY WATER YEAR (WY)

MEAN	272	331	152	98.5	71.5	57.8	158	193	97.2	99.1	157	379
MAX	490	766	280	166	102	85.4	457	376	134	184	393	1,100
(WY)	(2000)	(2000)	(2004)	(2000)	(2000)	(2004)	(2002)	(2004)	(2004)	(1998)	(1998)	(1998)
MIN	148	84.8	53.0	39.5	46.6	33.8	46.2	50.8	40.8	36.6	60.5	87.3
(WY)	(2002)	(1998)	(1998)	(1998)	(1998)	(1998)	(1997)	(1997)	(1997)	(1997)	(2003)	(1997)

50024950 RIO GRANDE DE ARECIBO BELOW UTUADO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1996 - 2004	
ANNUAL TOTAL	66,786		85,777			
ANNUAL MEAN	183		234		169	
HIGHEST ANNUAL MEAN					234	2004
LOWEST ANNUAL MEAN					99.6	1997
HIGHEST DAILY MEAN	4,170	Nov 13	4,170	Nov 13	17,900	Sep 22, 1998
LOWEST DAILY MEAN	34	Mar 14	59	Mar 23	22	Mar 20, 1998
ANNUAL SEVEN-DAY MINIMUM	37	Mar 10	68	Mar 17	23	Mar 19, 1998
MAXIMUM PEAK FLOW			14,700	Nov 13	76,400	Sep 22, 1998
MAXIMUM PEAK STAGE			15.40	Nov 13	32.92	Sep 22, 1998
INSTANTANEOUS LOW FLOW					13	Jul 3, 2002
ANNUAL RUNOFF (AC-FT)	132,500		170,100		122,300	
ANNUAL RUNOFF (CFSM)	2.79		3.57		2.57	
ANNUAL RUNOFF (INCHES)	37.86		48.63		34.96	
10 PERCENT EXCEEDS	375		443		333	
50 PERCENT EXCEEDS	90		147		96	
90 PERCENT EXCEEDS	44		77		41	

e Estimated



50024950 RIO GRANDE DE ARECIBO BELOW UTUADO, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORDS.--April 1996 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: April 1996 to current year.

INSTRUMENTATION.--USDH-48 and automatic sediment samplers since 1996.

REMARKS.--Sediment samples were collected by a local observer on a weekly basis. During high flow events sediment samples were collected with automatic sediment sampler.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 16,600 mg/L November 13, 2003; Minimum daily mean, 2 mg/L May 31, 2003.
SEDIMENT LOADS: Maximum daily mean, e768,000 tons (e698,000 tonnes) September 22,1998; Minimum daily mean, 0.41 ton (0.37 tonne) May 31, 2003.

EXTREMES FOR CURRENT YEAR 2004.--
SEDIMENT CONCENTRATION: Maximum daily mean, 16,600 mg/L November 13, 2003; Minimum daily mean, 3 mg/L August 1-3, 2004.
SEDIMENT LOADS: Maximum daily mean, 312,000 tons (283,000 tonnes) November 13, 2003; Minimum daily mean, .81 ton (.73 tonne) August 1, 2004.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		OCTOBER			NOVEMBER			DECEMBER	
1	301	1,900	7,660	444	215	333	203	122	67
2	414	824	1,080	320	162	154	194	136	71
3	377	638	908	249	122	99	186	129	65
4	387	562	613	218	104	64	179	118	57
5	269	529	388	144	90	35	173	108	50
6	618	1,320	5,280	174	103	55	408	563	750
7	376	229	282	169	98	44	964	2,660	12,700
8	241	108	78	200	138	103	673	276	678
9	197	100	53	178	166	83	446	66	80
10	451	350	648	240	230	300	371	47	48
11	468	345	522	172	94	44	370	173	218
12	221	145	87	827	1,790	12,100	341	84	97
13	174	139	65	4,170	16,600	312,000	332	150	156
14	315	624	2,280	1,870	4,200	27,400	311	101	112
15	491	617	977	1,040	4,000	22,500	293	173	142
16	317	196	199	1,620	2,820	17,200	253	85	58
17	257	148	107	798	166	375	229	58	36
18	259	181	138	700	322	900	208	31	18
19	144	159	62	524	36	51	191	22	11
20	243	237	291	420	35	40	179	19	9.4
21	217	167	105	357	35	34	298	180	400
22	149	154	62	517	378	1,020	243	102	70
23	117	148	47	407	206	232	200	25	14
24	124	144	48	442	252	403	187	16	8.2
25	184	210	191	334	83	75	194	15	8.1
26	226	181	134	274	75	55	181	15	7.4
27	157	155	66	257	71	49	171	15	6.7
28	356	311	514	238	73	47	181	14	6.9
29	386	325	567	223	89	53	191	15	7.7
30	689	1,060	5,830	214	105	61	173	16	7.6
31	713	531	1,160	---	---	---	158	17	7.4
TOTAL	9,838	---	30,442	17,740	---	395,909	8,681	---	15,967.4

50024950 RIO GRANDE DE ARECIBO BELOW UTUADO, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	148	19	7.5	90	24	5.9	103	29	8.1
2	152	19	7.7	90	25	6.0	e80	e26	e5.7
3	148	18	7.3	95	22	5.6	e75	e24	e4.8
4	139	20	7.4	88	20	4.7	e76	e21	e4.3
5	137	42	15	85	24	5.4	e72	e19	e3.7
6	139	33	12	85	27	6.2	e67	e16	e2.9
7	133	25	8.8	82	25	5.6	e68	e15	e2.7
8	129	35	12	80	22	4.9	e70	e14	e2.6
9	128	44	15	80	20	4.2	e67	e13	e2.3
10	147	58	27	81	17	3.6	e67	e12	e2.2
11	141	33	13	79	14	2.9	e72	e11	e2.2
12	185	21	11	78	11	2.3	e77	e11	e2.2
13	235	174	577	e74	e8	e1.6	e72	e10	e1.9
14	391	287	599	e73	e8	e1.5	e75	e9	e1.8
15	319	195	205	e78	e9	e1.9	82	8	1.9
16	183	62	31	e75	e10	e2.0	e69	e8	e1.4
17	145	45	18	e75	e11	e2.2	61	9	1.6
18	131	41	14	e73	e13	e2.5	64	11	1.9
19	122	37	12	e65	e15	e2.6	65	10	1.8
20	121	35	11	e70	e17	e3.3	70	51	16
21	140	33	12	e110	e18	e5.1	94	339	88
22	132	31	11	101	17	4.6	63	256	43
23	120	33	11	e79	21	6.2	59	269	43
24	125	29	10	e171	e126	e68	72	291	56
25	108	22	6.4	105	51	15	74	311	62
26	104	21	6.0	85	42	9.5	93	330	89
27	101	21	5.9	e83	e37	e8.3	112	57	22
28	99	22	5.9	e68	e34	e6.3	212	171	122
29	97	23	5.9	e104	e32	e8.5	152	49	30
30	98	23	6.2	---	---	---	146	44	19
31	92	24	5.9	---	---	---	117	28	9.1
TOTAL	4,589	---	1,696.9	2,502	---	206.4	2,646	---	655.1
		APRIL			MAY			JUNE	
1	186	69	44	101	104	28	228	71	82
2	95	29	7.4	97	103	27	179	18	9.2
3	78	27	5.6	106	103	29	157	10	4.2
4	91	31	8.5	116	102	32	163	20	9.0
5	88	27	6.5	112	101	31	144	31	12
6	140	109	110	102	101	28	149	42	17
7	194	151	334	179	123	73	140	50	19
8	252	127	134	1,280	6,110	81,400	142	50	19
9	155	60	40	799	530	1,360	166	93	57
10	143	97	38	811	411	1,040	182	46	27
11	95	87	22	473	201	259	135	27	9.8
12	82	77	17	461	119	154	124	33	11
13	77	74	15	338	78	71	119	38	12
14	72	73	14	706	3,310	17,900	117	35	11
15	69	73	13	520	343	517	123	31	10
16	100	74	21	360	118	121	115	28	8.6
17	193	127	90	251	29	20	112	24	7.2
18	152	302	130	212	23	13	108	20	5.9
19	542	2,080	8,510	212	22	13	105	16	4.6
20	292	693	630	468	1,520	6,220	101	12	3.3
21	168	262	120	322	80	90	104	8	2.3
22	245	350	384	212	27	15	101	7	2.0
23	293	194	259	335	36	33	98	7	2.0
24	242	110	87	447	283	691	96	8	2.0
25	197	74	41	957	3,210	23,100	108	17	5.7
26	485	3,610	19,200	419	104	124	122	48	16
27	211	120	71	336	95	121	106	42	12
28	143	107	41	332	65	66	104	37	10
29	119	105	34	226	32	20	194	111	127
30	106	104	30	191	22	11	163	41	19
31	---	---	---	174	14	6.7	---	---	---
TOTAL	5,305	---	30,457.0	11,655	---	133,613.7	4,005	---	536.8

50024950 RIO GRANDE DE ARECIBO BELOW UTUADO, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	174	31	15	87	3	0.81	126	175	60
2	132	27	9.5	110	3	0.95	108	171	50
3	109	22	6.5	123	3	1.1	82	142	32
4	100	18	4.8	101	4	1.1	76	111	23
5	98	16	4.2	104	5	1.4	77	80	17
6	93	15	3.7	95	6	1.5	83	50	11
7	101	13	3.6	85	10	2.3	580	2,400	19,400
8	101	12	3.2	82	15	3.3	283	67	59
9	88	11	2.5	80	20	4.3	178	23	12
10	81	9	2.0	73	23	4.6	141	6	2.2
11	87	8	1.9	87	22	5.2	206	81	119
12	94	8	1.9	176	130	271	287	253	558
13	403	1,750	8,540	175	89	56	238	171	110
14	373	277	439	145	81	54	199	111	59
15	304	140	146	126	58	24	1,750	4,320	68,300
16	151	36	16	93	12	2.9	2,170	3,040	18,600
17	114	20	6.2	84	10	2.3	844	1,980	4,670
18	194	81	74	75	14	2.9	851	1,740	7,040
19	140	42	18	85	18	4.3	431	57	77
20	98	31	8.1	69	22	4.1	288	7	6.0
21	92	30	7.4	64	22	3.8	232	6	3.6
22	89	29	7.0	72	21	4.1	204	5	3.0
23	97	27	7.0	212	144	270	188	5	2.6
24	103	20	5.6	133	110	41	175	5	2.3
25	134	13	5.0	292	292	698	165	4	2.0
26	127	20	10	301	202	254	189	43	34
27	147	27	13	200	78	74	157	7	3.0
28	103	8	2.3	185	165	83	148	6	2.4
29	94	6	1.5	138	163	61	146	6	2.4
30	96	4	1.0	109	164	48	144	6	2.3
31	90	4	0.90	102	169	46	---	---	---
TOTAL	4,207	---	9,366.80	3,863	---	2,030.96	10,746	---	119,262.8
YEAR	85,777	740,144.86							

e Estimated

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

SILT AND CLAY PERCENT OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
NOV					
13...	0847	4,120	58	53,400	594,000
MAY					
14...	1542	2,480	57	33,000	221,000
SEP					
15...	1810	8,220	51	25,600	568,000
15...	2140	2,560	44	5,170	35,800

50024950 RIO GRANDE DE ARECIBO BELOW UTUADO, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, falldia nat wat percent <.002mm (70326)	Suspnd. sediment, falldia nat wat percent <.004mm (70327)	Suspnd. sediment, falldia nat wat percent <.008mm (70328)	Suspnd. sediment, falldia nat wat percent <.016mm (70329)	Suspnd. sediment, falldia nat wat percent <.031mm (70330)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspnd. sediment, sieve diametr percent <.125mm (70332)	Suspnd. sediment, sieve diametr percent <.25mm (70333)	Suspnd. sediment, sieve diametr percent <.5 mm (70334)	Suspnd. sediment, sieve diametr percent <1 mm (70335)	Suspended sediment concentration mg/L (80154)
NOV													
13...	0632	12,700	9	12	16	24	41	55	90	99	100	100	95,800
APR													
26...	1724	12,700	20	26	34	46	60	71	92	99	99	100	47,400

Date	Suspended sediment discharge, tons/d (80155)
NOV	
13...	3,290,000
APR	
26...	1,630,000

50025000 RIO GRANDE DE ARECIBO NEAR UTUADO, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--66.0 mi^2 (170.9 km^2) this excludes 6.0 mi^2 (15.5 km^2) upstream from Lago Garzas to Río Guayanes in the Río Tallaboa basin.

PERIOD OF RECORD.--Water years 1959-74, 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV													
17...	1245	--	110	7.8	7.5	171	23.9	67	17.9	5.41	1.86	.5	8.47
APR													
01...	1325	--	91	7.7	7.8	213	27.0	84	23.2	6.41	2.05	.5	10.5
JUN													
22...	1418	108	9.4	8.0	8.4	259	27.4	--	--	--	--	--	--
SEP													
03...	1250	94	39	7.5	8.0	248	28.6	100	28.7	7.34	2.38	.5	12.3

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
NOV													
17...	57	7.32	<.2	24.5	13.6	113	--	94	.30	.05	1.08	1.10	.02
APR													
01...	73	9.19	<.2	24.3	14.8	134	--	46	--	--	--	--	--
JUN													
22...	90	--	--	--	--	--	--	11	.20	.07	.83	.860	.03
SEP													
03...	87	10.5	<.2	27.6	17.8	163	41.5	13	--	.07	--	--	--

Date	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)
NOV													
17...	.25	1.4	6.2	.14	10	E2,900	E50,000	--	--	--	--	--	--
APR													
01...	--	--	--	--	<10	4,000	45,000	<2	51.5	21	<.2	1.5	10
JUN													
22...	.13	1.1	4.7	.09	<10	E6,900	75,000	--	--	--	--	--	--
SEP													
03...	--	--	--	.09	10	--	2,600	<2	31.1	19	<.2	<.8	M

50025000 RIO GRANDE DE ARECIBO NEAR UTUADO, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Manganese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
NOV 17...	--	--	--	--	--	--	--	--	--	--
APR 01...	<.01	2,160	1.2	128	<.02	<3	<.3	9	<.20	<16
JUN 22...	--	--	--	--	--	--	--	--	--	--
SEP 03...	<.01	300	<1.0	20.1	<.02	<3	<.3	8	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50025155 RIO SALIENTE AT COABEY NEAR JAYUYA, PR

LOCATION.--Lat 18°12'48", long 66°33'49", Hydrologic Unit 21010002, 2.0 mi (3.2 km) southeast of Jayuya, 1.4 mi (2.2 km) northeast of Hacienda Gripiñas.

DRAINAGE AREA.--9.25 mi^2 (24.0 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,706 ft (520 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	32	42	24	15	47	e37	24	44	15	11	35
2	15	27	35	30	15	22	e26	23	39	14	23	29
3	15	44	32	28	15	17	e21	25	36	13	22	23
4	14	33	31	24	15	14	e28	32	38	12	20	25
5	12	26	29	25	14	12	e32	33	38	12	18	21
6	12	29	150	25	13	11	e45	29	e31	11	16	34
7	e72	44	374	23	14	11	e59	32	e27	17	13	37
8	e33	55	236	23	13	10	e62	194	e25	14	12	25
9	e19	40	135	28	13	10	e43	144	e24	11	11	20
10	e273	31	93	43	13	11	e38	93	e25	11	11	17
11	e88	28	71	55	12	13	e31	90	23	11	11	24
12	e42	176	59	49	11	9.6	e26	87	e22	16	14	21
13	e28	1,860	48	35	11	9.0	e23	68	e21	17	13	17
14	e43	493	40	34	11	9.1	e21	154	e20	14	28	18
15	e97	275	35	31	11	9.0	e20	102	e20	12	18	456
16	62	393	31	27	11	8.3	e22	72	e19	11	13	738
17	44	212	28	26	11	e8.1	e27	55	e19	11	11	202
18	33	233	25	26	11	e9.2	74	49	e18	16	11	164
19	26	182	22	26	10	e11	100	42	e17	13	33	126
20	e103	133	21	28	10	e10	59	45	e17	11	17	101
21	e105	103	38	32	15	e11	43	42	e17	10	12	89
22	61	95	23	25	13	e8.8	e35	41	e16	9.9	58	79
23	37	211	19	24	11	e8.6	34	e99	15	24	29	88
24	28	177	27	22	e37	e13	44	96	15	15	31	72
25	24	127	21	20	22	e19	40	117	14	13	25	66
26	31	97	18	19	18	e20	32	e72	14	12	18	62
27	37	80	18	18	19	e24	29	e223	14	11	17	59
28	52	66	25	17	12	e103	e26	e110	13	59	17	57
29	39	56	38	17	54	e74	e25	65	14	24	31	55
30	41	49	44	16	---	e53	24	49	13	15	24	57
31	40	---	28	16	---	e37	---	e43	---	12	21	---
TOTAL	1,551	5,407	1,836	836	450	632.7	1,126	2,350	668	466.9	609	2,817
MEAN	50.0	180	59.2	27.0	15.5	20.4	37.5	75.8	22.3	15.1	19.6	93.9
MAX	273	1,860	374	55	54	103	100	223	44	59	58	738
MIN	12	26	18	16	10	8.1	20	23	13	9.9	11	17
AC-FT	3,080	10,720	3,640	1,660	893	1,250	2,230	4,660	1,320	926	1,210	5,590
CFSM	5.41	19.5	6.40	2.92	1.68	2.21	4.06	8.20	2.41	1.63	2.12	10.2
IN.	6.24	21.74	7.38	3.36	1.81	2.54	4.53	9.45	2.69	1.88	2.45	11.33

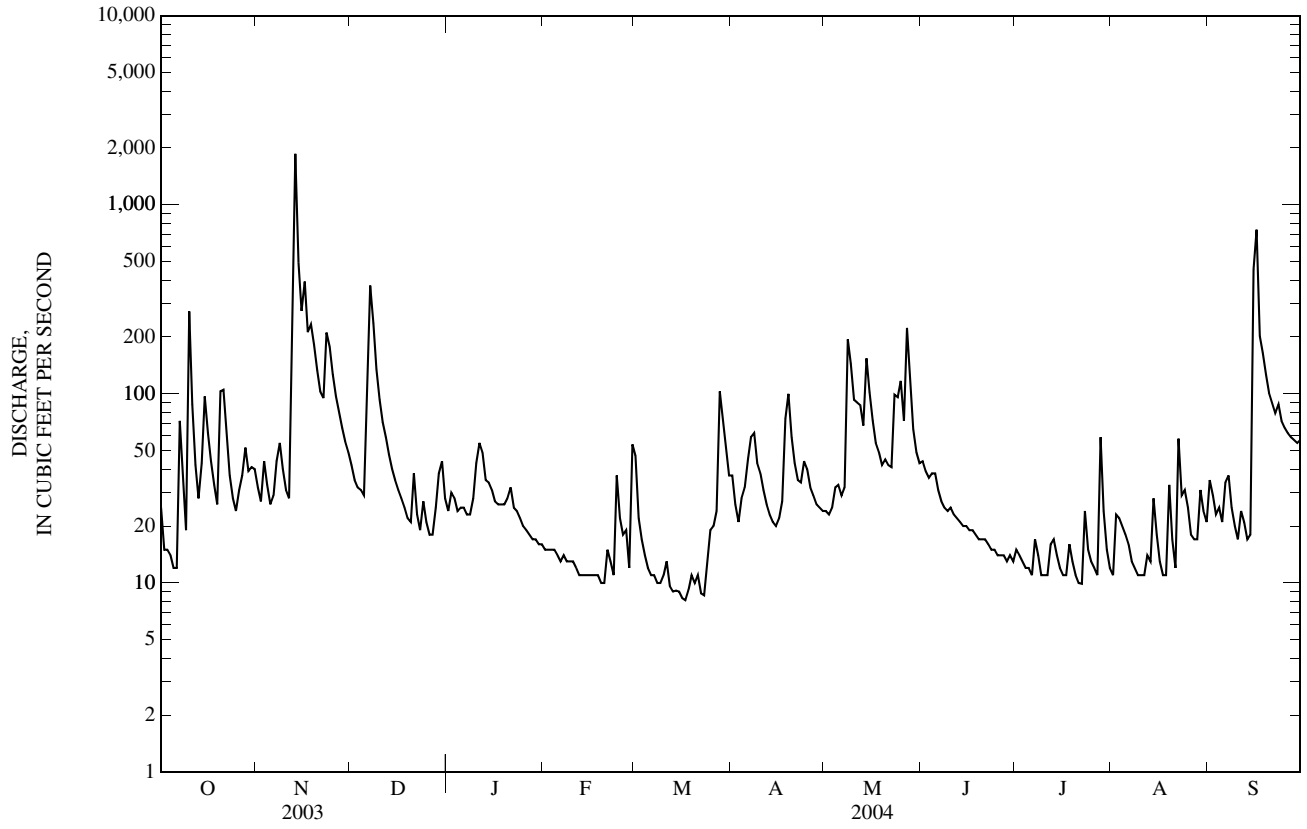
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 2004, BY WATER YEAR (WY)

MEAN	41.8	42.8	19.9	17.4	15.4	12.4	26.0	38.3	23.6	16.0	25.8	86.2
MAX	72.0	180	59.2	48.1	44.4	22.9	71.9	98.6	41.5	50.9	74.5	365
(WY)	(1996)	(2004)	(2004)	(1992)	(1996)	(2002)	(2002)	(1995)	(1999)	(1996)	(1998)	(1996)
MIN	11.6	10.0	5.41	4.13	4.67	4.79	5.95	5.35	5.30	2.83	7.64	10.8
(WY)	(1992)	(1994)	(1998)	(1995)	(1994)	(1994)	(1994)	(1990)	(1997)	(1994)	(2003)	(1994)

50025155 RIO SALIENTE AT COABEY NEAR JAYUYA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1989 - 2004	
ANNUAL TOTAL	13,275.4		18,749.6			
ANNUAL MEAN	36.4		51.2		30.4	
HIGHEST ANNUAL MEAN					64.0	1996
LOWEST ANNUAL MEAN					10.9	1994
HIGHEST DAILY MEAN	1,860	Nov 13	1,860	Nov 13	4,700	Sep 10, 1996
LOWEST DAILY MEAN	5.0	Mar 31	8.1	Mar 17	2.3	Jul 27, 1994
ANNUAL SEVEN-DAY MINIMUM	5.4	Aug 19	8.9	Mar 12	2.5	Jul 23, 1994
MAXIMUM PEAK FLOW			4,450	Nov 13	18,500	Sep 21, 1998
MAXIMUM PEAK STAGE			12.17	Nov 13	20.00	Sep 21, 1998
INSTANTANEOUS LOW FLOW					2.1	Jul 26, 1994
ANNUAL RUNOFF (AC-FT)	26,330		37,190		22,040	
ANNUAL RUNOFF (CFSM)	3.93		5.54		3.29	
ANNUAL RUNOFF (INCHES)	53.39		75.40		44.68	
10 PERCENT EXCEEDS	70		98		58	
50 PERCENT EXCEEDS	12		25		14	
90 PERCENT EXCEEDS	6.0		11		5.3	

e Estimated



50025155 RIO SALIENTE AT COABEY NEAR JAYUYA, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1989 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: October 2000 to current year.

INSTRUMENTATION.--USDH-48 and automatic sediment samplers since October 2000.

REMARKS.--Sediment samples were collected by a local observer on a weekly basis. During high flow events sediment samples were collected with automatic sediment sampler.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 1,910 mg/L November 11, 2003; Minimum daily mean, 1 mg/L several days during several years.
SEDIMENT LOADS: Maximum daily mean, 10,200 tons (9,250 tonnes) November 11, 2003; Minimum daily mean, 0.01 ton (0.01 tonne) March 19, 2001 and January 22, 2003.

EXTREMES FOR CURRENT YEAR 2004.--
SEDIMENT CONCENTRATION: Maximum daily mean, 1,910 mg/L November 11, 2003; Minimum daily mean, 1 mg/L several days.
SEDIMENT LOADS: Maximum daily mean, 10,200 tons (9,250 tonnes) November 11, 2003; Minimum daily mean, 0.02 ton (0.02 tonne) several days.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER			NOVEMBER			DECEMBER		
1	25	19	4.4	32	9	0.79	42	2	0.23
2	15	10	0.45	27	8	0.58	35	2	0.19
3	15	9	0.35	44	18	3.3	32	2	0.20
4	14	9	0.32	33	12	1.1	31	3	0.22
5	12	8	0.28	26	7	0.49	29	3	0.23
6	12	8	0.26	29	6	0.47	150	92	53
7	e72	e24	e4.7	44	35	12	374	247	654
8	e33	e10	e0.90	55	88	29	236	84	56
9	e19	e9	e0.35	40	16	1.8	135	59	22
10	e273	e24	e26	31	11	0.92	93	41	10
11	e88	e56	e15	28	9	0.72	71	24	4.7
12	e42	e13	e1.9	176	261	320	59	9	1.5
13	e28	e10	e0.76	1,860	1,910	10,200	48	6	0.81
14	e43	e13	e2.4	493	108	246	40	5	0.58
15	e97	e12	e3.5	275	24	26	35	5	0.43
16	62	27	4.7	393	32	42	31	4	0.31
17	44	13	1.6	212	10	5.6	28	6	0.44
18	33	10	0.90	233	301	397	25	3	0.22
19	26	8	0.53	182	19	9.5	22	2	0.13
20	e103	e12	e3.5	133	15	5.5	21	1	0.07
21	e105	e12	e3.5	103	12	3.5	38	16	4.9
22	61	32	5.7	95	9	2.4	23	4	0.28
23	37	13	1.3	211	163	252	19	2	0.11
24	28	10	0.76	177	30	14	27	8	1.1
25	24	7	0.43	127	2	0.68	21	2	0.15
26	31	11	1.2	97	2	0.52	18	2	0.08
27	37	15	2.4	80	2	0.43	18	2	0.12
28	52	25	5.9	66	2	0.36	25	3	0.22
29	39	11	1.3	56	2	0.30	38	4	0.48
30	41	13	1.9	49	2	0.26	44	5	0.60
31	40	12	1.3	---	---	---	28	4	0.27
TOTAL	1,551	---	98.49	5,407	---	11,577.22	1,836	---	813.57

50025155 RIO SALIENTE AT COABEY NEAR JAYUYA, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	24	2	0.15	15	4	0.14	47	2	0.25
2	30	2	0.15	15	4	0.18	22	2	0.12
3	28	2	0.12	15	5	0.21	17	2	0.10
4	24	1	0.09	15	6	0.24	14	3	0.12
5	25	1	0.07	14	6	0.21	12	4	0.13
6	25	1	0.07	13	5	0.19	11	5	0.15
7	23	1	0.06	14	5	0.18	11	6	0.17
8	23	1	0.06	13	4	0.14	10	7	0.18
9	28	1	0.07	13	3	0.11	10	5	0.15
10	43	14	4.0	13	2	0.08	11	3	0.10
11	55	24	4.1	12	3	0.09	13	1	0.05
12	49	4	0.53	11	4	0.12	9.6	1	0.03
13	35	2	0.15	11	5	0.15	9.0	1	0.02
14	34	1	0.11	11	6	0.17	9.1	1	0.02
15	31	2	0.15	11	5	0.16	9.0	1	0.02
16	27	2	0.14	11	5	0.14	8.3	1	0.02
17	26	2	0.14	11	4	0.12	e8.1	e1	e0.03
18	26	2	0.14	11	3	0.09	e9.2	e1	e0.06
19	26	2	0.14	10	2	0.06	e11	e3	e0.11
20	28	5	0.63	10	1	0.03	e10	e3	e0.11
21	32	9	0.87	15	1	0.05	e11	e3	e0.11
22	25	3	0.23	13	2	0.06	e8.8	e1	e0.02
23	24	2	0.16	11	2	0.06	e8.6	e1	e0.02
24	22	2	0.11	e37	e2	e0.20	e13	e1	e0.05
25	20	1	0.06	22	6	0.57	e19	e2	e0.10
26	19	1	0.06	18	1	0.05	e20	e2	e0.12
27	18	1	0.07	19	1	0.06	e24	e2	e0.12
28	17	2	0.07	12	2	0.05	e103	e35	e17
29	17	2	0.08	54	2	0.29	e74	e37	e14
30	16	2	0.09	---	---	---	e53	e12	e2.2
31	16	3	0.12	---	---	---	e37	e5	e0.46
TOTAL	836	---	12.99	450	---	4.20	632.7	---	36.14
		APRIL			MAY			JUNE	
1	e37	e6	e0.53	24	2	0.13	44	3	0.39
2	e26	e2	e0.13	23	2	0.12	39	3	0.30
3	e21	e2	e0.13	25	2	0.13	36	3	0.25
4	e28	e2	e0.13	32	8	0.96	38	2	0.23
5	e32	e3	e0.25	33	6	0.53	38	2	0.22
6	e45	e3	e0.37	29	3	0.26	e31	e4	e0.34
7	e59	e15	e2.4	32	6	0.60	e27	e7	e0.50
8	e62	e1	e0.39	194	692	586	e25	e9	e0.63
9	e43	e1	e0.27	144	741	279	e24	e8	e0.52
10	e38	e1	e0.24	93	122	32	e25	e5	e0.37
11	e31	e1	e0.22	90	3	0.67	23	3	0.17
12	e26	e1	e0.21	87	3	0.60	e22	e1	e0.07
13	e23	e1	e0.20	68	2	0.42	e21	e1	0.08
14	e21	e1	e0.20	154	274	259	e20	e2	e0.10
15	e20	e1	e0.19	102	129	36	e20	e2	e0.11
16	e22	e1	e0.19	72	70	14	e19	e2	e0.10
17	e27	e1	e0.20	55	15	2.4	e19	e2	e0.08
18	74	1	0.20	49	2	0.30	e18	e1	e0.05
19	100	35	17	42	3	0.29	e17	e1	e0.05
20	59	12	2.2	45	3	0.37	e17	e1	e0.05
21	43	2	0.20	42	4	0.41	e17	e1	e0.05
22	e35	e2	e0.14	41	4	0.48	e16	e1	e0.04
23	34	1	0.11	e99	e45	e15	15	1	0.04
24	44	153	31	96	48	13	15	1	0.04
25	40	17	1.9	117	62	26	14	1	0.04
26	32	5	0.46	e72	e5	e1.1	14	2	0.09
27	29	2	0.12	e223	e311	e936	14	4	0.16
28	e26	e2	e0.14	e110	e60	e21	13	6	0.21
29	e25	e2	e0.14	65	15	2.8	14	6	0.21
30	24	2	0.13	49	6	0.79	13	5	0.19
31	---	---	---	e43	e5	e0.54	---	---	---
TOTAL	1,126	---	59.99	2,350	---	2,230.90	668	---	5.68

50025155 RIO SALIENTE AT COABEY NEAR JAYUYA, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	15	5	0.19	11	8	0.22	35	3	0.28
2	14	4	0.17	23	13	1.4	29	3	0.22
3	13	4	0.14	22	8	0.76	23	3	0.16
4	12	4	0.13	20	4	0.30	25	2	0.16
5	12	3	0.11	18	3	0.16	21	2	0.12
6	11	3	0.09	16	5	0.22	34	13	2.6
7	17	2	0.11	13	7	0.23	37	13	2.2
8	14	2	0.07	12	8	0.26	25	5	0.38
9	11	1	0.04	11	10	0.30	20	3	0.16
10	11	1	0.03	11	11	0.33	17	3	0.13
11	11	1	0.03	11	13	0.37	24	3	0.17
12	16	1	0.04	14	14	0.53	21	2	0.14
13	17	1	0.05	13	14	0.50	17	2	0.11
14	14	1	0.04	28	50	8.3	18	2	0.10
15	12	1	0.03	18	11	0.58	456	370	1,440
16	11	1	0.03	13	8	0.29	738	698	2,110
17	11	1	0.03	11	7	0.21	202	65	37
18	16	1	0.04	11	5	0.16	164	59	27
19	13	1	0.03	33	36	13	126	30	10
20	11	2	0.07	17	20	0.94	101	17	4.7
21	10	5	0.14	12	16	0.50	89	5	1.3
22	9.9	3	0.09	58	213	124	79	3	0.68
23	24	12	2.3	29	11	0.91	88	17	5.1
24	15	3	0.15	31	8	0.69	72	3	0.58
25	13	2	0.05	25	8	0.52	66	3	0.54
26	12	1	0.04	18	7	0.35	62	3	0.50
27	11	1	0.03	17	6	0.30	59	3	0.48
28	59	146	127	17	6	0.26	57	3	0.46
29	24	6	0.53	31	11	1.7	55	3	0.45
30	15	4	0.14	24	3	0.19	57	3	0.46
31	12	6	0.18	21	3	0.17	---	---	---
TOTAL	466.9	---	132.12	609	---	158.65	2,817	---	3,646.18
YEAR	18,749.6	18,776.13							

e Estimated

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

SILT AND CLAY PERCENT OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
MAY					
08...	1540	2,150	76	359	2,080

50025850 RIO JAUCA AT PASO PALMA, PR

LOCATION.--Lat 18°12'50", long 66°38'44", Hydrologic Unit 21010001, 5.13 mi (8.2 km) southeast from Utuado Plaza, 4.5 mi (7.24 km) south of Lago Caonillas Dam and 6.15 mi (9.89 km) northeast from Adjuntas Plaza.

DRAINAGE AREA.--6.89 mi^2 (17.8 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 2000 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,197 ft (365 m), from topographic map.

REMARKS.--Records fair except those from November 15 through December 10 and estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e9.9	149	56	19	e12	11	16	8.9	22	20	9.1	18
2	e15	45	54	20	e13	9.0	9.7	9.1	21	16	9.1	25
3	e26	26	52	19	e12	8.3	8.9	11	20	13	12	19
4	e19	17	51	19	11	7.9	12	11	19	11	16	21
5	e11	13	49	19	10	7.7	11	11	18	11	14	15
6	e20	15	127	19	10	7.6	10	9.2	18	10	13	14
7	e38	12	233	19	10	7.5	17	15	18	20	10	60
8	e24	14	96	18	10	7.3	16	90	17	15	9.5	25
9	16	11	51	19	10	7.3	16	52	19	11	9.2	17
10	105	12	42	19	10	7.3	14	31	20	10	9.1	14
11	53	13	37	20	9.6	7.3	11	28	15	11	11	13
12	30	178	34	24	9.3	7.1	9.5	29	15	21	15	14
13	22	1,400	34	61	9.2	7.0	9.2	24	14	19	13	14
14	53	716	34	37	9.1	7.2	8.4	52	22	19	16	12
15	34	392	33	25	9.1	7.3	8.1	44	18	16	13	348
16	31	320	31	20	8.9	6.8	8.8	31	14	13	9.7	462
17	36	235	29	18	9.0	6.8	14	25	14	11	8.7	85
18	28	254	28	17	8.8	7.6	12	22	14	17	8.3	71
19	20	181	27	17	8.5	7.9	26	22	14	14	8.2	41
20	19	144	27	16	8.4	7.8	19	28	13	11	10	33
21	32	123	28	16	10	7.8	12	23	13	11	7.7	29
22	26	119	27	15	9.1	6.8	12	21	13	10	11	26
23	19	140	25	16	17	6.7	12	33	13	15	17	29
24	16	105	28	15	14	8.4	21	29	12	13	16	24
25	14	85	22	14	12	8.9	14	102	12	12	17	22
26	13	76	21	14	9.2	8.0	12	36	12	16	14	22
27	19	70	21	13	11	7.9	11	56	11	14	14	22
28	49	65	21	13	8.5	11	9.9	43	11	11	20	22
29	36	61	21	13	11	25	9.5	31	16	11	15	22
30	125	59	21	14	---	15	9.1	27	14	10	13	26
31	56	---	20	13	---	14	---	24	---	9.5	11	---
TOTAL	1,014.9	5,050	1,380	601	299.7	273.2	379.1	978.2	472	421.5	379.6	1,565
MEAN	32.7	168	44.5	19.4	10.3	8.81	12.6	31.6	15.7	13.6	12.2	52.2
MAX	125	1,400	233	61	17	25	26	102	22	21	20	462
MIN	9.9	11	20	13	8.4	6.7	8.1	8.9	11	9.5	7.7	12
AC-FT	2,010	10,020	2,740	1,190	594	542	752	1,940	936	836	753	3,100
CFSM	4.75	24.4	6.46	2.81	1.50	1.28	1.83	4.58	2.28	1.97	1.78	7.57
IN.	5.48	27.27	7.45	3.24	1.62	1.48	2.05	5.28	2.55	2.28	2.05	8.45

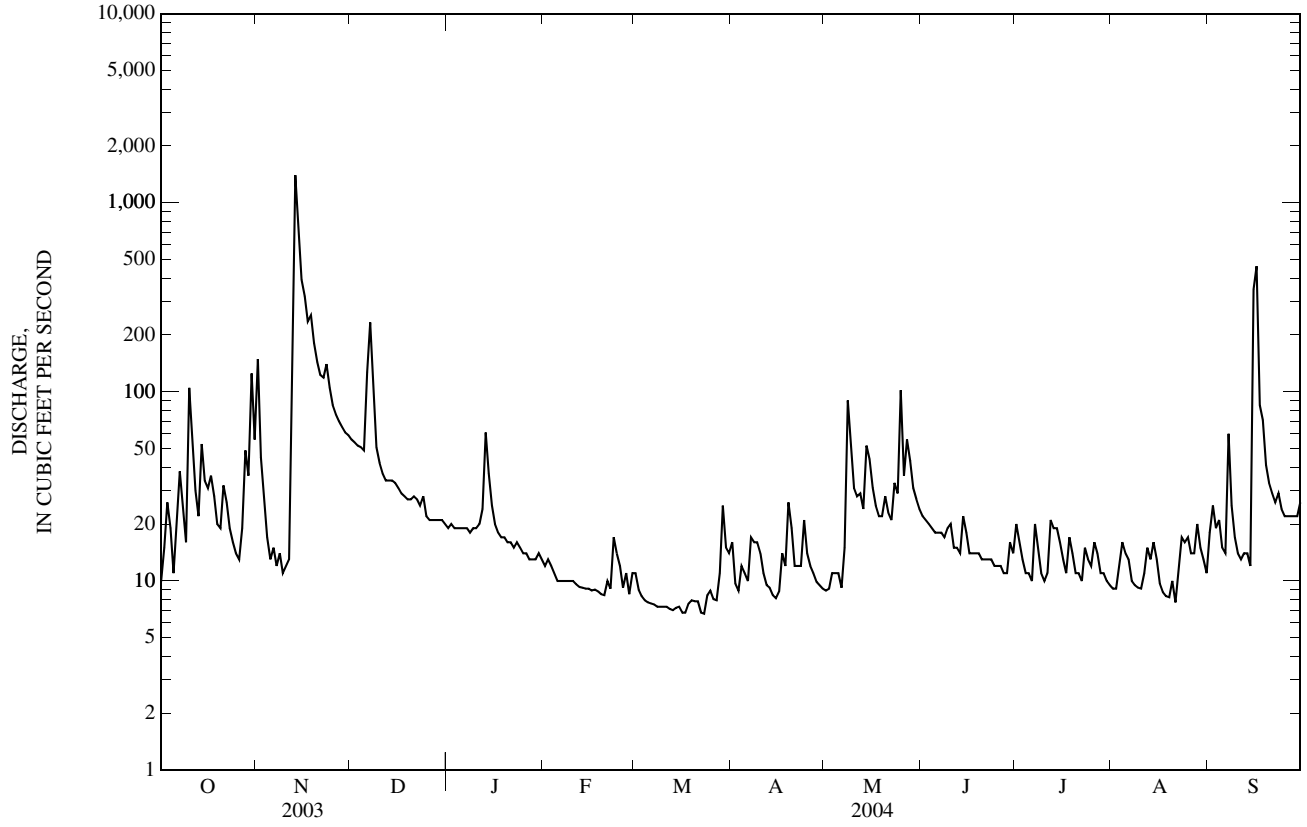
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2004, BY WATER YEAR (WY)

MEAN	29.1	59.4	22.4	11.0	8.65	6.71	17.2	20.8	9.97	8.93	11.8	32.1
MAX	45.9	168	44.5	19.4	11.8	8.81	32.1	31.6	15.7	13.7	18.9	52.2
(WY)	(2001)	(2004)	(2004)	(2004)	(2003)	(2004)	(2002)	(2004)	(2004)	(2001)	(2000)	(2004)
MIN	18.6	14.8	10.7	6.34	5.04	5.36	6.60	14.2	7.83	5.30	4.51	9.72
(WY)	(2002)	(2003)	(2001)	(2001)	(2001)	(2001)	(2001)	(2002)	(2003)	(2003)	(2003)	(2002)

50025850 RIO JAUCA AT PASO PALMA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2000 - 2004	
ANNUAL TOTAL	10,301.6		12,814.2			
ANNUAL MEAN	28.2		35.0		19.5	
HIGHEST ANNUAL MEAN					35.0	2004
LOWEST ANNUAL MEAN					11.7	2003
HIGHEST DAILY MEAN	1,400	Nov 13	1,400	Nov 13	1,400	Nov 13, 2003
LOWEST DAILY MEAN	3.5	Aug 10	6.7	Mar 23	3.5	Mar 17, 2001
ANNUAL SEVEN-DAY MINIMUM	3.7	Aug 19	7.1	Mar 11	3.6	Mar 14, 2001
MAXIMUM PEAK FLOW			4,120	Nov 13	4,120	Nov 13, 2003
MAXIMUM PEAK STAGE			9.60	Nov 13	9.60	Nov 13, 2003
INSTANTANEOUS LOW FLOW			6.2	Mar 23	3.2	Mar 17, 2001
ANNUAL RUNOFF (AC-FT)	20,430		25,420		14,150	
ANNUAL RUNOFF (CFSM)	4.10		5.08		2.84	
ANNUAL RUNOFF (INCHES)	55.62		69.19		38.52	
10 PERCENT EXCEEDS	52		55		33	
50 PERCENT EXCEEDS	8.1		16		11	
90 PERCENT EXCEEDS	4.3		8.9		5.3	

e Estimated



50025850 RIO JAUCA AT PASO PALMA, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 2000 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: October 2000 to current year.

INSTRUMENTATION.--USDH-48 and automatic sediment samplers since 2000.

REMARKS.--Sediment samples were collected by a local observer on a weekly basis. During high flow events sediment samples were collected with automatic sediment sampler.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 3,640 mg/L November 13, 2003; Minimum daily mean, 1 mg/L several years.
SEDIMENT LOADS: Maximum daily mean, 17,200 tons (15,600 tonnes) November 23, 2003; Minimum daily mean, 0.01 ton (0.01 tonne) several days during water year 2001.

EXTREMES FOR CURRENT YEAR 2004.--
SEDIMENT CONCENTRATION: Maximum daily mean, 3,640 mg/L November 13, 2003; Minimum daily mean, 1 mg/L March 15-16, 2004.
SEDIMENT LOADS: Maximum daily mean, 17,200 tons (15,600 tonnes) November 13, 2003; Minimum daily mean, 0.02 ton (0.02 tonne) March 16, 2004.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER			NOVEMBER			DECEMBER		
1	e9.9	---	e1.6	149	780	869	56	13	2.0
2	e15	---	e2.7	45	183	23	54	13	1.9
3	e26	---	e9.1	26	131	8.9	52	13	1.8
4	e19	---	e3.8	17	90	4.3	51	12	1.7
5	e11	---	e0.80	13	73	2.5	49	12	1.5
6	e20	---	e3.8	15	59	2.4	127	100	61
7	e38	---	e31	12	45	1.5	233	462	627
8	e24	---	e1.8	14	70	3.9	96	158	55
9	16	62	2.7	11	38	1.2	51	12	1.6
10	105	354	167	12	35	1.1	42	12	1.3
11	53	268	41	13	32	1.1	37	12	1.2
12	30	181	15	178	704	837	34	13	1.2
13	22	158	9.6	1,400	3,640	17,200	34	15	1.3
14	53	541	307	716	1,020	2,270	34	23	2.1
15	34	285	34	392	420	628	33	33	3.0
16	31	167	14	320	483	492	31	41	3.4
17	36	256	31	235	43	28	29	23	1.8
18	28	112	9.1	254	307	368	28	18	1.4
19	20	69	3.8	181	54	26	27	17	1.2
20	19	46	2.3	144	46	18	27	16	1.2
21	32	63	9.5	123	43	14	28	19	1.5
22	26	26	1.8	119	60	21	27	23	1.6
23	19	26	1.3	140	347	209	25	25	1.7
24	16	25	1.1	105	38	12	28	89	9.5
25	14	24	0.92	85	14	3.1	22	69	4.2
26	13	22	0.80	76	13	2.7	21	65	3.7
27	19	76	8.8	70	13	2.5	21	61	3.4
28	49	425	132	65	14	2.4	21	59	3.3
29	36	141	20	61	14	2.3	21	58	3.3
30	125	478	478	59	14	2.2	21	56	3.2
31	56	363	57	---	---	---	20	54	2.9
TOTAL	1,014.9	---	1,402.32	5,050	---	23,057.1	1,380	---	810.9

50025850 RIO JAUCA AT PASO PALMA, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	19	52	2.7	e12	e18	e0.68	11	6	0.17
2	20	50	2.7	e13	e18	e0.71	9.0	5	0.12
3	19	49	2.6	e12	e17	e0.60	8.3	4	0.10
4	19	47	2.4	11	16	0.46	7.9	4	0.08
5	19	45	2.3	10	15	0.44	7.7	3	0.06
6	19	43	2.2	10	15	0.41	7.6	3	0.06
7	19	41	2.1	10	15	0.41	7.5	3	0.05
8	18	40	2.0	10	15	0.40	7.3	3	0.05
9	19	38	2.0	10	14	0.39	7.3	2	0.05
10	19	36	1.9	10	14	0.38	7.3	2	0.04
11	20	34	1.8	9.6	14	0.35	7.3	2	0.04
12	24	32	2.1	9.3	13	0.34	7.1	2	0.04
13	61	367	302	9.2	13	0.32	7.0	2	0.03
14	37	124	16	9.1	13	0.31	7.2	2	0.03
15	25	41	3.1	9.1	12	0.31	7.3	1	0.03
16	20	26	1.4	8.9	12	0.29	6.8	1	0.02
17	18	24	1.2	9.0	12	0.29	6.8	2	0.04
18	17	21	0.97	8.8	12	0.28	7.6	3	0.06
19	17	20	0.93	8.5	11	0.26	7.9	3	0.06
20	16	20	0.88	8.4	11	0.25	7.8	3	0.06
21	16	20	0.86	10	11	0.29	7.8	4	0.08
22	15	20	0.82	9.1	10	0.25	6.8	5	0.08
23	16	19	0.83	17	43	5.7	6.7	5	0.10
24	15	19	0.79	14	25	1.1	8.4	6	0.14
25	14	19	0.74	12	16	0.52	8.9	7	0.17
26	14	19	0.70	9.2	13	0.32	8.0	8	0.17
27	13	19	0.68	11	10	0.29	7.9	9	0.19
28	13	19	0.66	8.5	7	0.17	11	9	0.27
29	13	19	0.68	11	6	0.19	25	100	16
30	14	19	0.69	---	---	---	15	22	0.93
31	13	18	0.66	---	---	---	14	37	2.9
TOTAL	601	---	361.39	299.7	---	16.71	273.2	---	22.22
		APRIL			MAY			JUNE	
1	16	52	3.0	8.9	2	0.06	22	6	0.37
2	9.7	25	0.65	9.1	2	0.05	21	5	0.27
3	8.9	20	0.48	11	2	0.06	20	8	0.43
4	12	18	0.57	11	2	0.06	19	12	0.62
5	11	18	0.53	11	2	0.06	18	15	0.73
6	10	17	0.47	9.2	2	0.05	18	13	0.61
7	17	49	4.2	15	19	1.4	18	9	0.46
8	16	48	2.4	90	504	486	17	6	0.28
9	16	46	2.7	52	280	41	19	42	4.9
10	14	31	1.3	31	115	9.9	20	33	2.4
11	11	21	0.59	28	85	6.4	15	7	0.31
12	9.5	18	0.46	29	76	6.1	15	5	0.21
13	9.2	15	0.38	24	68	4.4	14	5	0.19
14	8.4	14	0.31	52	395	113	22	57	9.0
15	8.1	12	0.27	44	267	32	18	20	1.0
16	8.8	11	0.26	31	227	19	14	12	0.45
17	14	9	0.41	25	188	12	14	8	0.31
18	12	4	0.11	22	148	8.8	14	6	0.23
19	26	82	12	22	109	6.5	14	3	0.13
20	19	54	3.1	28	85	7.2	13	3	0.10
21	12	35	1.2	23	63	3.9	13	3	0.09
22	12	33	1.1	21	61	3.5	13	2	0.08
23	12	32	1.0	33	81	7.9	13	2	0.07
24	21	164	19	29	66	5.2	12	3	0.10
25	14	42	1.6	102	991	688	12	4	0.13
26	12	25	0.80	36	176	18	12	5	0.16
27	11	10	0.30	56	322	135	11	5	0.14
28	9.9	7	0.19	43	141	19	11	4	0.13
29	9.5	6	0.14	31	14	1.2	16	49	4.0
30	9.1	4	0.10	27	11	0.79	14	84	3.2
31	---	---	---	24	9	0.55	---	---	---
TOTAL	379.1	---	59.62	978.2	---	1,637.08	472	---	31.10

50025850 RIO JAUCA AT PASO PALMA, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	20	112	9.2	9.1	12	0.30	18	67	5.7
2	16	220	9.9	9.1	12	0.28	25	178	21
3	13	129	4.6	12	11	0.35	19	51	3.4
4	11	63	1.9	16	10	0.44	21	68	6.2
5	11	14	0.40	14	10	0.39	15	44	1.8
6	10	8	0.21	13	9	0.33	14	42	1.6
7	20	75	8.5	10	9	0.24	60	618	565
8	15	27	1.4	9.5	8	0.21	25	186	13
9	11	9	0.28	9.2	8	0.19	17	35	1.7
10	10	9	0.25	9.1	7	0.18	14	10	0.38
11	11	9	0.26	11	7	0.20	13	10	0.35
12	21	57	5.8	15	38	2.6	14	9	0.36
13	19	117	7.5	13	24	0.94	14	9	0.34
14	19	126	7.2	16	64	4.7	12	9	0.30
15	16	41	1.9	13	47	1.7	348	924	2,660
16	13	12	0.45	9.7	15	0.39	462	982	1,380
17	11	10	0.31	8.7	10	0.23	85	91	25
18	17	45	4.3	8.3	10	0.22	71	93	41
19	14	17	0.65	8.2	10	0.21	41	13	1.4
20	11	13	0.38	10	9	0.26	33	9	0.78
21	11	9	0.27	7.7	9	0.19	29	7	0.59
22	10	9	0.26	11	35	2.2	26	8	0.58
23	15	55	3.8	17	69	3.3	29	9	0.73
24	13	20	0.75	16	52	2.2	24	11	0.68
25	12	15	0.49	17	78	4.9	22	12	0.70
26	16	40	2.9	14	63	2.4	22	13	0.75
27	14	19	0.80	14	57	2.8	22	14	0.80
28	11	14	0.44	20	103	7.2	22	15	0.87
29	11	14	0.39	15	57	2.4	22	16	0.94
30	10	13	0.36	13	33	1.2	26	15	1.1
31	9.5	13	0.32	11	32	0.95	---	---	---
TOTAL	421.5	---	76.17	379.6	---	44.10	1,565	---	4,737.05
YEAR	12,814.2	32,255.76							

e Estimated

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

SILT AND CLAY PERCENT OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
SEP					
15...	2255	1,200	58	2,840	9,190

50025850 RIO JAUCA AT PASO PALMA, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, falldia nat wat percent <.002mm (70326)	Suspnd. sediment, falldia nat wat percent <.004mm (70327)	Suspnd. sediment, falldia nat wat percent <.008mm (70328)	Suspnd. sediment, falldia nat wat percent <.016mm (70329)	Suspnd. sediment, falldia nat wat percent <.031mm (70330)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspnd. sediment, sieve diametr percent <.125mm (70332)	Suspnd. sediment, sieve diametr percent <.25mm (70333)	Suspnd. sediment, sieve diametr percent <.5 mm (70334)	Suspnd. sediment, sieve diametr percent <1 mm (70335)	Suspended sediment concentration mg/L (80154)
NOV													
12...	1510	760	25	37	49	59	69	72	86	94	98	99	3,270
13...	0450	2,300	24	30	39	48	55	61	74	87	96	99	8,700
SEP													
16...	0210	531	37	49	62	69	81	81	87	93	98	100	1,370

Date	Suspended sediment discharge, tons/d (80155)
NOV	
12...	6,700
13...	54,000
SEP	
16...	1,960

50026025 RIO CAONILLAS AT PASO PALMA, PR

LOCATION.--Lat 18°13'53", long 66°38'14", Hydrologic Unit 21010001, 3.5 mi (5.6 km) south of Lago Caonillas Dam, 4.8 mi (7.72 km) southeast of Utuado Plaza and 2.78 mi (4.47 km) east of Lago Viví Dam.

DRAINAGE AREA.--37.9 mi^2 (98.3 km^3).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 984 ft (300 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	361	128	83	51	75	102	51	106	61	44	80
2	78	236	122	91	52	51	73	51	99	57	43	86
3	102	196	e117	86	52	44	65	55	96	50	56	70
4	84	173	e111	80	49	40	80	e56	95	47	57	70
5	69	148	109	79	48	37	88	e59	89	47	52	60
6	84	156	267	78	47	35	118	53	83	44	51	64
7	142	156	576	75	48	34	152	107	85	62	46	111
8	123	171	363	72	46	33	162	816	80	58	44	72
9	82	156	224	76	46	32	115	357	79	45	42	53
10	392	148	e184	81	46	32	103	213	83	42	42	48
11	236	146	e173	99	46	33	78	187	72	44	e45	61
12	137	426	e167	112	44	31	68	176	67	67	e48	118
13	101	e2,150	e157	131	44	30	63	130	64	63	e46	130
14	270	e1,130	e152	111	44	30	59	359	72	59	e50	72
15	332	e652	e148	85	43	30	56	238	67	52	e47	1,560
16	267	e524	e137	71	42	28	60	167	62	46	e45	2,040
17	249	e421	e117	68	43	28	73	131	60	43	e41	516
18	194	e441	e106	68	42	30	69	118	57	66	e40	358
19	145	e327	100	68	41	33	181	109	55	53	e41	254
20	195	e269	96	68	41	31	132	109	53	41	e42	186
21	313	224	103	78	52	33	84	103	53	39	e39	159
22	223	219	e106	69	48	28	73	98	53	37	e44	141
23	160	300	e96	69	55	28	68	164	51	68	e53	149
24	136	274	100	64	64	35	94	167	49	54	e51	128
25	124	218	97	60	69	46	79	279	49	43	e53	115
26	131	183	87	59	48	49	67	151	49	47	53	111
27	139	163	84	58	53	54	62	440	47	44	54	104
28	234	150	93	57	41	298	56	293	47	100	63	101
29	271	141	99	56	70	229	53	175	52	76	100	98
30	364	134	105	55	---	153	51	142	54	51	74	102
31	271	---	89	53	---	107	---	119	---	46	62	---
TOTAL	5,715	10,393	4,613	2,360	1,415	1,777	2,584	5,673	2,028	1,652	1,568	7,217
MEAN	184	346	149	76.1	48.8	57.3	86.1	183	67.6	53.3	50.6	241
MAX	392	2,150	576	131	70	298	181	816	106	100	100	2,040
MIN	67	134	84	53	41	28	51	51	47	37	39	48
AC-FT	11,340	20,610	9,150	4,680	2,810	3,520	5,130	11,250	4,020	3,280	3,110	14,310
CFSM	4.86	9.13	3.92	2.01	1.29	1.51	2.27	4.82	1.78	1.40	1.33	6.34
IN.	5.60	10.19	4.52	2.31	1.39	1.74	2.53	5.56	1.99	1.62	1.54	7.08

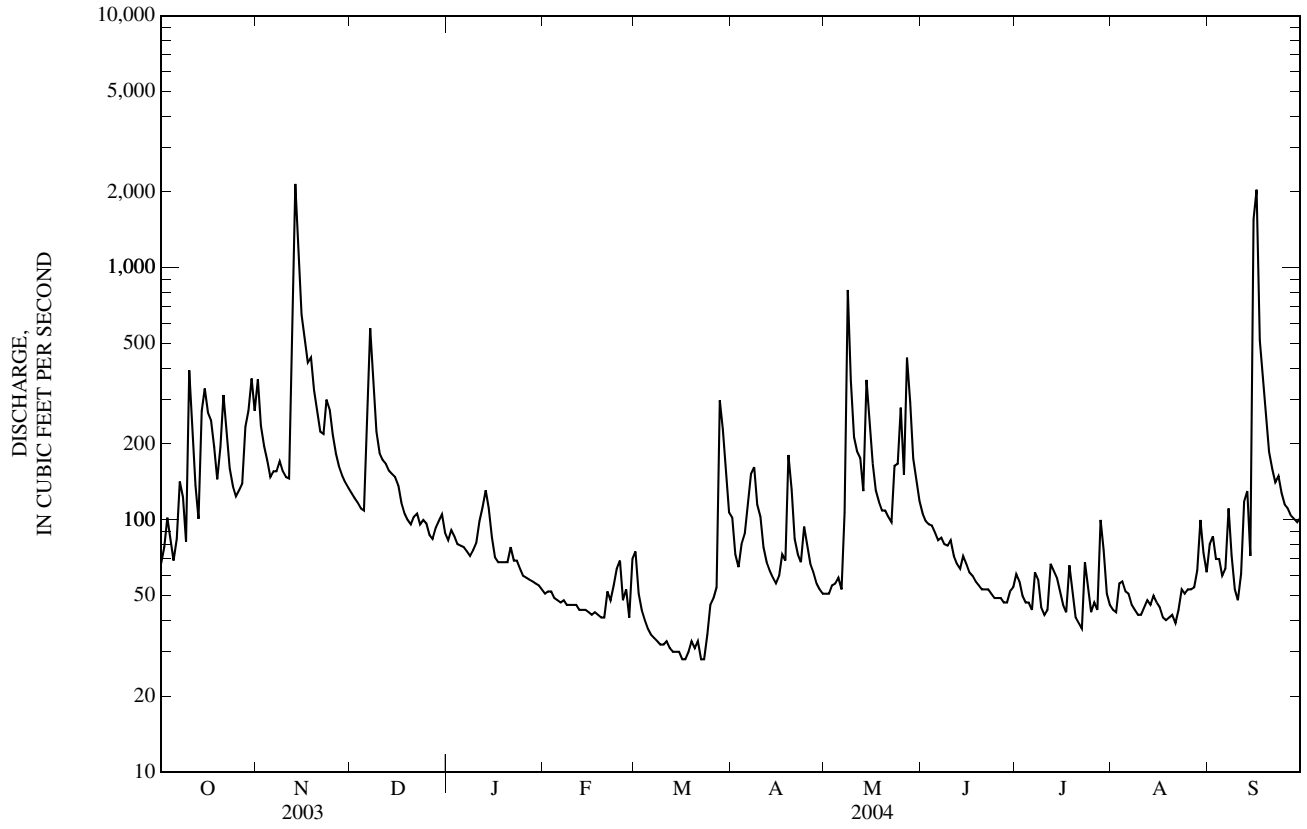
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2004, BY WATER YEAR (WY)

MEAN	150	152	80.1	55.7	48.5	39.0	78.7	98.0	65.4	49.1	74.8	248
MAX	248	346	149	89.8	86.0	57.3	235	183	161	117	156	815
(WY)	(1999)	(2004)	(2004)	(1997)	(1996)	(2004)	(2002)	(2004)	(1999)	(1996)	(1998)	(1998)
MIN	63.7	38.7	21.0	19.6	24.0	23.9	17.0	29.1	16.1	15.5	24.1	33.2
(WY)	(2002)	(2003)	(1998)	(1998)	(2001)	(2003)	(1997)	(1997)	(1997)	(1997)	(2003)	(1997)

50026025 RIO CAONILLAS AT PASO PALMA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1996 - 2004	
ANNUAL TOTAL	33,527		46,995			
ANNUAL MEAN	91.9		128		94.8	
HIGHEST ANNUAL MEAN					137	1998
LOWEST ANNUAL MEAN					46.8	2003
HIGHEST DAILY MEAN	2,150	Nov 13	2,150	Nov 13	13,000	Sep 22, 1998
LOWEST DAILY MEAN	14	Aug 24	28	Mar 16	10	Jul 4, 1997
ANNUAL SEVEN-DAY MINIMUM	16	Aug 18	30	Mar 12	11	Jul 1, 1997
MAXIMUM PEAK FLOW			10,000	Nov 13	36,000	Sep 22, 1998
MAXIMUM PEAK STAGE			18.78	Nov 13	31.15	Sep 22, 1998
INSTANTANEOUS LOW FLOW			26	Mar 23	9.5	Jul 6, 1997
ANNUAL RUNOFF (AC-FT)	66,500		93,210		68,670	
ANNUAL RUNOFF (CFSM)	2.42		3.38		2.50	
ANNUAL RUNOFF (INCHES)	32.87		46.08		33.94	
10 PERCENT EXCEEDS	213		241		186	
50 PERCENT EXCEEDS	39		74		52	
90 PERCENT EXCEEDS	18		42		22	

e Estimated



50026025 RIO CAONILLAS AT PASO PALMA, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORDS.--October 1995 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: October 1995 to current year.

INSTRUMENTATION.--USDH-48 sediment sampler and automatic sediment sampler since 1996.

REMARKS.--Sediment samples were collected by a local observer on a weekly basis. During high flow events sediments samples were collected with automatic sediment sampler.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 24,800 mg/L September 22, 1998; Minimum daily mean, 1 mg/L several years.
SEDIMENT LOADS: Maximum daily mean, e952,000 tons (e864,000 tonnes) September 22, 1998; Minimum daily mean, 0.04 ton (0.03 tonne) December 29-30, 1998.

EXTREMES FOR CURRENT YEAR 2004.
SEDIMENT CONCENTRATION: Maximum daily mean, 9,530 mg/L November 23, 2003; Minimum daily mean, 3 mg/L February 15, 2004.
SEDIMENT LOADS: Maximum daily mean, 110,000 tons (9,980 tonnes) November 13, 2003; Minimum daily mean, 0.32 ton (0.29 tonne) March 23, 2004.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		OCTOBER			NOVEMBER			DECEMBER	
1	67	37	9.6	361	750	1,520	128	14	4.8
2	78	47	11	236	122	83	122	14	4.6
3	102	534	349	196	139	83	e117	e14	e4.4
4	84	84	20	173	82	39	e111	e14	e4.1
5	69	56	11	148	72	29	109	13	3.9
6	84	81	23	156	96	43	267	1,460	1,430
7	142	234	182	156	96	43	576	2,810	7,140
8	123	113	40	171	129	68	363	640	757
9	82	120	27	156	91	39	224	113	69
10	392	527	907	148	94	39	e184	---	e39
11	236	116	84	146	76	30	e173	---	e39
12	137	20	7.6	426	624	1,470	e167	---	e39
13	101	17	4.5	e2,150	e8,050	e110,000	e157	---	e39
14	270	548	1,680	e1,130	e1,890	e5,780	e152	---	e29
15	332	842	817	e652	---	e2,930	e148	---	e29
16	267	323	252	e524	---	e2,360	e137	---	e6.1
17	249	289	285	e421	---	e907	e117	---	e4.6
18	194	107	66	e441	---	e1,000	e106	e16	e4.5
19	145	16	6.3	e327	---	e817	100	12	3.2
20	195	184	204	e269	e224	e166	96	8	2.0
21	313	402	482	224	133	80	103	10	3.2
22	223	183	119	219	249	164	e106	e28	e8.5
23	160	91	39	300	9,530	16,000	e96	e18	e4.6
24	136	63	23	274	1,690	1,390	100	21	6.2
25	124	36	12	218	223	133	97	18	4.8
26	131	45	19	183	62	31	87	15	3.5
27	139	57	29	163	43	19	84	14	3.3
28	234	124	105	150	35	14	93	15	3.9
29	271	424	748	141	27	10	99	15	4.2
30	364	922	1,640	134	17	6.1	105	20	5.6
31	271	509	415	---	---	---	89	17	4.1
TOTAL	5,715	---	8,617.0	10,393	---	145,293.1	4,613	---	9,704.1

50026025 RIO CAONILLAS AT PASO PALMA, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	83	16	3.6	51	7	0.99	75	34	7.3
2	91	29	7.2	52	7	0.99	51	22	3.1
3	86	30	6.9	52	7	1.0	44	17	2.1
4	80	24	5.2	49	9	1.2	40	14	1.5
5	79	19	4.0	48	8	1.0	37	11	1.1
6	78	13	2.8	47	7	0.88	35	7	0.68
7	75	9	1.9	48	6	0.76	34	5	0.45
8	72	9	1.7	46	5	0.61	33	8	0.72
9	76	10	2.1	46	4	0.56	32	12	1.0
10	81	15	3.4	46	6	0.78	32	14	1.2
11	99	40	11	46	8	0.94	33	13	1.2
12	112	60	20	44	7	0.78	31	11	0.90
13	131	473	461	44	5	0.63	30	9	0.70
14	111	103	53	44	4	0.49	30	7	0.60
15	85	24	5.9	43	3	0.38	30	8	0.64
16	71	14	2.7	42	4	0.46	28	8	0.65
17	68	14	2.5	43	5	0.59	28	23	1.8
18	68	13	2.4	42	6	0.67	30	29	2.3
19	68	13	2.4	41	6	0.64	33	20	1.9
20	68	13	2.4	41	6	0.63	31	12	1.0
21	78	13	2.7	52	5	0.76	33	6	0.50
22	69	12	2.2	48	5	0.67	28	5	0.35
23	69	11	2.0	55	44	13	28	4	0.32
24	64	10	1.7	64	109	22	35	4	0.38
25	60	9	1.5	69	111	25	46	4	0.50
26	59	10	1.5	48	12	1.5	49	4	0.53
27	58	10	1.6	53	11	1.6	54	7	1.3
28	57	11	1.6	41	10	1.2	298	1,010	1,290
29	56	10	1.5	70	34	8.3	229	3,460	4,530
30	55	9	1.3	---	---	---	153	434	215
31	53	8	1.1	---	---	---	107	197	65
TOTAL	2,360	---	620.8	1,415	---	89.01	1,777	---	6,134.72
		APRIL			MAY			JUNE	
1	102	131	41	51	7	0.97	106	8	2.2
2	73	64	13	51	6	0.85	99	7	1.9
3	65	36	6.3	55	6	0.89	96	8	2.0
4	80	28	8.7	e56	---	e0.89	95	8	2.1
5	88	28	7.8	e59	---	e2.5	89	9	2.1
6	118	732	475	53	12	1.8	83	9	2.0
7	152	891	589	107	761	500	85	8	1.8
8	162	723	432	816	2,720	21,700	80	7	1.5
9	115	53	19	357	235	273	79	6	1.3
10	103	36	11	213	65	38	83	6	1.3
11	78	21	4.5	187	71	42	72	5	1.1
12	68	19	3.6	176	56	28	67	5	0.95
13	63	18	3.0	130	34	12	64	5	0.85
14	59	16	2.5	359	2,010	4,020	72	13	3.9
15	56	15	2.2	238	276	190	67	24	4.4
16	60	13	2.1	167	85	39	62	17	2.9
17	73	11	2.3	131	65	23	60	19	3.1
18	69	10	1.9	118	45	14	57	22	3.4
19	181	2,350	2,510	109	27	8.0	55	25	3.7
20	132	392	220	109	31	9.8	53	25	3.6
21	84	25	5.7	103	38	11	53	19	2.7
22	73	22	4.2	98	35	9.3	53	11	1.6
23	68	21	3.9	164	93	54	51	10	1.4
24	94	107	37	167	44	20	49	32	4.2
25	79	122	27	279	694	887	49	55	7.3
26	67	32	5.6	151	46	19	49	77	10
27	62	7	1.3	440	1,870	11,300	47	100	13
28	56	9	1.3	293	162	154	47	123	16
29	53	10	1.4	175	20	9.7	52	146	21
30	51	8	1.2	142	11	4.3	54	152	22
31	---	---	---	119	8	2.7	---	---	---
TOTAL	2,584	---	4,443.5	5,673	---	39,375.70	2,028	---	145.30

50026025 RIO CAONILLAS AT PASO PALMA, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	61	140	24	44	12	1.4	80	118	25
2	57	91	14	43	14	1.7	86	103	24
3	50	49	6.7	56	17	2.6	70	71	14
4	47	20	2.5	57	19	3.0	70	48	8.9
5	47	16	2.0	52	16	2.2	60	29	4.7
6	44	13	1.6	51	11	1.6	64	35	7.5
7	62	52	12	46	7	0.85	111	310	235
8	58	12	1.9	44	4	0.46	72	137	28
9	45	9	1.1	42	6	0.68	53	90	13
10	42	9	0.98	42	9	0.99	48	77	10
11	44	8	0.92	e45	---	e0.85	61	84	17
12	67	25	5.5	e48	---	e0.85	118	491	503
13	63	49	8.4	e46	---	e0.85	130	1,380	949
14	59	43	6.9	e50	---	e1.6	72	106	23
15	52	42	6.0	e47	---	e0.85	1,560	4,570	56,000
16	46	42	5.2	e45	---	e0.46	2,040	5,930	37,500
17	43	41	4.8	e41	---	e0.46	516	1,440	2,220
18	66	95	32	e40	---	e0.46	358	646	647
19	53	42	7.2	e41	---	e0.46	254	277	192
20	41	9	0.97	e42	---	e0.46	186	212	107
21	39	18	1.9	e39	---	e0.46	159	149	64
22	37	20	2.0	e44	---	e0.46	141	62	24
23	68	47	15	e53	---	e0.46	149	33	15
24	54	15	2.7	e51	e63	e11	128	9	3.2
25	43	12	1.3	e53	e81	e15	115	10	3.0
26	47	21	2.8	53	76	11	111	10	2.9
27	44	33	3.8	54	69	10	104	8	2.2
28	100	408	388	63	78	14	101	6	1.6
29	76	41	12	100	234	113	98	6	1.5
30	51	17	2.3	74	164	35	102	6	1.7
31	46	14	1.7	62	125	21	---	---	---
TOTAL	1,652	---	578.17	1,568	---	254.16	7,217	---	98,647.2
YEAR	46,995	313,902.76							

e Estimated

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

SILT AND CLAY PERCENT OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
NOV 23...	2241	388	2	47,900	50,200
DEC 06...	1515	475	86	1,910	2,450

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspnd. sediment, sieve diametr percent <.125mm (70332)	Suspnd. sediment, sieve diametr percent <.25mm (70333)	Suspnd. sediment, sieve diametr percent <.5 mm (70334)	Suspnd. sediment, sieve diametr percent <1 mm (70335)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
NOV 23...	2056	545	2	2	3	12	86	82,800	122,000

50026050 RIO CAONILLAS ABOVE LAGO CAONILLAS NEAR JAYUYA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°13'26", long 66°38'22", 300 ft (91 m) off Highway 531, 700 ft (213 m) upstream from Lago Caonillas, 3.3 mi (5.3 km) northwest of Jayuya Plaza.

DRAINAGE AREA.--40.4 mi^2 (104.6 km^2).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
10...	1030	218	22	8.6	7.6	157	20.9	61	15.8	5.15	1.47	.5	9.11
FEB													
26...	1500	50	12	8.1	7.9	224	25.0	--	--	--	--	--	--
JUN													
17...	1135	71	2.6	7.0	7.8	223	26.1	--	--	--	--	--	--
SEP													
03...	1045	68	17	7.9	7.7	170	25.1	65	18.1	4.82	1.86	.5	9.72

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
DEC													
10...	53	8.21	<.2	23.7	11.4	--	107	62.8	<10	.20	<.01	1.00	<.01
FEB													
26...	72	--	--	--	--	<.1	--	--	--	<.20	.02	.880	<.01
JUN													
17...	66	--	--	--	--	--	--	--	<10	<.20	.01	.760	<.01
SEP													
03...	57	8.79	<.2	20.4	9.8	--	111	20.5	184	--	.02	--	--

Date	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)
DEC													
10...	1.2	5.3	.08	<10	380	E11,000	--	--	--	--	--	--	--
FEB													
26...	--	--	.06	--	390	5,700	--	--	--	--	--	--	--
JUN													
17...	--	--	.06	<10	280	E1,000	--	--	--	--	--	--	--
SEP													
03...	--	--	.15	20	--	35,000	<2	35.5	29	<.2	1.2	M	<.01

50026050 RIO CAONILLAS ABOVE LAGO CAONILLAS NEAR JAYUYA, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC									
10...	--	--	--	--	--	--	--	--	--
FEB									
26...	--	--	--	<.02	--	--	--	<.10	<16
JUN									
17...	--	--	--	--	--	--	--	--	--
SEP									
03...	2,770	1.5	140	.03	<3	<.3	12	<.40	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50026140 LAGO CAONILLAS AT DAMSITE NEAR UTUADO, PR

LOCATION.--Lat 18°16'43", long 66°39'24", Hydrologic Unit 21010001, at Lago Caonillas Dam on Río Caonillas, 2.9 mi (4.7 km) northeast of Plaza de Utuado, 0.3 mi (0.5 km) west from Iglesia Santa María del Monte Carmelo, and 1.8 mi (2.9 km) northwest from Hacienda Carbonell.

DRAINAGE AREA.--48.4 mi^2 (125.4 km^2).

PERIOD OF RECORD.--March 1991 to September 2001, May to September 2004. (March 16 to September 30, 1999, and October 2001 to April 2004, no records available due to repairs conducted by the Puerto Rico Electric and Power Authority; inspections data available at District Office). Prior to October 1994, published as Lago Caonillas at Caonillas.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago Caonillas was completed in 1948. The dam is a concrete gravity structure with a total length of 815 ft (248 m), a maximum height of 235 ft (72 m), and a maximum base width of 195 ft (59 m). Non-overflow sections on each abutment have a total length of 603 ft (184 m). The dam is the main unit of Caonillas Hydroelectric Project, and provides 49,000 acre-feet (60 hm^3) of usable storage for power generation at Caonillas Power Plant No. 1 located 2.5 mi (4.0 km) downstream from the dam. The dam is owned by the Puerto Rico Electric Power Authority. Gage-height and precipitation satellite telemetry at station. New capacity table based on U.S. Geological Survey Water-Resources Investigations Report 96-4153, February 1995.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation, 841.29 ft (256.42 m), September 22, 1998; minimun elevation, 737.92 ft (224.92 m), August 8, 1997.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 828.25 ft (252.45 m), September 16; minimum elevation, 803.12 ft (244.79 m), August 23.

Capacity Table
(based on data from U.S. Geological Survey Water-Resources Investigations Report 99-4143, 1996)
(Elevation in ft, capacity in acre-ft)

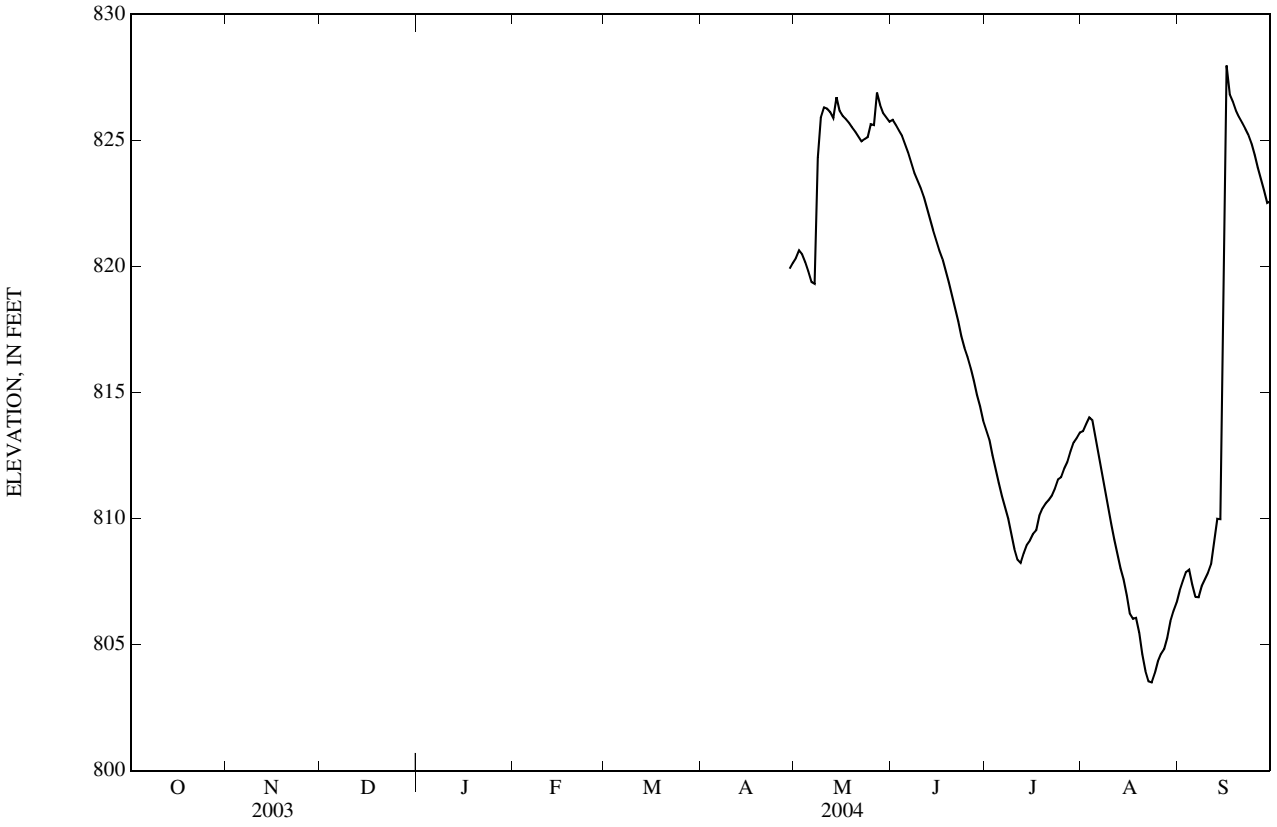
Elevation	Contents	Elevation	Contents
689	0	745	6,015
705	778	764	10,077
725	2,919	830	42,295

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	A	A	A	A	A	A	A	820.33	825.82	813.52	813.47	807.14
2	A	A	A	A	A	A	A	820.64	825.62	813.12	813.74	807.53
3	A	A	A	A	A	A	A	820.49	825.39	812.51	814.01	807.87
4	A	A	A	A	A	A	A	820.17	825.19	811.97	813.90	807.97
5	A	A	A	A	A	A	A	819.81	824.84	811.42	813.24	807.39
6	A	A	A	A	A	A	A	819.38	824.52	810.89	812.58	806.89
7	A	A	A	A	A	A	A	819.31	824.10	810.46	811.89	806.88
8	A	A	A	A	A	A	A	824.31	823.71	810.00	811.19	807.31
9	A	A	A	A	A	A	A	825.90	823.41	809.39	810.51	807.58
10	A	A	A	A	A	A	A	826.31	823.12	808.79	809.82	807.83
11	A	A	A	A	A	A	A	826.26	822.76	808.37	809.17	808.19
12	A	A	A	A	A	A	A	826.12	822.33	808.24	808.62	809.10
13	A	A	A	A	A	A	A	825.89	821.86	808.62	808.03	809.99
14	A	A	A	A	A	A	A	826.71	821.43	808.96	807.59	809.98
15	A	A	A	A	A	A	A	826.18	821.02	809.13	806.96	819.49
16	A	A	A	A	A	A	A	825.97	820.63	809.39	806.23	827.97
17	A	A	A	A	A	A	A	825.85	820.29	809.53	806.02	826.83
18	A	A	A	A	A	A	A	825.70	819.84	810.12	806.06	826.55
19	A	A	A	A	A	A	A	825.52	819.37	810.40	805.47	826.18
20	A	A	A	A	A	A	A	825.35	818.85	810.60	804.62	825.92
21	A	A	A	A	A	A	A	825.16	818.33	810.73	803.95	825.69
22	A	A	A	A	A	A	A	824.96	817.82	810.91	803.54	825.46
23	A	A	A	A	A	A	A	825.05	817.24	811.18	803.50	825.21
24	A	A	A	A	A	A	A	825.13	816.77	811.55	803.85	824.88
25	A	A	A	A	A	A	A	825.64	816.41	811.64	804.34	824.42
26	A	A	A	A	A	A	A	825.61	815.97	811.99	804.63	823.92
27	A	A	A	A	A	A	A	826.90	815.48	812.24	804.83	823.46
28	A	A	A	A	A	A	A	826.40	814.90	812.67	805.27	823.02
29	A	A	A	A	A	A	819.91	826.08	814.46	813.02	805.93	822.52
30	A	A	A	A	---	A	820.14	825.91	813.88	813.20	806.33	822.58
31	A	---	A	A	---	A	---	825.74	---	813.41	806.67	---
MAX	---	---	---	---	---	---	---	826.90	825.82	813.52	814.01	827.97
MIN	---	---	---	---	---	---	---	819.31	813.88	808.24	803.50	806.88

A No gage-height record

50026140 LAGO CAONILLAS AT DAMSITE NEAR UTUADO, PR—Continued



50026200 RIO CAONILLAS BLW LAGO CAONILLAS TUNNEL, PR

LOCATION.--Lat 18°17'57", long 66°38'36", Hydrologic Unit 21010001, on left bank at Río Caonillas Tunnel 1.6 mi (2.6 km) downstream of Lago Caonillas Dam, 3.1 mi (5.0 km) southeast from Central Hidroelétrica of Lago Dos Bocas, 2.6 mi (4.2 km) west from Escuela Segunda Unidad de Mameyes.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--December 2000 to current year.

GAGE.--Water-stage recorder. Elevation of gage 295 ft (90 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	227	928	6.0	265	136	3.3	3.3	262	235	3.1	3.4
2	2.4	216	924	6.0	265	3.2	3.3	3.3	252	232	3.1	2.9
3	2.2	119	e634	6.0	264	3.3	3.3	113	249	231	3.2	2.9
4	2.0	40	7.9	6.0	264	3.3	3.3	229	252	230	90	36
5	1.9	167	6.0	26	263	3.4	3.3	228	247	227	243	234
6	4.5	172	19	6.0	263	3.4	3.3	229	246	227	243	231
7	5.6	168	14	6.0	262	3.4	3.1	229	246	224	243	177
8	3.7	166	15	6.0	261	3.4	5.3	269	245	223	241	4.4
9	4.0	165	9.8	6.0	261	3.4	3.2	276	246	221	241	3.2
10	e9.4	169	6.2	6.0	260	3.4	3.2	492	245	220	241	3.0
11	e7.1	167	6.0	6.0	259	3.4	3.3	430	244	219	240	19
12	e4.6	169	6.0	6.0	259	3.4	3.3	438	244	151	240	7.8
13	e5.1	4,100	6.0	6.0	258	3.4	3.4	327	243	4.7	240	14
14	e5.9	2,410	6.0	6.0	257	3.4	3.4	425	243	3.2	241	140
15	e6.8	1,080	6.0	6.0	257	3.4	3.4	600	244	2.9	239	405
16	e8.2	1,380	6.0	6.0	257	3.4	4.0	396	244	2.9	238	894
17	e8.8	1,070	6.0	6.0	257	3.4	3.4	291	244	2.9	115	1,360
18	e5.7	1,110	6.0	118	256	85	3.3	247	243	5.9	56	876
19	e14	1,030	6.0	270	256	243	5.7	243	244	5.1	254	754
20	e108	969	6.0	270	256	243	3.4	244	243	3.0	239	655
21	e210	963	6.0	269	259	242	3.1	245	243	2.9	236	609
22	e178	961	6.0	269	256	240	3.3	246	242	2.9	235	605
23	e167	956	e6.0	269	254	119	3.3	248	242	2.9	154	605
24	e164	953	e6.0	268	253	3.2	3.3	248	242	3.3	3.3	605
25	e161	e949	6.0	268	252	3.3	3.3	247	242	2.9	3.0	604
26	e265	947	6.0	267	252	4.1	3.2	254	241	3.0	3.1	604
27	e247	943	6.0	267	250	4.7	3.1	329	241	2.9	3.0	604
28	e228	e939	6.0	266	249	11	3.3	733	240	3.0	5.6	605
29	e221	936	6.0	266	254	3.3	3.3	383	240	3.0	28	612
30	251	933	6.0	266	---	3.1	3.3	281	236	3.1	8.1	406
31	243	---	6.0	266	---	3.3	---	250	---	3.1	4.8	---
TOTAL	2,547.2	24,574	2,689.9	3,721.0	7,479	1,398.0	103.7	9,176.6	7,335	2,703.6	4,337.3	11,681.6
MEAN	82.2	819	86.8	120	258	45.1	3.46	296	244	87.2	140	389
MAX	265	4,100	928	270	265	243	5.7	733	262	235	254	1,360
MIN	1.9	40	6.0	6.0	249	3.1	3.1	3.3	236	2.9	3.0	2.9
AC-FT	5,050	48,740	5,340	7,380	14,830	2,770	206	18,200	14,550	5,360	8,600	23,170
CFSM	1.62	16.1	1.71	2.36	5.08	0.89	0.07	5.83	4.81	1.72	2.75	7.67
IN.	1.87	18.00	1.97	2.72	5.48	1.02	0.08	6.72	5.37	1.98	3.18	8.55

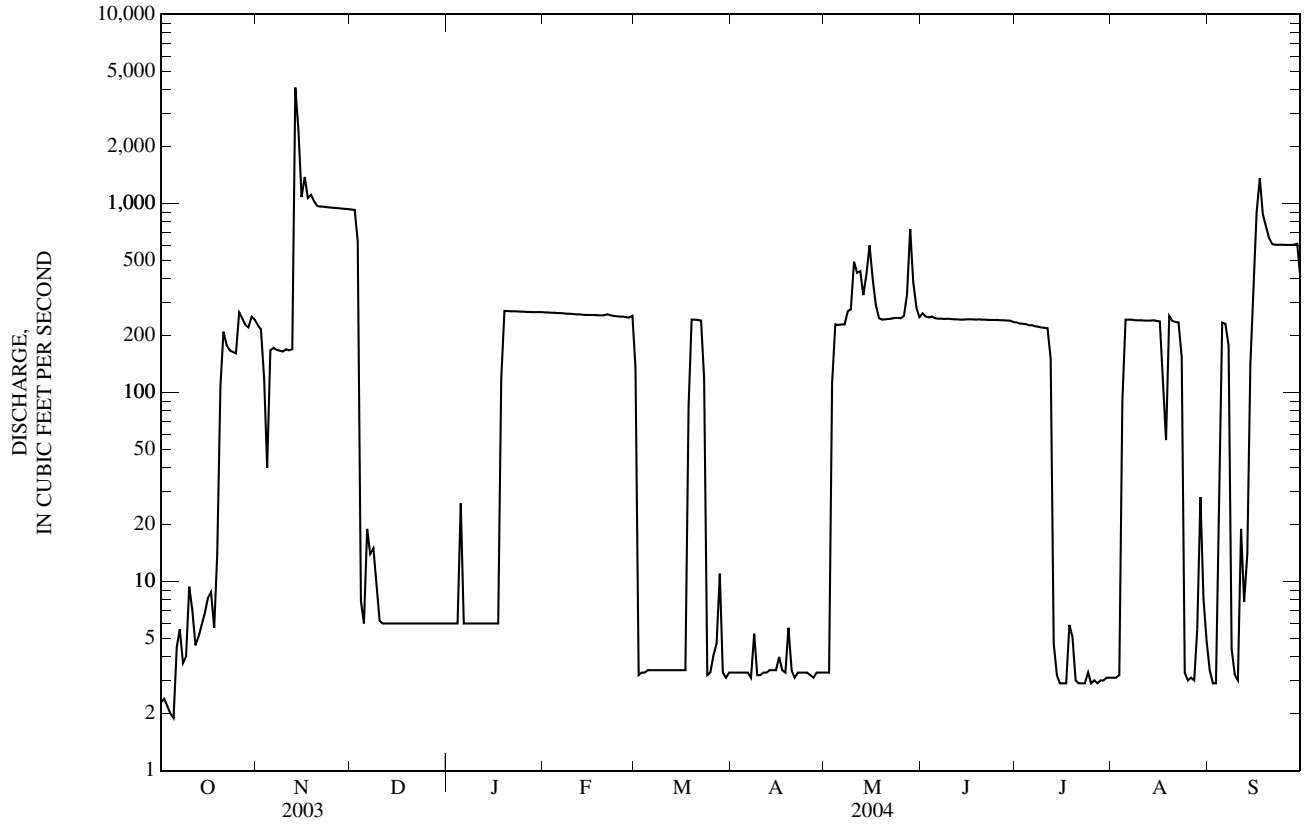
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

MEAN	74.0	316	103	83.1	102	60.4	98.4	180	132	90.9	139	214
MAX	86.3	819	158	120	258	68.3	250	296	244	127	164	389
(WY)	(2002)	(2004)	(2002)	(2004)	(2004)	(2003)	(2002)	(2004)	(2004)	(2001)	(2001)	(2004)
MIN	53.5	27.4	63.1	39.3	37.1	45.1	3.46	3.90	8.90	32.8	106	95.3
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2004)	(2004)	(2003)	(2003)	(2003)	(2002)	(2002)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2001 - 2004	
ANNUAL TOTAL	48,617.9		77,746.9			
ANNUAL MEAN	133		212		136	
HIGHEST ANNUAL MEAN					212	2004
LOWEST ANNUAL MEAN					63.7	2003
HIGHEST DAILY MEAN	4,100	Nov 13	4,100	Nov 13	4,100	Nov 13, 2003
LOWEST DAILY MEAN	1.3	May 7	1.9	Oct 5	1.3	May 7, 2003
ANNUAL SEVEN-DAY MINIMUM	1.5	Jun 10	3.0	Jul 21	1.5	Jun 10, 2003
MAXIMUM PEAK FLOW			7,250	Nov 13	7,250	Nov 13, 2003
MAXIMUM PEAK STAGE			12.36	Nov 13	12.36	Nov 13, 2003
ANNUAL RUNOFF (AC-FT)	96,430		154,200		98,190	
ANNUAL RUNOFF (CFSM)	2.62		4.18		2.67	
ANNUAL RUNOFF (INCHES)	35.60		56.93		36.25	
10 PERCENT EXCEEDS	360		601		270	
50 PERCENT EXCEEDS	34		169		62	
90 PERCENT EXCEEDS	2.4		3.2		3.4	

e Estimated

50026200 RIO CAONILLAS BLW LAGO CAONILLAS TUNNEL, PR—Continued



50026400 RIO YUNES AT HWY 140 NEAR FLORIDA, PR

LOCATION.--Lat 18°19'27", long 66°35'13", Hydrologic Unit 21010002, on left bank, 600 ft downstream from bridge on Highway 140, 3.1 mi (4.9 km) southwest from Florida Plaza, 2.4 mi (3.9 km) northwest from Escuela Segunda Unidad de Frontón, 1.9 mi (3.1 km) northeast from Escuela Segunda Unidad de Mameyes.

DRAINAGE AREA.--13.9 mi^2 (36.1 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 2000 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 492 ft (150 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	120	44	33	24	42	50	10	59	17	11	18
2	13	82	41	37	25	26	41	10	48	17	11	13
3	39	65	39	38	25	22	35	9.9	44	16	11	11
4	25	57	e38	34	25	22	39	18	48	23	11	11
5	15	57	e38	33	23	19	35	11	41	23	18	10
6	15	62	e54	39	23	18	63	16	39	15	12	15
7	17	52	e53	35	24	18	55	54	39	17	10	13
8	48	46	e60	32	22	17	44	718	35	14	9.9	13
9	31	44	e51	31	22	17	32	324	35	13	9.9	12
10	65	58	e42	31	22	17	27	434	36	13	10	10
11	40	47	e46	74	20	16	25	269	31	14	9.8	114
12	e25	52	e39	81	20	16	23	234	29	19	9.5	84
13	50	790	34	48	19	15	21	144	28	22	14	72
14	37	301	37	42	19	21	19	114	27	16	11	46
15	108	174	32	40	18	19	18	110	26	15	10	624
16	79	436	30	37	18	15	17	107	25	12	9.8	398
17	e105	217	30	34	21	15	17	79	27	12	9.3	160
18	e55	320	28	32	18	17	15	65	24	16	21	85
19	e101	181	26	31	17	17	41	53	23	15	27	59
20	188	131	26	36	19	18	22	48	22	12	13	47
21	78	105	89	46	54	17	16	49	21	12	10	42
22	48	133	38	32	24	15	13	46	21	12	9.9	36
23	40	95	29	32	19	14	13	120	20	13	11	33
24	43	90	27	29	21	19	15	104	19	23	28	29
25	37	72	27	28	19	32	12	81	21	16	15	27
26	61	64	26	27	17	76	14	78	20	13	12	73
27	60	58	30	27	17	101	13	81	18	14	12	40
28	56	53	53	27	16	271	11	70	17	23	13	29
29	148	49	48	28	50	116	11	59	23	16	65	26
30	270	48	45	25	---	68	9.5	55	20	12	27	25
31	221	---	37	24	---	52	---	52	---	11	24	---
TOTAL	2,132	4,059	1,237	1,123	661	1,168	766.5	3,622.9	886	486	475.1	2,175
MEAN	68.8	135	39.9	36.2	22.8	37.7	25.6	117	29.5	15.7	15.3	72.5
MAX	270	790	89	81	54	271	63	718	59	23	65	624
MIN	13	44	26	24	16	14	9.5	9.9	17	11	9.3	10
AC-FT	4,230	8,050	2,450	2,230	1,310	2,320	1,520	7,190	1,760	964	942	4,310
CFSM	4.92	9.67	2.85	2.59	1.63	2.69	1.83	8.35	2.11	1.12	1.10	5.18
IN.	5.67	10.79	3.29	2.99	1.76	3.11	2.04	9.63	2.36	1.29	1.26	5.78

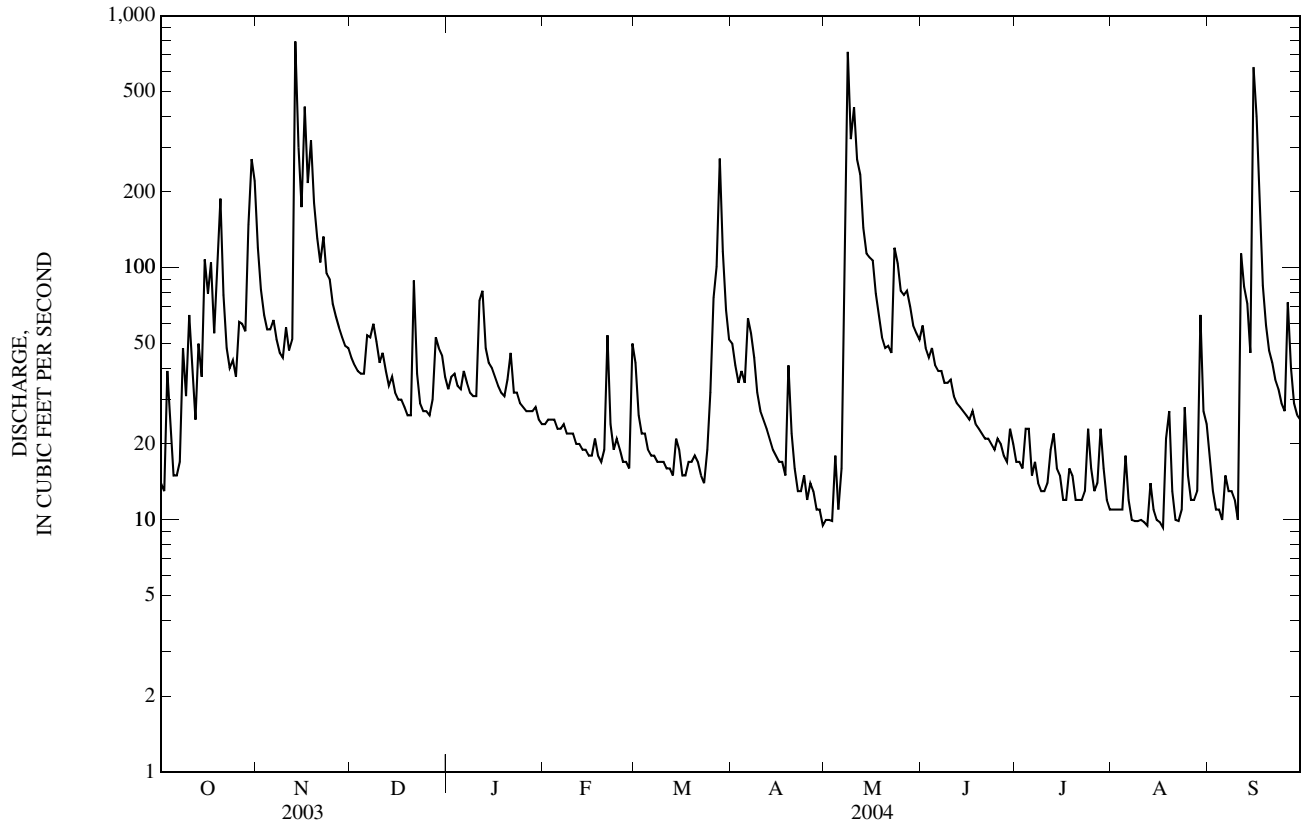
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2004, BY WATER YEAR (WY)

MEAN	44.1	76.2	26.6	21.3	16.2	17.9	40.0	57.4	18.7	14.3	18.7	41.2
MAX	68.8	135	39.9	36.2	22.8	37.7	85.9	117	29.5	20.9	35.2	72.5
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2002)	(2004)	(2004)	(2001)	(2002)	(2004)
MIN	24.8	28.2	13.8	10.7	9.14	7.00	12.9	24.4	9.34	8.39	11.0	25.8
(WY)	(2002)	(2003)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)	(2000)	(2000)	(2000)

50026400 RIO YUNES AT HWY 140 NEAR FLORIDA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2000 - 2004	
ANNUAL TOTAL	13,411.5		18,791.5			
ANNUAL MEAN	36.7		51.3		33.3	
HIGHEST ANNUAL MEAN					51.3	2004
LOWEST ANNUAL MEAN					19.3	2001
HIGHEST DAILY MEAN	790	Nov 13	790	Nov 13	1,660	Nov 8, 2001
LOWEST DAILY MEAN	6.9	Mar 25	9.3	Aug 17	4.7	Aug 12, 2000
ANNUAL SEVEN-DAY MINIMUM	7.2	Aug 16	10	Aug 6	5.2	Aug 12, 2000
MAXIMUM PEAK FLOW			6,650	May 8	6,650	May 8, 2004
MAXIMUM PEAK STAGE			13.47	May 8	13.47	May 8, 2004
INSTANTANEOUS LOW FLOW			7.1	May 6	4.4	Aug 12, 2000
ANNUAL RUNOFF (AC-FT)	26,600		37,270		24,140	
ANNUAL RUNOFF (CFSM)	2.63		3.67		2.38	
ANNUAL RUNOFF (INCHES)	35.66		49.97		32.36	
10 PERCENT EXCEEDS	78		97		62	
50 PERCENT EXCEEDS	15		28		18	
90 PERCENT EXCEEDS	8.5		12		8.4	

e Estimated



50026400 RIO YUNES AT HWY 140 NEAR FLORIDA, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 2000 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: June 2000 to current year.

INSTRUMENTATION.--USDH-48 and automatic sediment samplers since 2000.

REMARKS.--Sediment samples were collected by a local observer on a weekly basis. During high flow events sediment samples were collected with automatic sediment sampler.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 4,940 mg/L November 8, 2001; Minimum daily mean, 1 mg/L several days during Water Year 2001.
SEDIMENT LOADS: Maximum daily mean, 30,700 tons (27,850 tonnes) November 8, 2001; Minimum daily mean, 0.02 ton (0.02 tonne) several days during Water Year 2001.

EXTREMES FOR CURRENT YEAR 2004.-
SEDIMENT CONCENTRATION: Maximum daily mean, 1,750 mg/L November 13, 2003; Minimum daily mean, 2 mg/L August 7, 2004.
SEDIMENT LOADS: Maximum daily mean, 10,600 tons (9,620 tonnes) May 8, 2004; Minimum daily mean, 0.07 ton (0.06 tonne) August 7, 2004.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER			NOVEMBER			DECEMBER		
1	14	5	0.19	120	126	49	44	19	2.2
2	13	5	0.18	82	26	5.7	41	19	2.0
3	39	484	219	65	18	3.3	39	18	1.9
4	25	56	4.4	57	16	2.5	e38	e17	e1.8
5	15	27	1.1	57	15	2.3	e38	e17	e1.6
6	15	10	0.43	62	60	14	e54	e16	e2.4
7	17	14	0.60	52	55	7.9	e53	e15	e2.0
8	48	250	148	46	50	6.3	e60	e13	e3.5
9	31	37	4.4	44	49	5.7	e51	e12	e1.9
10	65	121	37	58	91	23	e42	e10	e1.2
11	40	30	3.6	47	48	6.1	e46	e9	e1.0
12	e25	e14	e2.0	52	139	23	e39	e8	e0.78
13	50	459	240	790	1,750	6,300	34	6	0.60
14	37	30	5.1	301	183	175	37	7	0.64
15	108	464	461	174	72	44	32	7	0.63
16	79	544	222	436	369	882	30	8	0.67
17	e105	e471	e307	217	20	12	30	9	0.71
18	e55	e99	e18	320	425	1,180	28	9	0.64
19	e101	e548	e383	181	26	13	26	8	0.60
20	188	713	1,510	131	21	7.6	26	8	0.57
21	78	138	33	105	18	5.0	89	422	402
22	48	66	8.7	133	218	150	38	21	2.5
23	40	50	5.4	95	33	8.6	29	12	0.93
24	43	52	7.8	90	125	46	27	12	0.85
25	37	35	3.5	72	25	4.9	27	12	0.83
26	61	101	30	64	18	3.1	26	11	0.81
27	60	96	21	58	17	2.7	30	11	0.91
28	56	72	12	53	18	2.6	53	11	1.6
29	148	531	582	49	20	2.6	48	11	1.4
30	270	770	1,760	48	20	2.5	45	11	1.3
31	221	684	742	---	---	---	37	11	1.1
TOTAL	2,132	---	6,771.33	4,059	---	8,990.4	1,237	---	442.57

50026400 RIO YUNES AT HWY 140 NEAR FLORIDA, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	33	10	0.92	24	5	0.35	42	19	2.1
2	37	10	1.0	25	6	0.40	26	22	1.5
3	38	10	1.0	25	6	0.43	22	24	1.4
4	34	10	0.91	25	7	0.46	22	19	1.1
5	33	10	0.88	23	7	0.41	19	14	0.70
6	39	10	1.0	23	6	0.40	18	9	0.43
7	35	10	0.91	24	6	0.40	18	8	0.37
8	32	9	0.82	22	6	0.33	17	8	0.35
9	31	9	0.79	22	5	0.31	17	7	0.33
10	31	9	0.77	22	5	0.27	17	7	0.32
11	74	250	142	20	4	0.23	16	7	0.30
12	81	210	71	20	5	0.27	16	7	0.28
13	48	38	5.0	19	6	0.33	15	6	0.27
14	42	18	2.0	19	8	0.39	21	6	0.36
15	40	12	1.2	18	8	0.38	19	6	0.31
16	37	12	1.2	18	8	0.36	15	7	0.31
17	34	13	1.2	21	7	0.41	15	14	0.58
18	32	12	1.1	18	7	0.34	17	13	0.60
19	31	11	0.94	17	8	0.39	17	9	0.42
20	36	10	0.99	19	10	0.50	18	6	0.28
21	46	9	1.2	54	12	1.7	17	5	0.22
22	32	11	0.93	24	11	0.72	15	5	0.18
23	32	13	1.2	19	10	0.54	14	4	0.16
24	29	15	1.2	21	9	0.53	19	4	0.24
25	28	14	1.0	19	8	0.42	32	12	0.96
26	27	11	0.81	17	9	0.42	76	369	234
27	27	8	0.60	17	11	0.49	101	575	321
28	27	6	0.45	16	13	0.54	271	956	1,020
29	28	6	0.43	50	16	2.2	116	354	185
30	25	5	0.37	---	---	---	68	73	15
31	24	5	0.34	---	---	---	52	19	2.7
TOTAL	1,123	---	244.16	661	---	14.92	1,168	---	1,791.77
		APRIL			MAY			JUNE	
1	50	18	2.4	10	22	0.58	59	55	12
2	41	17	1.9	10	22	0.61	48	8	1.0
3	35	17	1.6	9.9	30	0.80	44	7	0.78
4	39	17	1.8	18	38	1.8	48	11	1.4
5	35	16	1.6	11	45	1.3	41	17	1.9
6	63	115	71	16	47	2.0	39	24	2.5
7	55	76	24	54	190	109	39	30	3.1
8	44	11	1.3	718	1,590	10,600	35	26	2.5
9	32	9	0.81	324	1,360	1,290	35	19	1.7
10	27	7	0.55	434	1,680	2,140	36	11	1.1
11	25	7	0.45	269	1,050	922	31	8	0.66
12	23	6	0.40	234	874	610	29	6	0.49
13	21	6	0.35	144	452	180	28	5	0.36
14	19	10	0.50	114	257	78	27	3	0.24
15	18	14	0.70	110	122	46	26	4	0.25
16	17	19	0.87	107	65	22	25	4	0.28
17	17	20	0.89	79	17	3.7	27	5	0.35
18	15	19	0.80	65	14	2.5	24	5	0.33
19	41	80	28	53	14	2.0	23	5	0.31
20	22	31	1.9	48	18	2.3	22	5	0.30
21	16	29	1.2	49	18	2.3	21	5	0.31
22	13	29	1.0	46	17	2.1	21	15	0.82
23	13	40	1.4	120	253	123	20	28	1.5
24	15	55	2.2	104	211	61	19	40	2.0
25	12	69	2.2	81	90	20	21	40	2.2
26	14	72	2.7	78	222	70	20	34	1.8
27	13	72	2.5	81	95	30	18	29	1.4
28	11	70	2.0	70	70	14	17	23	1.1
29	11	56	1.8	59	20	3.2	23	18	1.1
30	9.5	39	1.0	55	9	1.4	20	13	0.68
31	---	---	---	52	8	1.2	---	---	---
TOTAL	766.5	---	159.82	3,622.9	---	16,342.79	886	---	44.46

50026400 RIO YUNES AT HWY 140 NEAR FLORIDA, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	17	7	0.34	11	5	0.15	18	9	0.45
2	17	6	0.26	11	5	0.16	13	9	0.33
3	16	5	0.23	11	6	0.17	11	10	0.29
4	23	17	2.5	11	6	0.17	11	10	0.29
5	23	18	2.0	18	5	0.25	10	10	0.27
6	15	5	0.18	12	4	0.12	15	10	0.39
7	17	5	0.24	10	2	0.07	13	10	0.35
8	14	6	0.23	9.9	3	0.08	13	9	0.34
9	13	6	0.23	9.9	4	0.11	12	9	0.30
10	13	7	0.24	10	6	0.15	10	9	0.25
11	14	7	0.28	9.8	7	0.18	114	250	310
12	19	8	0.41	9.5	6	0.16	84	214	113
13	22	13	0.82	14	5	0.20	72	158	71
14	16	14	0.61	11	4	0.13	46	5	0.62
15	15	7	0.28	10	9	0.24	624	1,450	7,960
16	12	6	0.21	9.8	16	0.42	398	1,460	1,730
17	12	6	0.20	9.3	22	0.56	160	119	66
18	16	6	0.26	21	29	1.7	85	14	3.3
19	15	6	0.25	27	36	2.6	59	11	1.8
20	12	6	0.19	13	43	1.5	47	16	2.0
21	12	6	0.19	10	49	1.4	42	20	2.2
22	12	8	0.26	9.9	51	1.4	36	19	1.8
23	13	10	0.35	11	51	1.6	33	16	1.4
24	23	12	0.80	28	78	12	29	13	1.0
25	16	13	0.56	15	67	2.7	27	10	0.70
26	13	13	0.44	12	25	0.78	73	192	129
27	14	12	0.45	12	15	0.49	40	43	4.9
28	23	37	5.6	13	16	0.54	29	25	1.9
29	16	10	0.47	65	189	117	26	25	1.8
30	12	6	0.18	27	36	3.1	25	25	1.7
31	11	5	0.15	24	10	0.63	---	---	---
TOTAL	486	---	19.41	475.1	---	150.76	2,175	---	10,407.38
YEAR	18,791.5	45,379.77							

e Estimated

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

SILT AND CLAY PERCENT OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
MAR					
26...	2325	209	96	736	415
MAY					
23...	1840	224	98	544	329

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, falldia nat wat percent <.002mm (70326)	Suspnd. sediment, falldia nat wat percent <.004mm (70327)	Suspnd. sediment, falldia nat wat percent <.008mm (70328)	Suspnd. sediment, falldia nat wat percent <.016mm (70329)	Suspnd. sediment, falldia nat wat percent <.031mm (70330)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspnd. sediment, sieve diametr percent <.125mm (70332)	Suspnd. sediment, sieve diametr percent <.25mm (70333)	Suspnd. sediment, sieve diametr percent <.5 mm (70334)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
MAR													
27...	2203	327	43	55	69	83	93	97	99	100	100	6,210	5,480
MAY													
26...	1535	202	48	58	70	81	93	95	99	99	100	2,410	1,310

50027000 RIO LIMON ABOVE LAGO DOS BOCAS, PR

LOCATION.--Lat 18°19'32", long 66°37'24", Hydrologic Unit 21010002, on right bank off Highway 146, 2.2 mi (3.5 km) northwest from Escuela Segunda Unidad de Mameyes, 3.0 mi (4.8 km) southwest from Lago Dos Bocas Dam, 3.8 mi (6.0 km) northeast from Lago Caonillas Dam.

DRAINAGE AREA.--33.2 mi^2 (86.0 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1999 to current year.

GAGE.--Water-stage recorder. Datum of gage is 311.6 ft (94.9 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	403	129	75	49	73	55	29	149	54	34	40
2	40	268	124	81	51	49	42	29	108	54	33	32
3	63	211	120	81	51	45	38	29	99	51	38	29
4	53	187	116	74	50	44	43	39	106	54	36	27
5	37	185	113	72	48	41	39	32	95	62	48	54
6	36	201	166	79	49	39	74	46	90	48	35	39
7	40	171	157	73	51	38	66	82	89	54	31	36
8	102	156	183	68	47	38	69	2,090	84	48	30	33
9	70	148	151	66	48	38	45	674	83	45	30	30
10	147	193	124	69	48	37	38	878	86	44	30	27
11	90	158	137	121	45	36	35	482	79	45	28	180
12	53	175	113	149	44	36	33	440	76	55	28	128
13	96	2,620	104	83	44	35	32	280	74	60	36	228
14	110	820	105	73	43	43	31	254	73	52	30	108
15	277	396	100	73	43	41	30	241	71	47	31	1,830
16	242	1,330	94	70	42	35	35	229	69	42	28	955
17	321	555	92	65	46	35	36	190	71	41	27	376
18	151	1,340	88	63	43	38	31	173	68	56	41	247
19	e305	473	86	61	41	37	86	155	65	53	63	191
20	e694	331	84	66	46	38	45	146	63	41	36	153
21	190	271	149	79	92	39	34	149	63	40	28	129
22	120	281	93	61	50	34	30	140	61	42	26	108
23	99	223	79	61	44	33	30	210	59	41	27	96
24	116	208	77	58	46	39	32	164	57	61	41	86
25	93	182	75	56	43	52	30	138	61	49	32	80
26	342	168	73	55	40	123	34	183	60	42	27	159
27	179	155	77	54	40	155	34	148	55	45	28	110
28	142	146	111	53	38	429	28	131	55	47	31	81
29	359	139	99	54	95	147	30	114	62	44	177	89
30	656	135	98	51	---	82	27	108	59	37	61	78
31	521	---	82	50	---	55	---	104	---	35	46	---
TOTAL	5,784	12,229	3,399	2,194	1,417	2,004	1,212	8,107	2,290	1,489	1,217	5,759
MEAN	187	408	110	70.8	48.9	64.6	40.4	262	76.3	48.0	39.3	192
MAX	694	2,620	183	149	95	429	86	2,090	149	62	177	1,830
MIN	36	135	73	50	38	33	27	29	55	35	26	27
AC-FT	11,470	24,260	6,740	4,350	2,810	3,970	2,400	16,080	4,540	2,950	2,410	11,420
CFSM	5.62	12.3	3.30	2.13	1.47	1.95	1.22	7.88	2.30	1.45	1.18	5.78
IN.	6.48	13.70	3.81	2.46	1.59	2.25	1.36	9.08	2.57	1.67	1.36	6.45

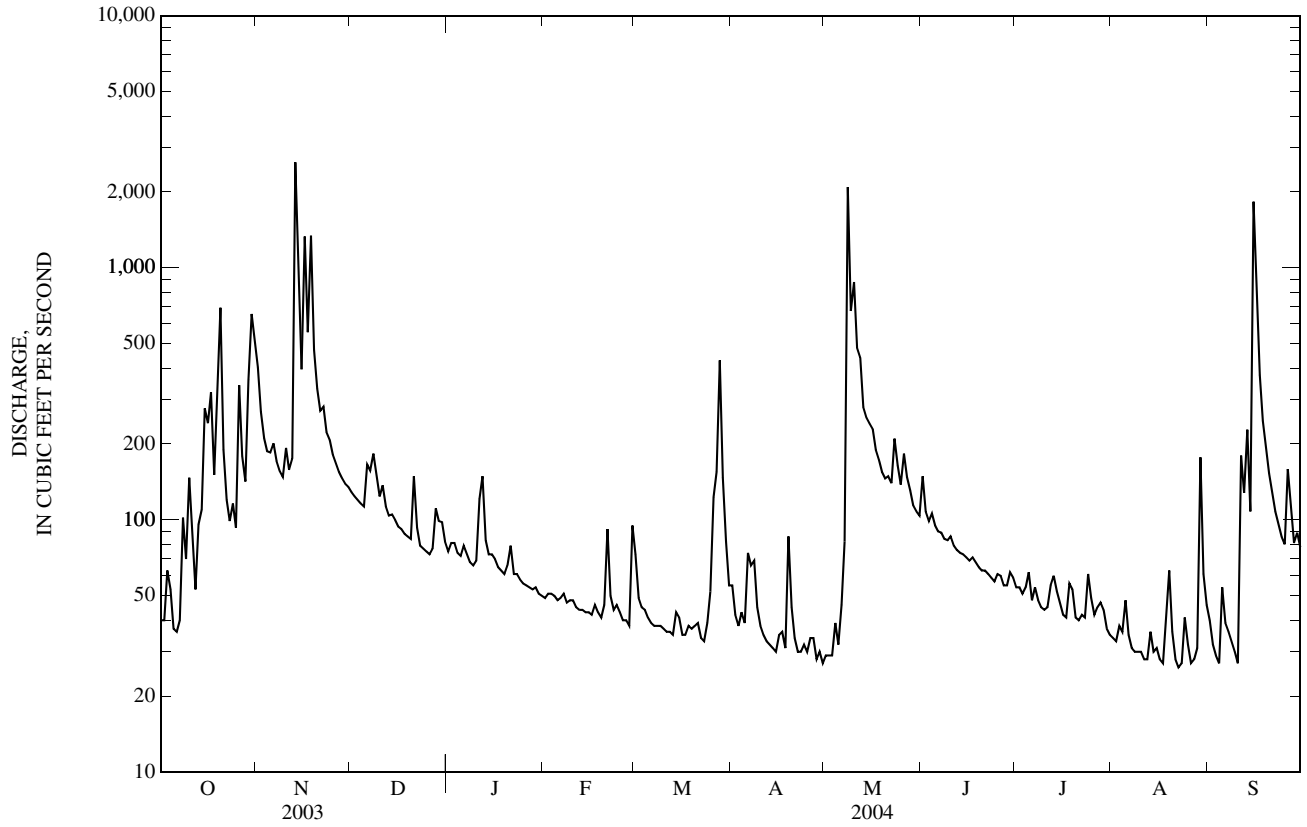
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2004, BY WATER YEAR (WY)

MEAN	109	201	69.0	60.9	43.3	39.3	81.6	132	49.4	39.2	45.3	98.4
MAX	187	408	110	108	60.8	64.6	240	262	76.3	49.7	72.5	192
(WY)	(2004)	(2004)	(2004)	(2000)	(2000)	(2004)	(2002)	(2004)	(2004)	(2002)	(2002)	(2004)
MIN	67.3	67.3	36.1	30.1	26.9	20.5	29.7	54.7	27.4	30.9	31.7	57.3
(WY)	(2002)	(2003)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)	(2003)	(2000)	(2000)

50027000 RIO LIMON ABOVE LAGO DOS BOCAS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2000 - 2004	
ANNUAL TOTAL	35,403		47,101			
ANNUAL MEAN	97.0		129		82.4	
HIGHEST ANNUAL MEAN					129	2004
LOWEST ANNUAL MEAN					46.6	2001
HIGHEST DAILY MEAN	2,620	Nov 13	2,620	Nov 13	3,990	Nov 8, 2001
LOWEST DAILY MEAN	19	Mar 24	26	Aug 22	14	Apr 18, 2001
ANNUAL SEVEN-DAY MINIMUM	20	Apr 10	29	Apr 27	16	Apr 15, 2001
MAXIMUM PEAK FLOW			17,700	Sep 15	17,700	Sep 15, 2004
MAXIMUM PEAK STAGE			17.76	Sep 15	17.76	Sep 15, 2004
INSTANTANEOUS LOW FLOW			24	Sep 4	13	Apr 18, 2001
ANNUAL RUNOFF (AC-FT)	70,220		93,420		59,720	
ANNUAL RUNOFF (CFSM)	2.92		3.88		2.48	
ANNUAL RUNOFF (INCHES)	39.67		52.78		33.73	
10 PERCENT EXCEEDS	186		224		148	
50 PERCENT EXCEEDS	38		63		47	
90 PERCENT EXCEEDS	25		32		24	

e Estimated



50027000 RIO LIMON ABOVE LAGO DOS BOCAS, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years December 1999 to November 2003 (discontinued).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV 18...	1010	403	19	8.0	7.5	166	22.7	63	17.5	4.65	1.98	.4	8.12

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Phosphorus, water, unfltrd mg/L (00665)
NOV 18...	57	9.13	<.2	27.5	4.8	108	117	14	<.20	.01	1.40	<.01	.04

Date	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)
NOV 18...	<10	E160	34,000

< Actual value is known to be less than the value shown

50027100 LAGO DOS BOCAS AT DAMSITE NEAR UTUADO, PR

LOCATION.--Lat 18°20'16", long 66°40'05", Hydrologic Unit 21010001, on upstream side of road 146 over damsite, close to the center of dam, 10 mi (16 km) southeast of the city of Arecibo, 4.1 mi (6.6 km) north of Lago Caonillas Dam, 5.3 mi (8.53 km) northeast of Utuado Plaza, and 3.8 mi (6.1 km) southeast of Escuela Antonio Sánchez de Padilla.

DRAINAGE AREA.--169.45 mi^2 (438.87 km^2).

PERIOD OF RECORD.--March 1999 to current year.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago Dos Bocas was completed in 1942. The dam is a concrete gravity structure with a total length of 1,317 ft (401.4 m), a maximum height of 188 ft (57.3 m), and a maximum base width of 158 ft (48.2 m). No overflow sections on each abutment have a total length of 957 ft (292 m). The dam and the powerplant comprise the Dos Bocas Hydroelectric Project and provides 32,000 acre-feet (39.456 km^3). A three-unit powerplant is located on the right bank of the slitting basin. The dam is owned by the Puerto Rico Electric Power Authority. The capacity of Lago Dos Bocas was computed to be 714.40 million ft^3 (20.23 million m^3) for June 1997. Gage-height and precipitation satellite telemetry at station.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation, 301.13 ft (91.78 m), November 13, 2004; minimum elevation, 283.29 ft (86.35 m), September 15, 2004.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 301.13 ft (91.78 m), November 13; minimum elevation, 283.29 ft (86.35 m), September 15.

Capacity Table
(based on data from Puerto Rico Electric Power Authority)
(Elevation in ft, capacity in acre-ft)

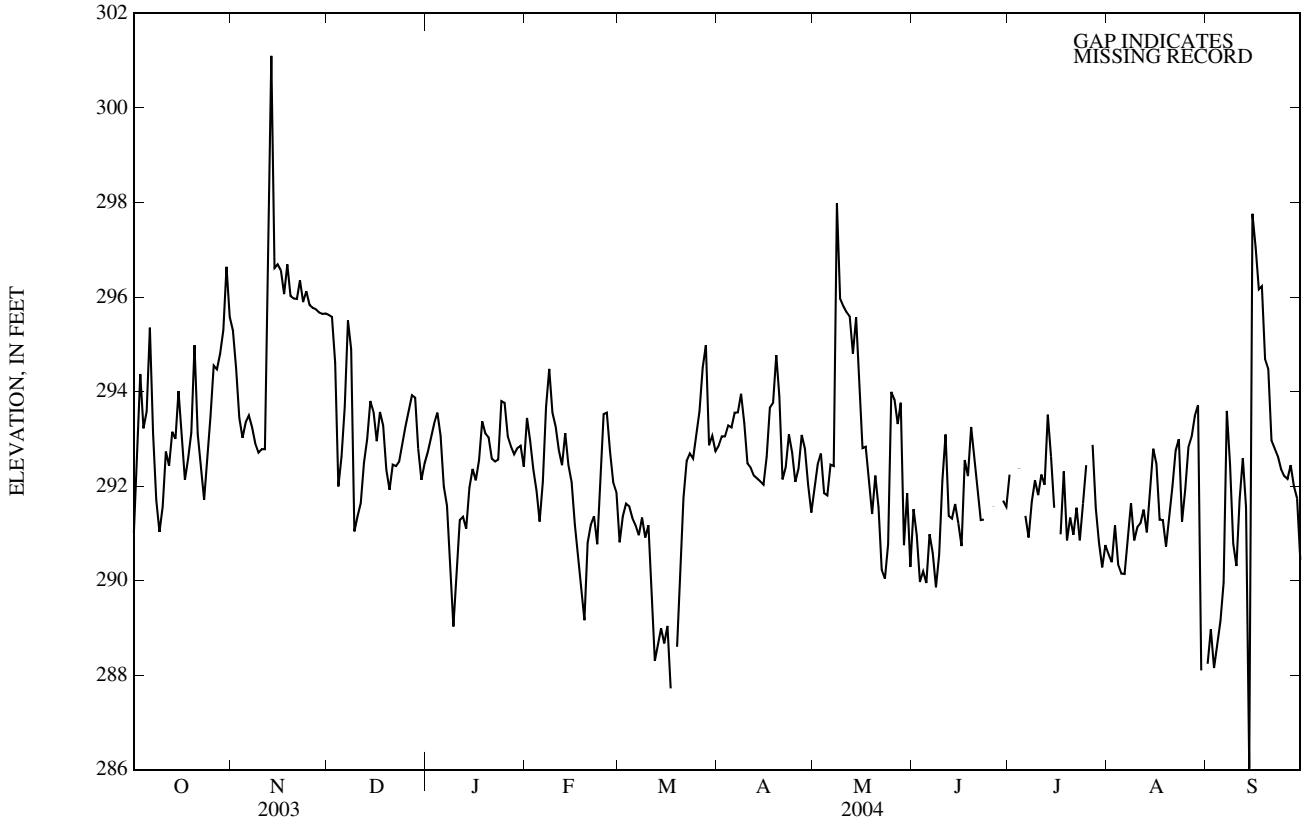
Elevation	Contents	Elevation	Contents
216	0	275	9,283
236	1,403	288	13,684
256	4,491	295	16,400

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	291.01	295.29	295.62	292.72	293.44	290.81	292.85	291.97	291.51	292.24	290.56	288.24
2	292.81	294.49	295.58	293.02	292.95	291.36	293.05	292.46	290.96	A	290.39	288.97
3	294.37	293.44	294.61	293.32	292.34	291.63	293.05	292.69	289.97	A	291.17	288.15
4	293.22	293.02	291.99	293.55	291.89	291.57	293.28	291.85	290.19	292.38	290.34	288.65
5	293.58	293.35	292.63	293.06	291.25	291.32	293.24	291.80	289.95	A	290.15	289.14
6	295.35	293.49	293.68	291.99	292.09	291.17	293.55	292.45	290.98	291.37	290.14	289.96
7	293.11	293.24	295.50	291.58	293.67	290.96	293.56	292.42	290.58	290.91	290.86	293.59
8	291.70	292.90	294.90	290.34	294.48	291.33	293.95	297.98	289.86	291.67	291.64	292.46
9	291.03	292.71	291.04	289.03	293.55	290.91	293.33	295.97	290.55	292.12	290.85	290.78
10	291.56	292.78	291.36	290.03	293.26	291.17	292.48	295.81	292.11	291.81	291.13	290.31
11	292.73	292.78	291.64	291.28	292.76	289.55	292.39	295.68	293.09	292.24	291.21	291.72
12	292.43	295.68	292.49	291.35	292.44	288.30	292.22	295.59	291.37	292.03	291.50	292.59
13	293.15	301.10	292.99	291.10	293.12	288.65	292.16	294.80	291.31	293.51	291.02	291.55
14	293.00	296.61	293.80	291.96	292.44	288.99	292.10	295.57	291.62	292.63	291.87	286.02
15	294.01	296.69	293.57	292.36	292.08	288.67	292.03	294.32	291.21	291.54	292.79	297.76
16	292.98	296.56	292.95	292.12	291.19	289.04	292.62	292.80	290.73	A	292.47	297.05
17	292.13	296.06	293.57	292.54	290.52	287.72	293.66	292.83	292.55	290.98	291.29	296.16
18	292.58	296.69	293.28	293.37	289.89	A	293.76	292.17	292.21	292.31	291.28	296.23
19	293.13	296.02	292.34	293.11	289.16	288.60	294.77	291.41	293.25	290.85	290.72	294.69
20	294.98	295.97	291.92	293.03	290.80	290.09	293.91	292.22	292.59	291.33	291.40	294.48
21	293.10	295.96	292.45	292.58	291.18	291.75	292.14	291.55	291.91	290.97	291.99	292.97
22	292.42	296.35	292.42	292.52	291.36	292.53	292.40	290.23	291.28	291.54	292.75	292.80
23	291.71	295.89	292.52	292.56	290.77	292.69	293.09	290.04	291.29	290.85	292.99	292.63
24	292.69	296.12	292.88	293.80	292.17	292.58	292.71	290.77	A	291.63	291.25	292.36
25	293.48	295.83	293.27	293.76	293.52	293.09	292.09	293.99	A	292.44	291.93	292.21
26	294.55	295.77	293.60	293.05	293.55	293.58	292.37	293.83	291.57	A	292.82	292.15
27	294.47	295.74	293.92	292.84	292.73	294.50	293.08	293.31	A	292.87	293.04	292.44
28	294.80	295.67	293.87	292.67	292.08	294.98	292.79	293.76	A	291.53	293.48	292.00
29	295.29	295.64	292.79	292.80	291.87	292.86	292.03	290.75	291.69	290.80	293.71	291.74
30	296.64	295.65	292.13	292.85	---	293.06	291.44	291.85	291.56	290.28	288.10	290.44
31	295.58	---	292.48	292.41	---	292.74	---	290.29	---	290.75	A	---
MAX	296.64	301.10	295.62	293.80	294.48	---	294.77	297.98	---	---	---	297.76
MIN	291.01	292.71	291.04	289.03	289.16	---	291.44	290.04	---	---	---	286.02

A No gage-height record

50027100 LAGO DOS BOCAS AT DAMSITE NEAR UTUADO, PR—Continued



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

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--169 mi^2 (436 km^2), this does not include 6.0 mi^2 (15.5 km^2) above Lago Garzas.

PERIOD OF RECORD.--Water years 1970-71, 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)
NOV													
17...	1351	200	7.5	7.2	140	24.3	53	14.5	4.17	2.07	.4	7.06	48
APR													
01...	1230	26	6.8	7.3	193	25.2	74	19.9	5.79	2.09	.5	9.69	68
JUN													
21...	1415	16	5.0	7.2	192	26.6	--	--	--	--	--	--	67
AUG													
13...	0820	3.8	4.1	7.1	209	27.3	77	21.4	5.68	1.82	.5	9.58	75

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)
NOV													
17...	6.61	<.2	18.9	8.9	91	40	.50	.06	.78	.800	.02	.44	1.3
APR													
01...	9.36	<.2	21.1	10.8	119	10	--	--	--	--	--	--	--
JUN													
21...	--	--	--	--	--	<10	<.20	.06	--	.500	<.01	--	--
AUG													
13...	9.19	<.2	23.0	11.0	128	<10	--	.06	--	--	--	--	--

Date	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)
NOV													
17...	5.8	.15	10	E560	E8,000	--	--	--	--	--	--	--	--
APR													
01...	--	--	<10	--	--	<2	37.7	17	<.2	E.4	M	<.01	510
JUN													
21...	--	.02	<10	E6	E120,000	--	--	--	--	--	--	--	--
AUG													
13...	--	.02	<10	E7	88	<2	33.0	15	<.2	<.8	<4	<.01	110

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
NOV 17...	--	--	--	--	--	--	--	--
APR 01...	<1.0	58.0	<.02	<3	<.3	<4	<.20	<16
JUN 21...	--	--	--	--	--	--	--	--
AUG 13...	<1.0	85.5	<.02	<3	E.2	<4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50027600 RIO GRANDE DE ARECIBO NEAR SAN PEDRO, PR

LOCATION.--Lat 18°23'55", long 66°41'29", Hydrologic Unit 21010002, on left side of old Highway 10, 7.2 mi (11.6 km) north of Lago Dos Bocas Dam, 5.4 mi (8.69 km) from Plaza Rosario at Arecibo town and 3.8 mi (6.11 km) east from Escuela La Esperanza.

DRAINAGE AREA.--173.7 mi^2 (449 km^2), approximately, of which an undetermined amount does not contribute directly to surface runoff.

PERIOD OF RECORD.--February 1959 to February 1962 yearly measurements only, May 2001 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 49.2 ft (15 m), from topographic map.

REMARKS.--Records fair. Flow affected by Lago Dos Bocas Dam 7.2 mi (11.6 km) upstream from gage. Gage-height satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

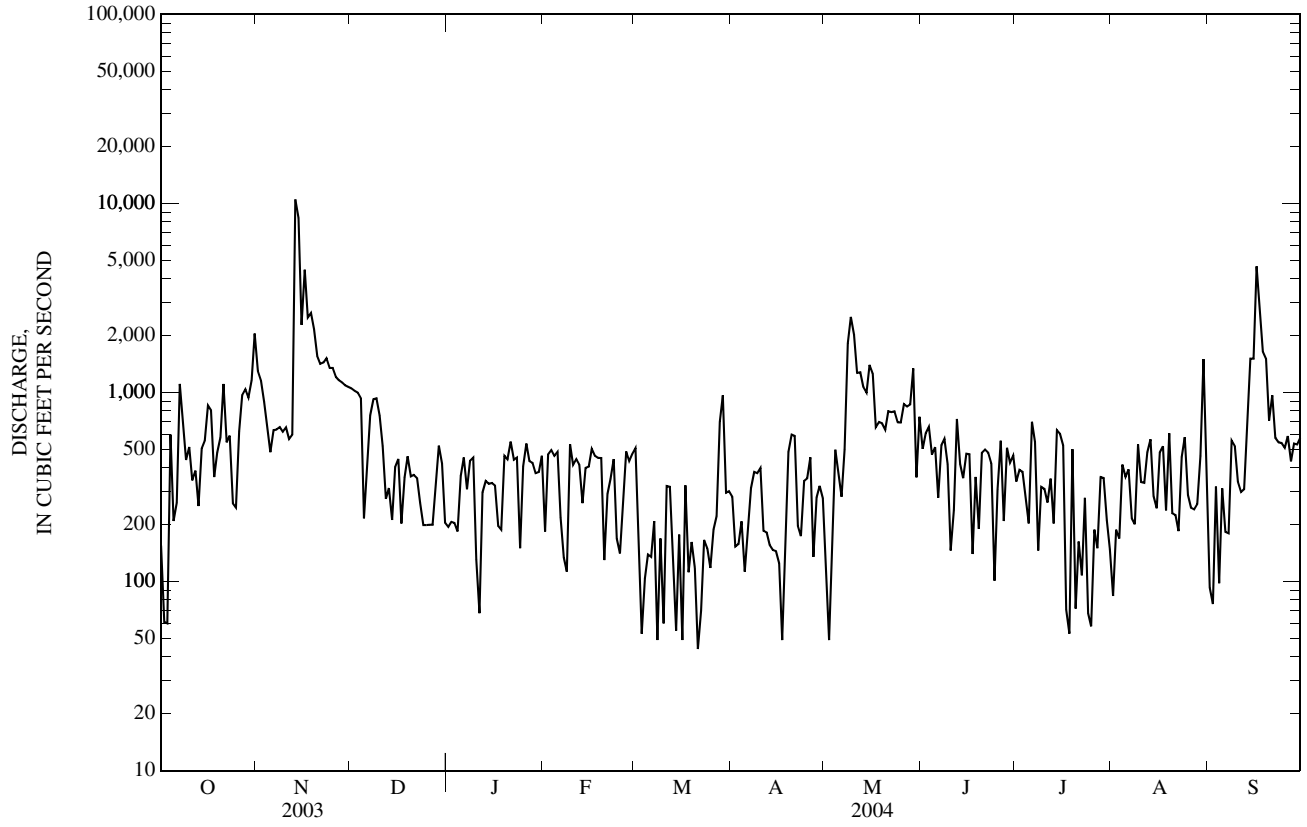
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	155	1,300	1,050	195	184	508	281	123	503	338	84	93
2	61	1,160	1,020	207	470	129	153	49	608	390	188	76
3	60	893	999	204	495	53	158	195	657	381	169	318
4	599	660	931	184	462	104	208	498	469	279	416	98
5	209	483	216	362	485	139	113	379	514	203	358	311
6	261	632	420	453	218	135	192	281	278	699	392	183
7	1,110	637	758	308	134	209	312	500	525	547	216	180
8	687	656	920	436	113	49	380	1,820	568	146	201	557
9	440	620	931	453	532	169	374	2,510	417	317	531	520
10	515	653	754	131	414	60	399	2,020	146	309	336	338
11	343	567	521	68	444	320	186	1,270	239	262	333	298
12	386	597	274	296	415	317	182	1,280	724	350	483	308
13	251	10,500	312	340	260	118	156	1,070	419	203	566	637
14	505	8,380	212	329	399	55	147	998	352	632	283	1,510
15	555	2,280	403	332	405	177	145	1,400	475	605	244	1,510
16	855	4,460	445	322	504	49	125	1,260	472	525	481	4,650
17	806	2,490	203	197	463	323	49	656	140	71	519	2,830
18	357	2,630	356	188	451	112	189	698	358	53	238	1,650
19	482	2,160	459	463	450	162	485	687	190	501	609	1,510
20	579	1,560	360	443	130	118	598	636	480	72	230	710
21	1,110	1,420	366	549	291	44	589	795	499	163	225	967
22	545	1,440	352	442	349	70	197	787	480	108	185	576
23	592	1,520	261	453	444	166	174	795	422	277	456	545
24	259	1,350	199	150	169	150	340	696	101	68	580	541
25	246	1,350	199	407	141	118	351	694	308	58	287	510
26	624	1,210	200	537	270	189	454	868	556	188	246	588
27	968	1,160	200	434	488	222	135	844	209	150	241	432
28	1,040	1,130	324	425	434	699	279	865	510	357	257	537
29	941	1,090	523	374	475	966	321	1,340	425	353	462	531
30	1,160	1,070	421	379	---	295	276	356	464	211	1,500	576
31	2,050	---	205	463	---	300	---	744	---	148	519	---
TOTAL	18,751	56,058	14,794	10,524	10,489	6,525	7,948	27,114	12,508	8,964	11,835	24,090
MEAN	605	1,869	477	339	362	210	265	875	417	289	382	803
MAX	2,050	10,500	1,050	549	532	966	598	2,510	724	699	1,500	4,650
MIN	60	483	199	68	113	44	49	49	101	53	84	76
AC-FT	37,190	111,200	29,340	20,870	20,800	12,940	15,760	53,780	24,810	17,780	23,470	47,780
CFSM	3.48	10.8	2.75	1.95	2.08	1.21	1.53	5.04	2.40	1.66	2.20	4.62
IN.	4.02	12.01	3.17	2.25	2.25	1.40	1.70	5.81	2.68	1.92	2.53	5.16

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

MEAN	459	988	386	256	250	176	483	613	297	252	317	553
MAX	605	1,869	477	339	362	210	857	875	417	303	382	803
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2002)	(2004)	(2004)	(2001)	(2004)	(2004)
MIN	358	332	237	167	160	158	265	324	245	144	199	419
(WY)	(2002)	(2003)	(2003)	(2003)	(2002)	(2003)	(2004)	(2003)	(2002)	(2003)	(2003)	(2002)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2001 - 2004	
ANNUAL TOTAL	159,743		209,600			
ANNUAL MEAN	438		573		419	
HIGHEST ANNUAL MEAN					573	2004
LOWEST ANNUAL MEAN					275	2003
HIGHEST DAILY MEAN	10,500	Nov 13	10,500	Nov 13	10,500	Nov 13, 2003
LOWEST DAILY MEAN	44	Aug 14	44	Mar 21	44	Aug 14, 2003
ANNUAL SEVEN-DAY MINIMUM	83	Jan 17	117	Mar 2	83	Jan 17, 2003
MAXIMUM PEAK FLOW			20,800	Nov 13	20,800	Nov 13, 2003
MAXIMUM PEAK STAGE			16.33	Nov 13	16.33	Nov 13, 2003
ANNUAL RUNOFF (AC-FT)	316,900		415,700		303,900	
ANNUAL RUNOFF (CFSM)	2.52		3.30		2.41	
ANNUAL RUNOFF (INCHES)	34.21		44.89		32.81	
10 PERCENT EXCEEDS	972		1,110		753	
50 PERCENT EXCEEDS	251		406		283	
90 PERCENT EXCEEDS	57		135		84	

50027600 RIO GRANDE DE ARECIBO NEAR SAN PEDRO, PR—Continued



50028000 RIO TANAMA NEAR UTUADO, PR

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

DRAINAGE AREA.--18.4 mi^2 (47.7 km^2).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 938.3 ft (286.0 m) above mean sea level. Datum of gage was increased by 3.0 ft (0.91 m) on October 1978.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

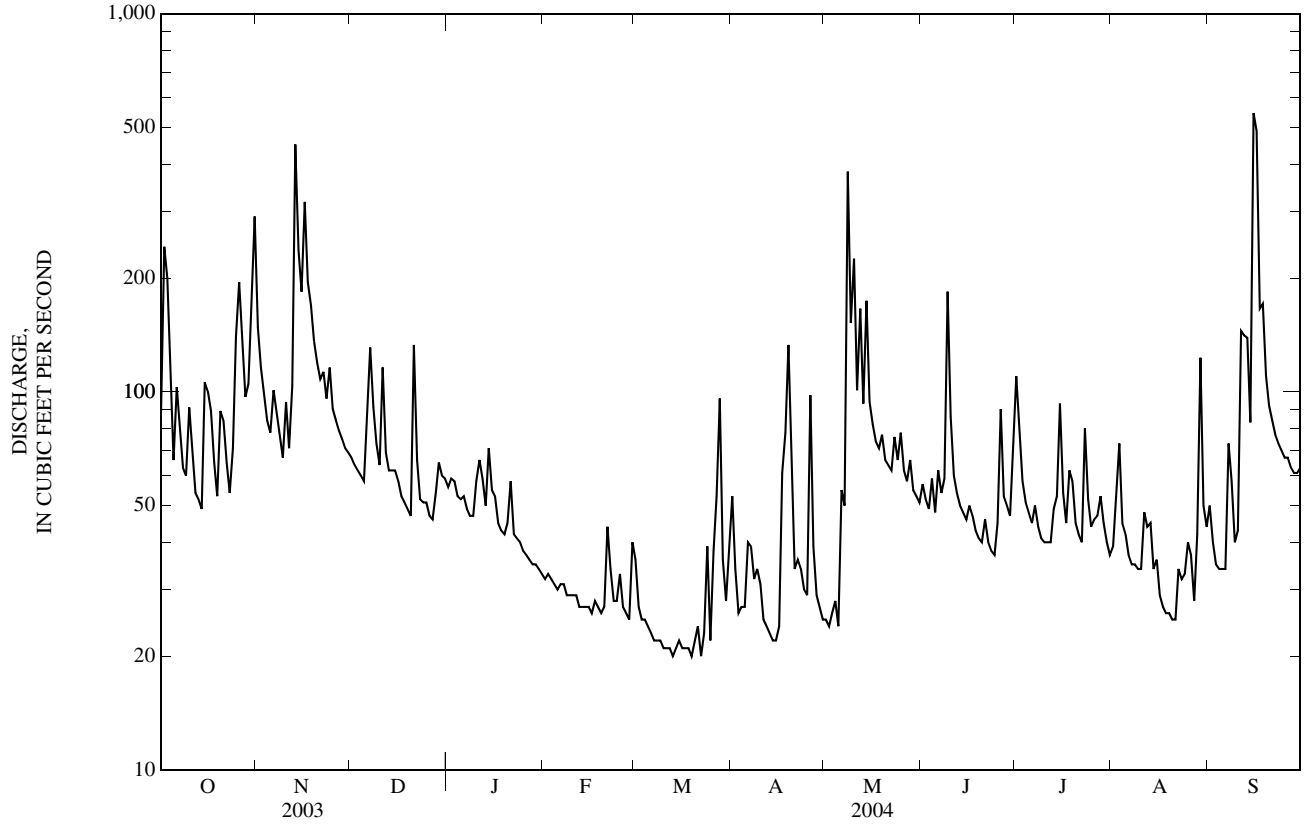
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	148	67	56	32	36	53	25	57	110	39	50
2	242	116	64	59	33	27	34	24	52	79	54	40
3	200	99	62	58	32	25	26	26	49	58	73	35
4	106	84	60	53	31	25	27	28	59	51	45	34
5	66	78	58	52	30	24	27	24	48	48	42	34
6	103	101	83	53	31	23	40	55	62	45	37	34
7	79	88	131	49	31	22	39	50	54	50	35	73
8	63	77	91	47	29	22	32	382	59	44	35	58
9	60	67	73	47	29	22	34	152	184	41	34	40
10	91	94	64	58	29	21	31	225	86	40	34	43
11	70	71	116	66	29	21	25	101	60	40	48	145
12	54	104	69	59	27	21	24	166	54	40	44	141
13	52	451	62	50	27	20	23	93	50	49	45	139
14	49	237	62	71	27	21	22	174	48	53	34	83
15	106	184	62	55	27	22	22	94	46	93	36	546
16	100	318	58	53	26	21	24	82	50	54	29	490
17	89	195	53	45	28	21	61	74	47	45	27	166
18	65	169	51	43	27	21	78	71	43	62	26	171
19	53	136	49	42	26	20	133	77	41	58	26	110
20	89	119	47	45	27	22	63	66	40	45	25	92
21	84	108	133	58	44	24	34	64	46	42	25	84
22	65	113	66	42	34	20	36	62	40	40	34	77
23	54	96	52	41	28	23	34	76	38	80	32	73
24	71	116	51	40	28	39	30	66	37	52	33	70
25	140	90	51	38	33	22	29	78	45	44	40	67
26	195	84	47	37	27	38	98	62	90	46	37	67
27	135	79	46	36	26	53	39	58	53	47	28	63
28	97	75	54	35	25	96	29	66	50	53	42	61
29	105	71	65	35	40	36	27	55	47	45	123	61
30	186	69	60	34	---	28	25	53	74	40	50	63
31	291	---	59	33	---	37	---	51	---	37	44	---
TOTAL	3,249	3,837	2,066	1,490	863	873	1,199	2,680	1,709	1,631	1,256	3,210
MEAN	105	128	66.6	48.1	29.8	28.2	40.0	86.5	57.0	52.6	40.5	107
MAX	291	451	133	71	44	96	133	382	184	110	123	546
MIN	49	67	46	33	25	20	22	24	37	37	25	34
AC-FT	6,440	7,610	4,100	2,960	1,710	1,730	2,380	5,320	3,390	3,240	2,490	6,370
CFSM	5.70	6.95	3.62	2.61	1.62	1.53	2.17	4.70	3.10	2.86	2.20	5.82
IN.	6.57	7.76	4.18	3.01	1.74	1.76	2.42	5.42	3.46	3.30	2.54	6.49

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2004, BY WATER YEAR (WY)

MEAN	81.4	71.5	44.2	30.6	25.9	24.9	38.2	59.0	44.2	36.3	47.1	77.8
MAX	195	159	121	71.0	50.8	71.2	151	193	117	65.7	110	208
(WY)	(1990)	(1969)	(1966)	(1997)	(1996)	(1972)	(2002)	(1963)	(1999)	(1981)	(1979)	(1998)
MIN	25.4	25.1	18.1	14.7	13.2	11.0	9.70	12.4	15.6	9.18	15.9	25.0
(WY)	(1963)	(1995)	(1998)	(1998)	(1965)	(1984)	(1984)	(1977)	(1994)	(1994)	(1994)	(1994)

50028000 RIO TANAMA NEAR UTUADO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1960 - 2004	
ANNUAL TOTAL	16,839		24,063			
ANNUAL MEAN	46.1		65.7		48.5	
HIGHEST ANNUAL MEAN					71.7	1999
LOWEST ANNUAL MEAN					20.7	1994
HIGHEST DAILY MEAN	451	Nov 13	546	Sep 15	3,260	Sep 22, 1998
LOWEST DAILY MEAN	11	Mar 4	20	Mar 13	5.4	Aug 4, 1994
ANNUAL SEVEN-DAY MINIMUM	11	Mar 11	21	Mar 13	6.4	Jul 29, 1994
MAXIMUM PEAK FLOW			3,490	May 8	23,500	Sep 22, 1998
MAXIMUM PEAK STAGE			15.56	May 8	21.24	Sep 22, 1998
INSTANTANEOUS LOW FLOW			17	Mar 23	5.4	Aug 4, 1994
ANNUAL RUNOFF (AC-FT)	33,400		47,730		35,140	
ANNUAL RUNOFF (CFSM)	2.51		3.57		2.64	
ANNUAL RUNOFF (INCHES)	34.04		48.65		35.81	
10 PERCENT EXCEEDS	100		114		88	
50 PERCENT EXCEEDS	27		50		34	
90 PERCENT EXCEEDS	13		26		16	



50028000 RIO TANAMA NEAR UTUADO, PR

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV													
18...	1320	153	15	8.1	7.5	152	23.4	56	14.2	5.10	1.89	.4	6.99
FEB													
26...	0930	26	11	9.7	8.0	166	20.5	--	--	--	--	--	--
JUN													
17...	0845	49	10	7.9	7.6	153	22.2	--	--	--	--	--	--
AUG													
12...	1415	35	44	7.8	7.9	156	26.5	55	14.2	4.83	1.83	.4	7.38

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
NOV													
18...	47	7.33	<.2	24.5	8.8	--	97	39.9	<10	<.20	.01	1.20	<.01
FEB													
26...	51	--	--	--	--	<.1	--	--	--	<.20	.02	1.00	<.01
JUN													
17...	52	--	--	--	--	--	--	--	<10	<.20	<.01	.890	<.01
AUG													
12...	50	6.99	<.2	21.4	9.5	--	100	9.53	29	--	.03	--	--

Date	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)
NOV													
18...	.03	<10	E91	E6,500	--	--	--	--	--	--	--	--	--
FEB													
26...	.03	--	230	8,400	--	--	--	--	--	--	--	--	--
JUN													
17...	<.02	<10	E2,400	5,100	--	--	--	--	--	--	--	--	--
AUG													
12...	.04	<10	E770	5,800	<2	28.3	14	<.2	1.3	M	<.01	720	<1.0

50028000 RIO TANAMA NEAR UTUADO, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
NOV							
18...	--	--	--	--	--	--	--
FEB							
26...	--	<.02	--	--	--	<.10	<16
JUN							
17...	--	--	--	--	--	--	--
AUG							
12...	49.1	<.02	<3	<.3	4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50028400 RIO TANAMA AT CHARCO HONDO, PR

LOCATION.--Lat 18°24'52", long 66°42'52", Hydrologic Unit 21010002, on right bank at abandoned power house at Charco Hondo, 1.5 mi (2.4 km) upstream from mouth, and 4 mi (6 km) south of Arecibo.

DRAINAGE AREA.--22.2 mi^2 (57.5 km^2).

PERIOD OF RECORD.--April 1969 to June 1971, October 1981 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 60 ft (18 m), from topographic map.

REMARKS.--Records poor. Diversion 0.8 mi (1.3 km) upstream for municipal supply of Arecibo. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	e430	139	100	64	75	107	68	78	146	59	71
2	300	e383	134	99	64	54	102	64	86	112	61	70
3	343	e278	131	109	64	50	68	62	74	91	124	81
4	180	238	e127	95	63	49	68	83	75	70	123	104
5	103	209	e134	93	61	47	95	79	83	67	73	88
6	146	226	e157	93	61	45	64	73	71	62	64	78
7	269	232	e190	95	63	43	88	116	94	69	59	91
8	192	201	e264	87	59	44	86	509	68	72	59	110
9	180	180	e159	86	60	44	80	602	178	64	54	116
10	149	180	e135	84	60	44	75	571	173	61	54	60
11	188	171	186	103	59	42	60	364	100	62	57	197
12	119	168	216	112	56	41	56	356	86	63	73	239
13	105	616	139	89	56	41	53	257	81	65	81	243
14	101	628	131	107	56	43	52	272	77	72	61	176
15	138	326	132	91	55	44	50	194	74	116	73	893
16	153	611	127	91	55	43	49	151	72	116	62	897
17	144	442	124	80	56	42	58	129	83	69	56	442
18	125	361	115	78	56	42	118	116	79	87	58	304
19	100	291	111	76	53	44	201	116	68	168	60	231
20	160	243	109	76	55	42	249	106	67	78	76	185
21	254	216	161	91	62	49	100	100	72	70	55	165
22	153	205	166	75	71	42	77	100	74	66	52	146
23	116	197	117	74	54	42	80	114	65	89	66	122
24	118	205	111	72	52	64	70	115	62	102	65	111
25	158	201	112	71	57	51	71	117	62	73	67	105
26	291	169	105	69	51	50	145	107	100	68	81	110
27	e346	162	102	69	50	151	261	104	111	75	57	104
28	e468	153	108	68	48	221	108	102	70	67	95	92
29	e404	146	132	67	54	123	103	132	70	91	191	88
30	e524	141	116	67	---	76	76	88	81	68	108	93
31	e547	---	105	65	---	68	---	82	---	61	78	---
TOTAL	6,669	8,209	4,295	2,632	1,675	1,856	2,870	5,449	2,534	2,540	2,302	5,812
MEAN	215	274	139	84.9	57.8	59.9	95.7	176	84.5	81.9	74.3	194
MAX	547	628	264	112	71	221	261	602	178	168	191	897
MIN	95	141	102	65	48	41	49	62	62	61	52	60
AC-FT	13,230	16,280	8,520	5,220	3,320	3,680	5,690	10,810	5,030	5,040	4,570	11,530
CFSM	9.69	12.3	6.24	3.82	2.60	2.70	4.31	7.92	3.80	3.69	3.34	8.73
IN.	11.18	13.76	7.20	4.41	2.81	3.11	4.81	9.13	4.25	4.26	3.86	9.74

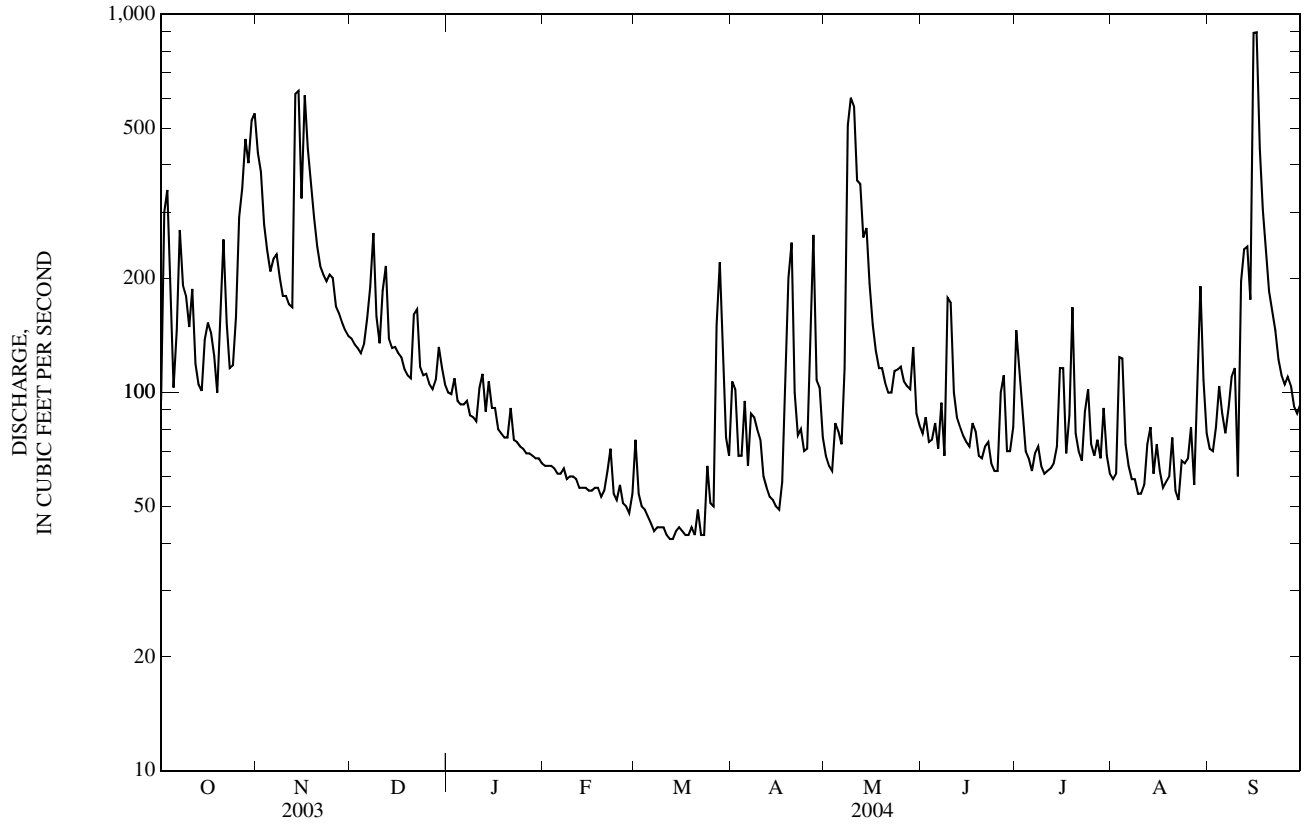
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 2004, BY WATER YEAR (WY)

MEAN	169	147	89.5	63.7	51.3	45.0	74.1	129	91.4	66.7	84.5	142
MAX	335	274	219	167	106	76.1	232	371	236	120	168	448
(WY)	(1990)	(2004)	(1982)	(1997)	(1996)	(1999)	(2002)	(1986)	(1999)	(1969)	(1998)	(1998)
MIN	72.1	50.4	36.4	22.3	16.8	16.6	25.9	15.8	23.3	22.0	35.1	44.9
(WY)	(1983)	(1995)	(1989)	(1989)	(1989)	(1988)	(1989)	(1989)	(1989)	(1989)	(1994)	(1994)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1969 - 2004	
ANNUAL TOTAL	37,437		46,843			
ANNUAL MEAN	103		128		94.9	
HIGHEST ANNUAL MEAN					133	1999
LOWEST ANNUAL MEAN					46.9	1994
HIGHEST DAILY MEAN	628	Nov 14	897	Sep 16	6,400	Sep 22, 1998
LOWEST DAILY MEAN	27	Mar 13	41	Mar 12	4.2	May 28, 1989
ANNUAL SEVEN-DAY MINIMUM	28	Mar 13	42	Mar 11	5.4	May 22, 1989
MAXIMUM PEAK FLOW			5,450	Sep 15	15,000	May 18, 1985
MAXIMUM PEAK STAGE			13.75	Sep 15	24.56	Sep 22, 1998
ANNUAL RUNOFF (AC-FT)	74,260		92,910		68,770	
ANNUAL RUNOFF (CFSM)	4.62		5.77		4.28	
ANNUAL RUNOFF (INCHES)	62.73		78.49		58.09	
10 PERCENT EXCEEDS	209		240		181	
50 PERCENT EXCEEDS	63		91		66	
90 PERCENT EXCEEDS	32		54		31	

e Estimated

50028400 RIO TANAMA AT CHARCO HONDO, PR—Continued



50029000 RIO GRANDE DE ARECIBO AT CENTRAL CAMBALACHE, PR

LOCATION.--Lat 18°27'20", long 66°42'10", Hydrologic Unit 21010002, at bridge on unimproved road, about 500 ft (152 m) upstream from Central Cambalache, near Highway 2, 13.9 mi (22.4 km) downstream from Dos Bocas reservoir, 1.9 mi (3.1 km) downstream from Río Tanamá junction, and 1.6 mi (2.6 km) southeast of Arecibo.

DRAINAGE AREA.--200 mi^2 (520 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1963 to January 1965 (monthly measurements only), February 1965 to April 1969 (occasional measurements only), May 1969 to September 1983, October 1996 to current year.

GAGE.--Water-stage recorder. Datum of gage is 9.84 ft (3 m) above mean sea level.

REMARKS.--Records poor. Flow regulated by Lago Dos Bocas dam, 13.9 mi (22.4 km) upstream. Gage-height satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

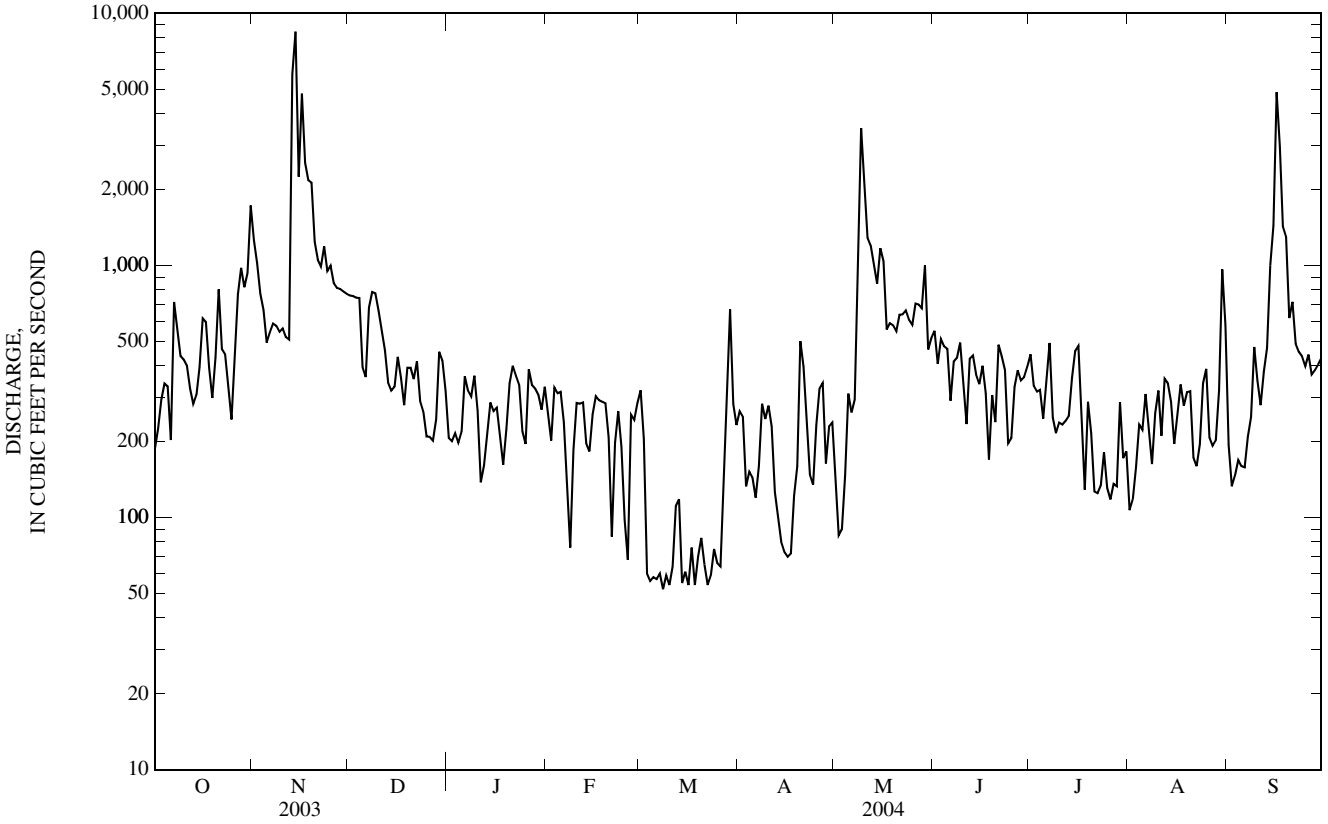
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	187	1,260	761	207	254	320	264	152	551	444	107	194
2	225	1,020	756	201	202	205	251	85	407	333	118	133
3	293	773	745	216	328	60	133	90	511	316	158	147
4	340	666	743	198	311	56	152	147	478	321	234	169
5	331	494	395	219	315	58	144	310	467	247	223	160
6	203	543	361	363	239	57	120	261	291	337	309	158
7	716	588	681	319	142	60	160	294	416	493	220	209
8	555	576	784	302	76	52	283	746	430	249	163	250
9	438	546	775	365	185	59	246	3,510	494	216	259	475
10	424	563	661	266	285	54	278	2,210	328	238	319	349
11	401	520	554	138	283	64	230	1,290	235	234	211	279
12	325	508	460	161	286	111	126	1,200	427	242	355	379
13	282	5,740	343	215	197	118	101	1,000	440	253	341	470
14	307	8,450	319	286	183	55	80	846	369	358	288	999
15	394	2,250	330	265	257	61	73	1,170	338	458	196	1,440
16	617	4,800	434	273	303	54	70	1,040	400	480	256	4,870
17	597	2,550	359	209	292	76	72	557	311	232	337	2,970
18	393	2,180	279	162	288	54	122	590	170	129	278	1,430
19	298	2,130	393	225	284	70	160	579	306	288	314	1,300
20	433	1,240	393	341	208	83	501	548	239	216	317	619
21	804	1,050	354	400	84	65	397	637	485	127	173	717
22	466	991	417	365	198	54	258	640	436	125	160	489
23	444	1,190	290	336	264	59	148	663	385	134	195	454
24	332	951	263	220	191	75	135	608	197	182	341	436
25	245	999	210	196	98	66	233	581	207	131	389	399
26	467	851	209	387	68	64	325	706	330	118	208	443
27	769	815	202	336	256	145	342	700	384	136	193	369
28	978	807	245	325	244	367	164	677	350	133	203	384
29	819	789	455	307	285	669	230	1,000	361	287	319	404
30	934	773	420	268	---	282	238	464	397	172	965	428
31	1,730	---	318	330	---	233	---	515	---	183	580	---
TOTAL	15,747	46,613	13,909	8,401	6,606	3,806	6,036	23,816	11,140	7,812	8,729	21,523
MEAN	508	1,554	449	271	228	123	201	768	371	252	282	717
MAX	1,730	8,450	784	400	328	669	501	3,510	551	493	965	4,870
MIN	187	494	202	138	68	52	70	85	170	118	107	133
AC-FT	31,230	92,460	27,590	16,660	13,100	7,550	11,970	47,240	22,100	15,500	17,310	42,690
CFSM	2.54	7.77	2.24	1.35	1.14	0.61	1.01	3.84	1.86	1.26	1.41	3.59
IN.	2.93	8.67	2.59	1.56	1.23	0.71	1.12	4.43	2.07	1.45	1.62	4.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 2004, BY WATER YEAR (WY)

MEAN	752	763	507	327	268	272	370	540	427	342	409	666
MAX	1,577	1,554	1,327	651	425	627	1,022	1,192	1,220	854	1,269	1,866
(WY)	(1971)	(2004)	(1982)	(1997)	(1997)	(1972)	(2002)	(1980)	(1979)	(1979)	(1979)	(1979)
MIN	331	201	150	108	85.4	53.8	89.7	188	139	62.0	133	271
(WY)	(2002)	(1998)	(1998)	(2001)	(2001)	(2003)	(2001)	(1977)	(1977)	(2003)	(2003)	(1997)

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

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1969 - 2004	
ANNUAL TOTAL	123,320		174,138			
ANNUAL MEAN	338		476		475	
HIGHEST ANNUAL MEAN					691	1979
LOWEST ANNUAL MEAN					208	2003
HIGHEST DAILY MEAN	8,450	Nov 14	8,450	Nov 14	15,900	Aug 31, 1979
LOWEST DAILY MEAN	38	Apr 13	52	Mar 8	38	Mar 5, 2002
ANNUAL SEVEN-DAY MINIMUM	46	Mar 21	57	Mar 4	46	Mar 21, 2003
MAXIMUM PEAK FLOW			12,800	Nov 14		
MAXIMUM PEAK STAGE			12.46	Nov 14	19.28	Sep 22, 1998
ANNUAL RUNOFF (AC-FT)	244,600		345,400		344,400	
ANNUAL RUNOFF (CFSM)	1.69		2.38		2.38	
ANNUAL RUNOFF (INCHES)	22.94		32.39		32.29	
10 PERCENT EXCEEDS	744		816		918	
50 PERCENT EXCEEDS	154		314		331	
90 PERCENT EXCEEDS	52		118		122	



50029000 RIO GRANDE DE ARECIBO AT CENTRAL CAMBALACHE, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--200 mi^2 (520 km^2), approximately, and excludes 6.0 mi^2 (15.6 km^2) above Lago Garzas.

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)
APR													
02...	1200	22	8.3	7.6	255	24.6	110	36.2	5.25	1.77	.4	8.55	101
JUN													
21...	1200	69	7.1	7.6	245	26.8	--	--	--	--	--	--	101
SEP													
07...	1130	12	7.4	7.7	280	26.9	120	38.6	5.06	2.14	.3	8.07	114

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)
APR													
02...	9.91	<.2	17.1	10.5	150	15	--	--	--	--	--	--	--
JUN													
21...	--	--	--	--	--	26	.30	.03	.580	<.01	.27	.88	3.9
SEP													
07...	9.02	<.2	16.4	9.0	159	13	--	.02	--	--	--	--	--

Date	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)
APR													
02...	--	<10	--	--	<2	31.5	18	<.2	E.5	M	<.01	580	<1.0
JUN													
21...	.08	<10	60	5,200	--	--	--	--	--	--	--	--	--
SEP													
07...	.07	<10	E100	2,900	<2	26.8	17	<.2	E.7	M	<.01	250	<1.0

Date	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
APR							
02...	48.2	<.02	<3	<.3	<4	<.20	<16
JUN							
21...	--	--	--	--	--	--	--
SEP							
07...	28.3	<.02	<3	<.3	E4	<.10	<16

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Time
APR	
02...	1200
JUN	
21...	1200
SEP	
07...	1130

< Actual value is known to be less than the value shown
E Estimated value
M Presence verified, not quantified

THIS PAGE IS INTENTIONALLY BLANK

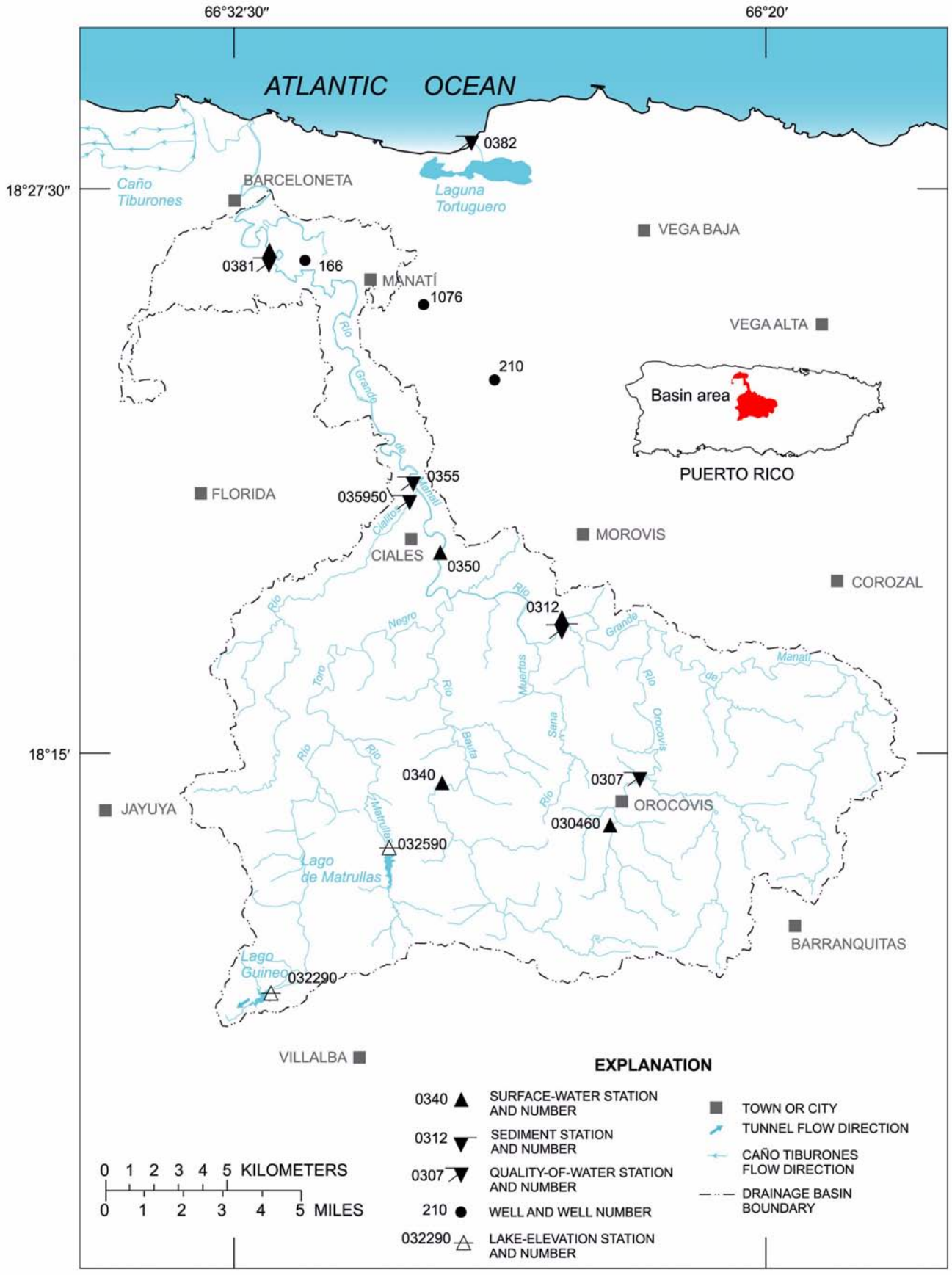


Figure 13. Río Grande de Manatí basin.

50030460 RIO OROCOVIS AT OROCOVIS, PR

LOCATION.--Lat 18°13'25", long 66°23'34", Hydrologic Unit 21010001, on right bank, 0.4 mi (0.6 km) south of junction of Highways 155 and 156 in Orocovis, 2.1 mi (3.4 km) upstream from Río Botijas, and 250 ft (76 m) upstream from bridge on Highway 599.

DRAINAGE AREA.--5.03 mi^2 (13.0 km^2).

PERIOD OF RECORD.--April 1981 to September 1982, October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 500 ft (152 m), from topographic map.

REMARKS.--Records poor. Low flow affected by diversions for water supply. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	12	15	e14	4.3	4.7	e5.0	6.4	9.8	5.2	e1.7	2.0
2	4.6	10	15	e26	3.8	4.0	e3.9	5.6	9.7	3.9	e1.7	0.98
3	7.2	9.1	15	e14	3.9	3.0	e2.9	6.2	8.0	3.5	e1.6	0.70
4	3.9	7.7	13	e11	3.0	2.3	e21	15	9.2	2.8	e1.5	1.1
5	3.1	8.9	12	e9.3	2.9	2.7	e11	8.1	7.5	3.2	e1.7	0.79
6	14	8.1	49	e13	3.3	2.7	e24	5.0	7.3	2.8	e1.5	0.73
7	9.2	8.6	63	e12	3.4	2.9	e46	28	8.1	2.6	e1.4	0.86
8	8.1	14	45	e8.8	3.0	3.3	e24	9.2	7.5	2.7	e1.3	0.78
9	5.6	14	32	e6.2	3.8	2.2	e40	7.6	7.0	3.8	e1.3	0.92
10	51	26	25	e8.3	3.3	2.2	e27	7.3	7.0	2.9	e1.3	0.76
11	28	31	22	e47	3.2	1.9	e8.0	9.4	5.9	2.8	e1.2	1.1
12	15	48	21	e28	2.8	2.3	e5.1	7.0	6.2	3.5	e1.3	0.74
13	10	320	20	e5.9	3.0	2.3	e3.5	10	6.0	3.7	e1.3	0.79
14	40	73	18	e6.2	3.0	1.6	e3.2	15	6.5	2.4	e1.3	2.4
15	26	71	17	6.2	4.1	1.8	e3.1	8.2	6.3	1.9	e1.2	222
16	13	148	17	6.0	3.4	1.5	e3.1	6.6	6.0	1.9	e1.2	381
17	11	62	16	6.0	4.0	1.4	e3.1	5.7	6.1	2.5	e1.2	63
18	9.6	45	14	5.0	2.6	2.2	e2.9	7.2	4.9	2.1	e5.9	30
19	7.8	34	13	4.3	2.4	1.9	e15	6.1	3.9	2.4	e9.5	10
20	6.8	28	12	7.0	2.2	1.8	5.2	6.2	3.9	1.8	e1.5	5.7
21	8.1	24	18	9.5	3.1	1.4	3.4	11	4.2	2.5	e1.0	4.4
22	5.5	26	14	7.0	2.4	2.0	8.4	10	4.4	2.0	e1.6	3.4
23	6.2	51	12	11	1.6	1.4	6.3	26	3.8	2.4	e1.0	4.1
24	5.9	38	11	8.9	1.6	5.4	3.6	14	3.9	3.5	e0.78	2.8
25	5.3	28	10	8.5	2.1	3.1	4.8	9.0	3.8	3.4	e0.70	2.3
26	6.2	24	10	5.4	2.1	6.5	5.6	7.0	3.4	3.0	0.66	3.3
27	5.1	20	11	5.3	1.7	15	6.6	12	4.4	2.1	1.2	2.6
28	11	19	14	5.4	1.5	32	5.7	7.4	4.7	2.2	1.7	2.2
29	13	18	12	5.2	5.9	e14	5.0	7.9	4.9	1.8	1.7	5.1
30	24	17	e12	5.2	---	e8.8	5.9	8.7	5.1	2.2	1.2	7.5
31	18	---	e13	3.9	---	e11	---	8.1	---	e2.0	1.3	---
TOTAL	386.5	1,243.4	591	319.5	87.4	149.3	312.3	300.9	179.4	85.5	53.44	764.05
MEAN	12.5	41.4	19.1	10.3	3.01	4.82	10.4	9.71	5.98	2.76	1.72	25.5
MAX	51	320	63	47	5.9	32	46	28	9.8	5.2	9.5	381
MIN	3.1	7.7	10	3.9	1.5	1.4	2.9	5.0	3.4	1.8	0.66	0.70
AC-FT	767	2,470	1,170	634	173	296	619	597	356	170	106	1,520
CFSM	2.48	8.24	3.79	2.05	0.60	0.96	2.07	1.93	1.19	0.55	0.34	5.06
IN.	2.86	9.20	4.37	2.36	0.65	1.10	2.31	2.23	1.33	0.63	0.40	5.65

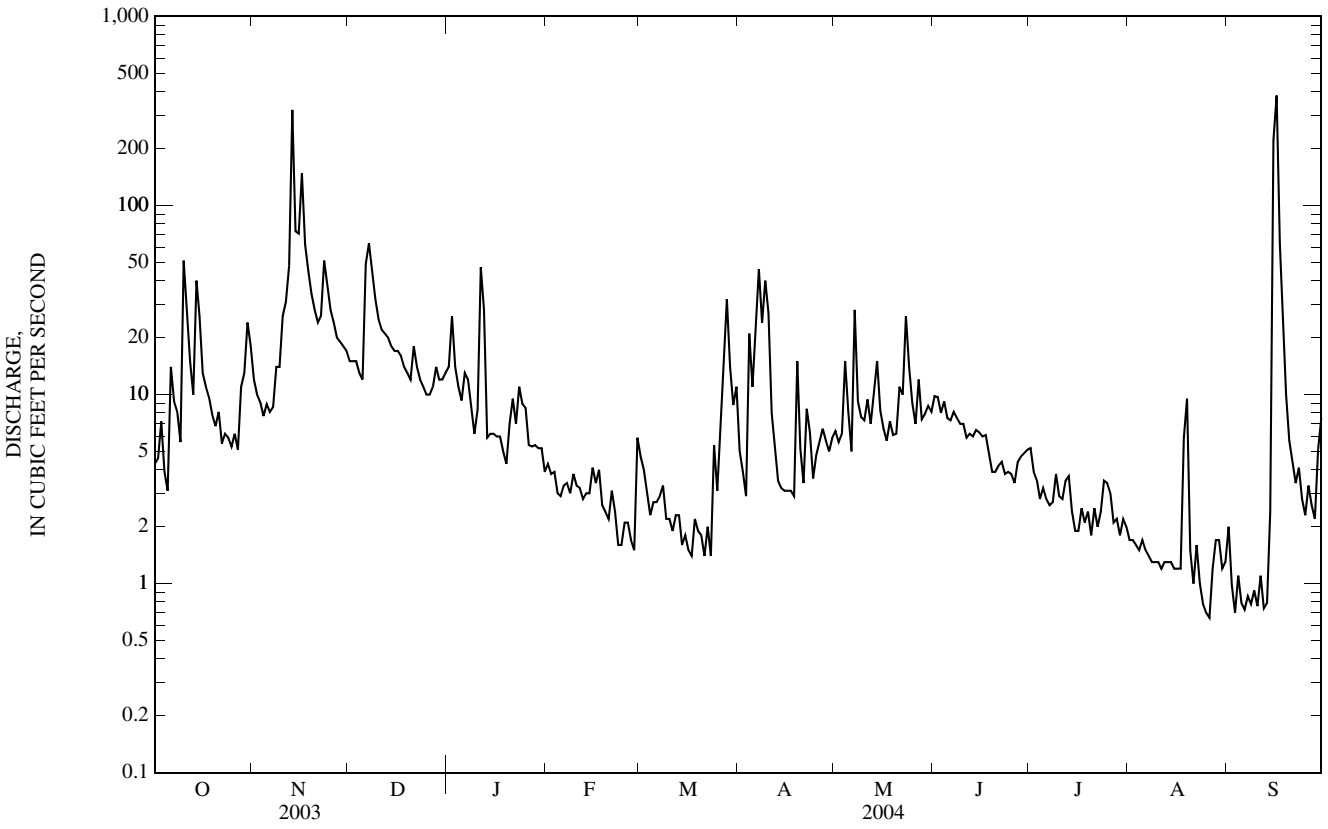
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 2004, BY WATER YEAR (WY)

MEAN	15.4	13.0	7.41	6.26	4.05	2.41	7.02	12.1	4.65	3.00	4.24	21.7
MAX	58.0	41.4	19.1	34.3	15.7	5.02	21.5	45.9	17.1	9.07	12.3	83.0
(WY)	(1990)	(2004)	(2004)	(1992)	(1996)	(2002)	(2002)	(1995)	(1999)	(1996)	(1989)	(1998)
MIN	1.95	0.93	0.53	0.77	0.96	0.90	0.93	0.86	0.88	0.88	1.03	0.88
(WY)	(1994)	(1998)	(1998)	(1995)	(1995)	(1994)	(1995)	(1997)	(1994)	(1994)	(1982)	(1994)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1981 - 2004	
ANNUAL TOTAL	3,467.49		4,472.69			
ANNUAL MEAN	9.50		12.2		8.35	
HIGHEST ANNUAL MEAN					13.3	1999
LOWEST ANNUAL MEAN					1.49	1994
HIGHEST DAILY MEAN	320	Nov 13	381	Sep 16	1,570	Sep 10, 1996
LOWEST DAILY MEAN	0.71	Jan 3	0.66	Aug 26	0.20	Oct 4, 1992
ANNUAL SEVEN-DAY MINIMUM	0.73	Jan 3	0.84	Sep 3	0.33	Oct 11, 1992
MAXIMUM PEAK FLOW			2,420	Nov 13	8,890	Sep 10, 1996
MAXIMUM PEAK STAGE			11.65	Nov 13	17.38	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	6,880		8,870		6,050	
ANNUAL RUNOFF (CFSM)	1.89		2.43		1.66	
ANNUAL RUNOFF (INCHES)	25.64		33.08		22.56	
10 PERCENT EXCEEDS	24		25		14	
50 PERCENT EXCEEDS	2.9		5.6		2.3	
90 PERCENT EXCEEDS	0.81		1.5		0.86	

e Estimated

50030460 RIO OROCOVIS AT OROCOVIS, PR—Continued



50030700 RIO OROCOVIS NEAR OROCOVIS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°14'20", long 66°22'58", at flat low bridge about 300 ft (91 m) northwest of Highway 568, 1.0 mi (1.6 km) north of Orocovis Plaza.

DRAINAGE AREA.--10.1 mi^2 (26.2 km^2).

PERIOD OF RECORD.--Water year 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
18...	1300	21	3.2	8.5	8.1	270	23.1	120	28.4	11.4	1.69	.5	12.2
APR													
20...	1005	32	39	8.4	7.9	233	21.1	91	22.5	8.50	1.87	.4	9.87
JUN													
09...	1307	16	10	9.6	8.3	315	26.6	--	--	--	--	--	--
AUG													
17...	1330	6.9	3.2	8.2	8.6	340	26.9	140	35.7	13.0	1.48	.5	14.2

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
18...	107	14.2	<.2	34.8	6.7	--	174	--	<10	.30	.04	.91	.920
APR													
20...	91	11.4	<.2	27.7	7.4	<.1	144	--	<20	.20	.02	.80	.810
JUN													
09...	121	--	--	--	--	--	--	--	15	<.20	.03	.88	.900
AUG													
17...	139	17.5	<.2	37.0	7.9	--	214	3.98	<10	--	.03	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC													
18...	.01	.26	1.2	5.4	.09	<10	2,000	E9,000	--	--	--	--	--
APR													
20...	.01	.18	1.0	4.5	.12	<10	1,200	4,700	<2	53.8	24	<.2	3.8
JUN													
09...	.02	--	--	--	.28	<10	300	7,000	--	--	--	--	--
AUG													
17...	--	--	--	--	.23	10	E100	470	<2	43.5	27	<.2	E.5

50030700 RIO OROCOVIS NEAR OROCOVIS, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC											
18...	--	--	--	--	--	--	--	--	--	--	--
APR											
20...	M	<.01	2,050	E.7	57.7	<.02	<3	<.3	5	<.80	<16
JUN											
09...	--	--	--	--	--	--	--	--	--	--	--
AUG											
17...	M	<.01	110	<1.0	15.4	<.02	<3	<.3	5	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR

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

DRAINAGE AREA.--55.2 mi^2 (143.0 km^2).

WATER DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 440 ft (134 m), from topographic map. February 2, 1966 to April 27, 1967, staff gage read twice daily.

REMARKS.--Records good. Public water-supply pumpage, about 1,000 ft (305 m) upstream from the station, influences low-flow discharges. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

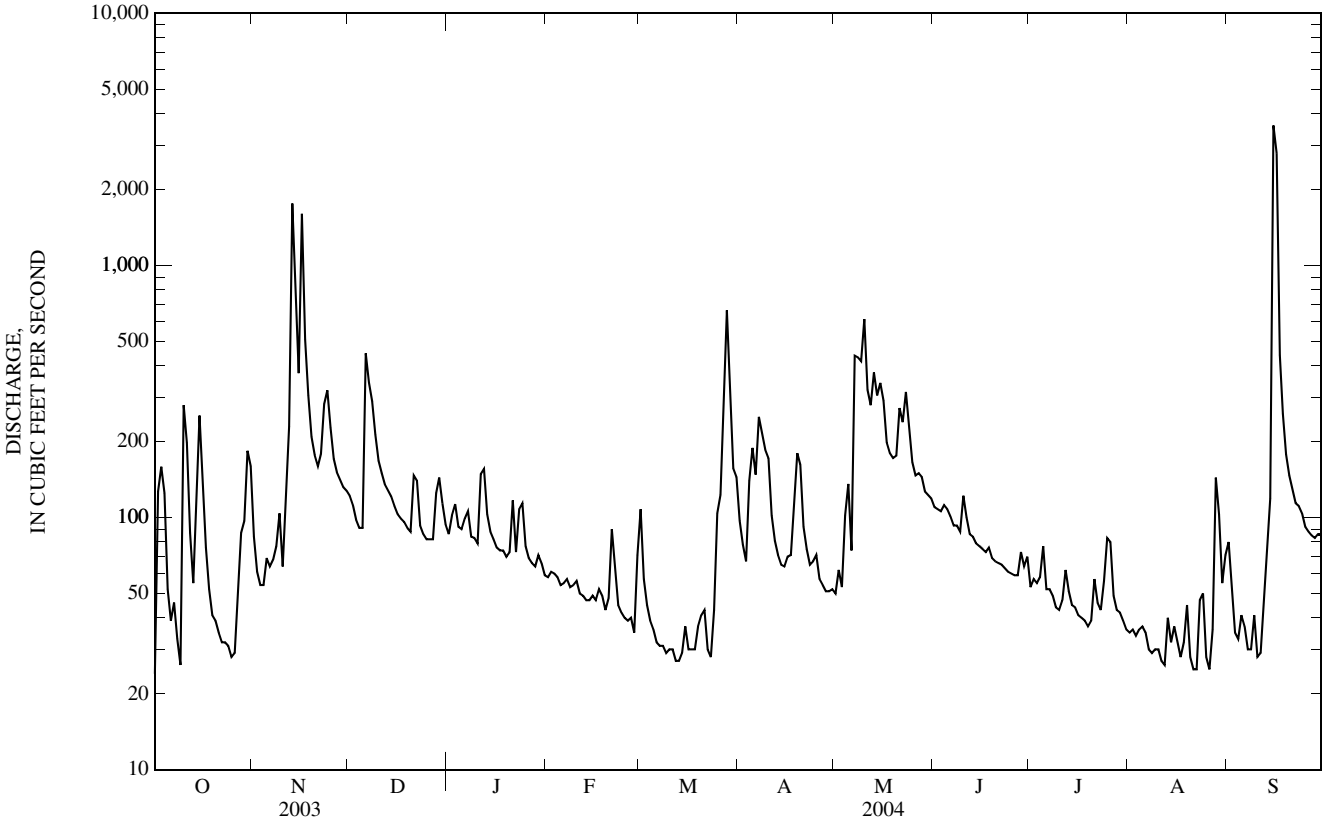
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	84	122	86	58	108	97	50	110	53	35	80
2	127	61	112	102	61	57	78	62	108	57	36	52
3	159	54	98	113	60	45	67	53	106	55	34	35
4	125	54	91	92	58	39	140	102	112	58	36	33
5	52	69	91	90	54	36	189	136	108	77	37	41
6	39	64	448	99	55	32	148	74	101	52	35	37
7	46	68	343	106	57	31	251	439	93	52	30	30
8	33	77	289	84	53	31	217	432	93	49	29	30
9	26	104	213	83	54	29	186	417	88	44	30	41
10	279	64	168	79	56	30	172	613	122	43	30	28
11	198	115	150	149	50	30	102	321	100	47	27	29
12	87	230	135	156	49	27	81	279	86	62	26	44
13	55	1,760	128	103	47	27	71	376	84	51	40	75
14	116	745	121	88	47	29	65	305	79	45	32	119
15	254	374	111	82	49	37	64	342	77	44	37	3,590
16	150	1,600	103	76	47	30	70	291	75	41	32	2,790
17	76	510	99	74	52	30	71	199	73	40	28	441
18	52	305	96	74	49	30	117	180	76	39	32	258
19	41	209	91	70	43	37	180	172	69	37	45	178
20	39	177	88	73	48	41	162	176	67	39	28	147
21	35	160	147	117	90	43	92	272	66	57	25	130
22	32	179	140	73	62	30	75	239	65	46	25	114
23	32	282	93	108	45	28	65	315	63	43	47	111
24	31	320	86	114	42	43	67	229	61	56	50	104
25	28	227	82	77	40	104	71	166	60	83	28	92
26	29	171	82	69	39	123	57	147	59	80	25	88
27	53	151	82	66	40	293	54	150	59	49	36	85
28	87	141	125	64	35	664	51	145	73	43	144	83
29	97	132	144	71	71	340	51	127	64	42	103	86
30	184	128	114	66	---	157	52	123	70	39	55	86
31	160	---	94	59	---	145	---	119	---	36	71	---
TOTAL	2,746	8,615	4,286	2,763	1,511	2,726	3,163	7,051	2,467	1,559	1,268	9,057
MEAN	88.6	287	138	89.1	52.1	87.9	105	227	82.2	50.3	40.9	302
MAX	279	1,760	448	156	90	664	251	613	122	83	144	3,590
MIN	24	54	82	59	35	27	51	50	59	36	25	28
AC-FT	5,450	17,090	8,500	5,480	3,000	5,410	6,270	13,990	4,890	3,090	2,520	17,960
CFSM	1.60	5.20	2.50	1.61	0.94	1.59	1.91	4.12	1.49	0.91	0.74	5.47
IN.	1.85	5.81	2.89	1.86	1.02	1.84	2.13	4.75	1.66	1.05	0.85	6.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2004, BY WATER YEAR (WY)

MEAN	142	148	109	80.1	62.1	60.5	101	147	58.5	43.1	51.1	112
MAX	1,037	491	522	228	179	226	412	915	173	157	435	432
(WY)	(1971)	(1971)	(1966)	(1997)	(1969)	(1972)	(1969)	(1985)	(1987)	(1979)	(1979)	(1996)
MIN	20.9	11.4	8.65	10.4	15.3	12.7	8.80	15.7	6.75	5.54	9.70	6.87
(WY)	(2002)	(1995)	(1995)	(1995)	(1994)	(1984)	(1995)	(1994)	(1994)	(1994)	(1984)	(1994)

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1965 - 2004	
ANNUAL TOTAL	27,357.3		47,212			
ANNUAL MEAN	75.0		129		92.5	
HIGHEST ANNUAL MEAN					248	1971
LOWEST ANNUAL MEAN					24.2	1994
HIGHEST DAILY MEAN	1,760	Nov 13	3,590	Sep 15	17,100	May 18, 1985
LOWEST DAILY MEAN	6.1	Mar 18	24	Oct 1	3.5	May 1, 1995
ANNUAL SEVEN-DAY MINIMUM	7.2	Mar 13	29	Mar 8	4.0	Jul 22, 1994
MAXIMUM PEAK FLOW			24,200	Sep 15	48,000	May 18, 1985
MAXIMUM PEAK STAGE			13.66	Sep 15	17.89	May 18, 1985
ANNUAL RUNOFF (AC-FT)	54,260		93,650		67,040	
ANNUAL RUNOFF (CFSM)	1.36		2.34		1.68	
ANNUAL RUNOFF (INCHES)	18.44		31.82		22.78	
10 PERCENT EXCEEDS	163		228		169	
50 PERCENT EXCEEDS	25		74		47	
90 PERCENT EXCEEDS	11		32		18	



50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
18...	0950	97	3.0	8.6	8.1	275	22.7	120	28.3	12.1	2.21	.5	12.3
APR													
20...	1300	--	E220	8.5	7.7	211	23.3	82	19.5	8.10	2.46	.5	9.47
JUN													
09...	1019	88	2.0	10.1	8.2	292	26.2	--	--	--	--	--	--
AUG													
17...	0930	28	2.0	7.9	8.2	301	27.1	120	28.3	12.1	1.60	.5	12.8

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
18...	113	15.5	<.2	28.8	7.5	--	175	45.6	<10	<.20	<.01	--	.990
APR													
20...	81	11.8	<.2	21.4	6.8	<.1	128	--	28	.70	.04	.82	.850
JUN													
09...	112	--	--	--	--	--	--	--	--	<.20	.01	--	.640
AUG													
17...	119	16.3	<.2	28.6	7.2	--	180	13.8	<10	--	.03	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC													
18...	<.01	--	--	--	.05	<10	280	4,800	--	--	--	--	--
APR													
20...	.03	.66	1.5	6.9	.20	<10	--	--	E1	73.8	31	<.2	9.3
JUN													
09...	<.01	--	--	--	.03	--	E70	2,500	--	--	--	--	--
AUG													
17...	--	--	--	--	.07	<10	120	290	<2	49.9	26	<.2	E.5
14...	--	--	--	--	--	--	--	--	--	--	--	--	--

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC											
18...	--	--	--	--	--	--	--	--	--	--	--
APR											
20...	20	<.01	4,900	1.2	177	.02	<3	<.3	15	<.80	<16
JUN											
09...	--	--	--	--	--	--	--	--	--	--	--
AUG											
17...	M	<.01	100	<1.0	17.0	<.02	<3	<.3	<4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR—Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: October 2001 to current year.

INSTRUMENTATION.--USDH-48 and automatic sediment sampler since 2001.

REMARKS.-- Sediment samples were collected by a local observer on a weekly basis. During high flow events sediment samples were collected with automatic sediment sampler.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 8,370 mg/L September 15, 2004; Minimum daily mean, 3 mg/L several days during Water Year 2003 and August 11, 2004.
SEDIMENT LOADS: Maximum daily mean, 232,000 tons (210,470 tonnes) September 15, 2004; Minimum daily mean, .09 ton (.08 tonne) July 12, 2003.

EXTREMES FOR CURRENT YEAR 2004.--
SEDIMENT CONCENTRATION: Maximum daily mean, 8,370 mg/L September 15, 2004; Minimum daily mean, 3 mg/L August 11, 2004.
SEDIMENT LOADS: Maximum daily mean, 232,000 tons (210,470 tonnes) September 15, 2004; Minimum daily mean, .24 ton (.22 tonne) August 11, 2004.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		OCTOBER			NOVEMBER			DECEMBER	
1	24	36	2.3	84	57	13	122	14	4.6
2	127	97	77	61	56	9.2	112	10	3.0
3	159	119	63	54	55	8.0	98	14	3.4
4	125	201	74	54	55	8.0	91	21	5.3
5	52	81	12	69	56	10	91	21	5.1
6	39	61	6.5	64	62	11	448	626	1,400
7	46	49	6.1	68	69	13	343	431	456
8	33	57	5.0	77	76	16	289	204	173
9	26	63	4.5	104	78	22	213	88	51
10	279	289	497	64	77	13	168	36	16
11	198	127	76	115	77	24	150	21	8.7
12	87	47	11	230	191	209	135	16	5.9
13	55	43	6.4	1,760	2,130	26,500	128	11	3.9
14	116	107	114	745	609	1,930	121	10	3.3
15	254	328	242	374	251	1,010	111	10	3.1
16	150	110	53	1,600	1,720	12,800	103	11	3.0
17	76	34	7.1	510	198	276	99	11	3.0
18	52	23	3.2	305	97	83	96	12	3.2
19	41	22	2.5	209	48	27	91	14	3.5
20	39	22	2.3	177	39	18	88	16	3.7
21	35	23	2.1	160	38	17	147	65	43
22	32	23	2.0	179	50	27	140	85	37
23	32	25	2.2	282	120	197	93	52	13
24	31	29	2.4	320	87	90	86	38	8.8
25	28	32	2.4	227	46	30	82	30	6.6
26	29	29	2.3	171	23	11	82	24	5.2
27	53	28	4.6	151	20	7.9	82	18	4.0
28	87	49	18	141	20	7.7	125	16	5.5
29	97	45	14	132	21	7.4	144	16	6.1
30	184	138	125	128	18	6.3	114	15	4.6
31	160	98	49	---	---	---	94	14	3.6
TOTAL	2,746	---	1,488.9	8,615	---	43,401.5	4,286	---	2,296.1

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	86	13	3.1	58	15	2.3	108	12	3.5
2	102	13	3.5	61	14	2.3	57	14	2.1
3	113	12	3.7	60	13	2.0	45	15	1.9
4	92	12	3.0	58	12	1.8	39	15	1.5
5	90	12	2.9	54	16	2.4	36	13	1.3
6	99	12	3.1	55	23	3.4	32	11	1.0
7	106	12	3.3	57	29	4.5	31	11	0.90
8	84	11	2.6	53	27	3.8	31	10	0.84
9	83	11	2.5	54	22	3.2	29	10	0.76
10	79	11	2.4	56	17	2.5	30	9	0.74
11	149	30	23	50	12	1.6	30	9	0.74
12	156	31	14	49	9	1.1	27	9	0.66
13	103	24	6.7	47	6	0.82	27	9	0.64
14	88	22	5.1	47	5	0.57	29	9	0.68
15	82	19	4.1	49	5	0.71	37	9	0.86
16	76	16	3.2	47	7	0.90	30	8	0.67
17	74	13	2.6	52	8	1.1	30	8	0.66
18	74	14	2.8	49	8	0.99	30	11	0.86
19	70	17	3.1	43	8	0.95	37	14	1.4
20	73	19	3.8	48	9	1.1	41	17	1.9
21	117	21	6.8	90	9	2.3	43	17	2.0
22	73	24	4.7	62	10	1.6	30	17	1.4
23	108	26	7.7	45	10	1.2	28	17	1.3
24	114	29	8.8	42	11	1.2	43	17	2.0
25	77	29	5.9	40	11	1.2	104	17	4.8
26	69	28	5.3	39	10	1.1	123	106	55
27	66	28	4.9	40	10	1.1	293	1,070	905
28	64	27	4.7	35	9	0.87	664	2,080	4,160
29	71	24	4.6	71	10	2.0	340	881	927
30	66	20	3.6	---	---	---	157	161	72
31	59	17	2.7	---	---	---	145	45	18
TOTAL	2,763	---	158.2	1,511	---	50.61	2,726	---	6,172.11
		APRIL			MAY			JUNE	
1	97	45	12	50	13	1.8	110	16	4.7
2	78	45	9.4	62	13	2.2	108	12	3.6
3	67	44	8.0	53	13	1.9	106	11	3.3
4	140	103	82	102	144	54	112	12	3.7
5	189	108	62	136	270	106	108	13	3.7
6	148	83	36	74	82	17	101	13	3.5
7	251	281	398	439	392	1,780	93	13	3.3
8	217	127	92	432	268	669	93	13	3.2
9	186	134	129	417	180	211	88	13	3.1
10	172	71	38	613	335	758	122	12	4.1
11	102	36	10	321	132	126	100	12	3.2
12	81	22	4.9	279	119	93	86	11	2.6
13	71	21	3.9	376	188	297	84	10	2.3
14	65	19	3.4	305	111	105	79	9	1.9
15	64	17	3.0	342	154	178	77	8	1.6
16	70	15	2.8	291	119	105	75	6	1.3
17	71	12	2.4	199	56	30	73	6	1.2
18	117	83	59	180	45	22	76	6	1.2
19	180	125	91	172	34	16	69	6	1.1
20	162	111	51	176	39	22	67	6	1.1
21	92	48	12	272	429	534	66	6	1.1
22	75	40	8.1	239	277	190	65	6	1.0
23	65	35	6.2	315	267	233	63	4	0.70
24	67	30	5.5	229	260	167	61	9	1.5
25	71	26	5.0	166	88	40	60	18	3.0
26	57	22	3.4	147	63	25	59	27	4.4
27	54	18	2.7	150	57	27	59	32	5.1
28	51	14	2.0	145	43	18	73	34	6.7
29	51	13	1.8	127	27	9.2	64	36	6.3
30	52	13	1.8	123	24	7.8	70	37	7.0
31	---	---	---	119	20	6.3	---	---	---
TOTAL	3,163	---	1,146.3	7,051	---	5,852.2	2,467	---	90.50

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	53	38	5.5	35	5	0.50	80	52	11
2	57	38	5.9	36	6	0.54	52	48	6.8
3	55	38	5.7	34	6	0.55	35	43	4.1
4	58	32	5.0	36	8	0.80	33	38	3.4
5	77	26	5.5	37	11	1.1	41	33	3.7
6	52	19	2.7	35	14	1.3	37	28	2.8
7	52	13	1.8	30	16	1.3	30	23	1.9
8	49	12	1.6	29	14	1.1	30	18	1.5
9	44	13	1.6	30	10	0.85	41	16	1.7
10	43	15	1.7	30	7	0.56	28	14	1.1
11	47	13	1.6	27	3	0.24	29	12	0.96
12	62	10	1.8	26	5	0.35	44	12	1.4
13	51	8	1.1	40	9	1.0	75	11	2.3
14	45	5	0.59	32	14	1.2	119	701	1,200
15	44	5	0.64	37	14	1.4	3,590	8,370	232,000
16	41	7	0.78	32	14	1.2	2,790	4,130	55,200
17	40	9	1.0	28	13	0.99	441	498	607
18	39	21	2.2	32	12	1.0	258	215	159
19	37	36	3.6	45	13	1.6	178	92	45
20	39	51	5.4	28	14	1.1	147	43	17
21	57	64	9.9	25	16	1.0	130	19	6.5
22	46	52	6.5	25	15	1.0	114	16	4.8
23	43	34	4.0	47	14	1.8	111	12	3.7
24	56	17	2.4	50	13	1.8	104	9	2.6
25	83	11	2.5	28	12	0.92	92	6	1.5
26	80	11	2.4	25	12	0.79	88	8	1.8
27	49	11	1.5	36	17	3.4	85	11	2.6
28	43	11	1.3	144	520	357	83	15	3.3
29	42	9	1.1	103	382	156	86	18	4.2
30	39	7	0.79	55	53	7.8	86	17	3.8
31	36	5	0.53	71	52	10	---	---	---
TOTAL	1,559	---	88.63	1,268	---	560.19	9,057	---	289,305.46
YEAR	47,212	350,610.70							

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

SILT AND CLAY PERCENT OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
MAY					
21...	2035	524	97	1,290	1,830

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, falldia nat wat percent <.002mm (70326)	Suspnd. sediment, falldia nat wat percent <.004mm (70327)	Suspnd. sediment, falldia nat wat percent <.008mm (70328)	Suspnd. sediment, falldia nat wat percent <.016mm (70329)	Suspnd. sediment, falldia nat wat percent <.031mm (70330)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspnd. sediment, sieve diametr percent <.125mm (70332)	Suspnd. sediment, sieve diametr percent <.25mm (70333)	Suspnd. sediment, sieve diametr percent <.5 mm (70334)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
MAY													
21...	2340	340	68	80	92	97	100	100	100	100	--	2,360	2,160
SEP													
14...	2300	759	40	55	72	88	97	100	100	100	100	11,900	24,400

50032290 LAGO EL GUINEO AT DAMSITE NEAR VILLALBA, PR

LOCATION.--Lat 18°09'41", long 66°31'36", Hydrologic Unit 21010001, at damsite on Río Toro Negro, 3.0 mi (4.8 km) northwest from Villalba Plaza and 1.9 mi (3.1 km) northeast of Cerro Maravillas. The reservoir itself fixes the territorial limits between the municipalities of Ciales and Orocovis.

DRAINAGE AREA.--1.64 mi^2 (4.25 km^2).

PERIOD OF RECORD.--May 1988 to current year. Prior to October 1994, published as Lago El Guineo at Damsite.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago El Guineo was completed in 1931. It provides a maximum storage of approximately 2,180 acre-feet (2.688 hm^3) for power and irrigation. Waters are discharged through an outlet power tunnel into the Río Toro Negro and conveyed to the head water works of the Toro Negro Hydroelectric Plant No. 2, for energy generation at the Toro Negro Hydroelectric Plant No. 1, and are discharged into the Guayabal Reservoir to be later used for irrigation at South Coast Irrigation System. The dam is rockfill with a vertical concrete corewall, rock toes, and riprap facing of upstream slope, with a total length of 565 ft (172 m), a maximum structural height of 125 ft (38 m) to top of corewall. At a maximum reservoir water surface elevation the uncontrolled morning-glory tunnel spillway crest has an elevation of 2,960 ft (902 m) above mean sea level and a design capacity of 7,000 ft^3/s. The dam is owned by the Puerto Rico Electric Power Authority. Gage-height and precipitation satellite telemetry at station.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation 2,964.40 ft (905.55 m), September 22, 1998; minimun elevation 2,919.79 ft (899.95 m), May 27, 1988.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 2,962.38 ft (902.93 m), September 16; minimun elevation, 2,936.26 ft (894.97 m), October 1.

Capacity Table
(based on data from Puerto Rico Electric Power Authority)
(Elevation in ft, capacity in acre-ft)

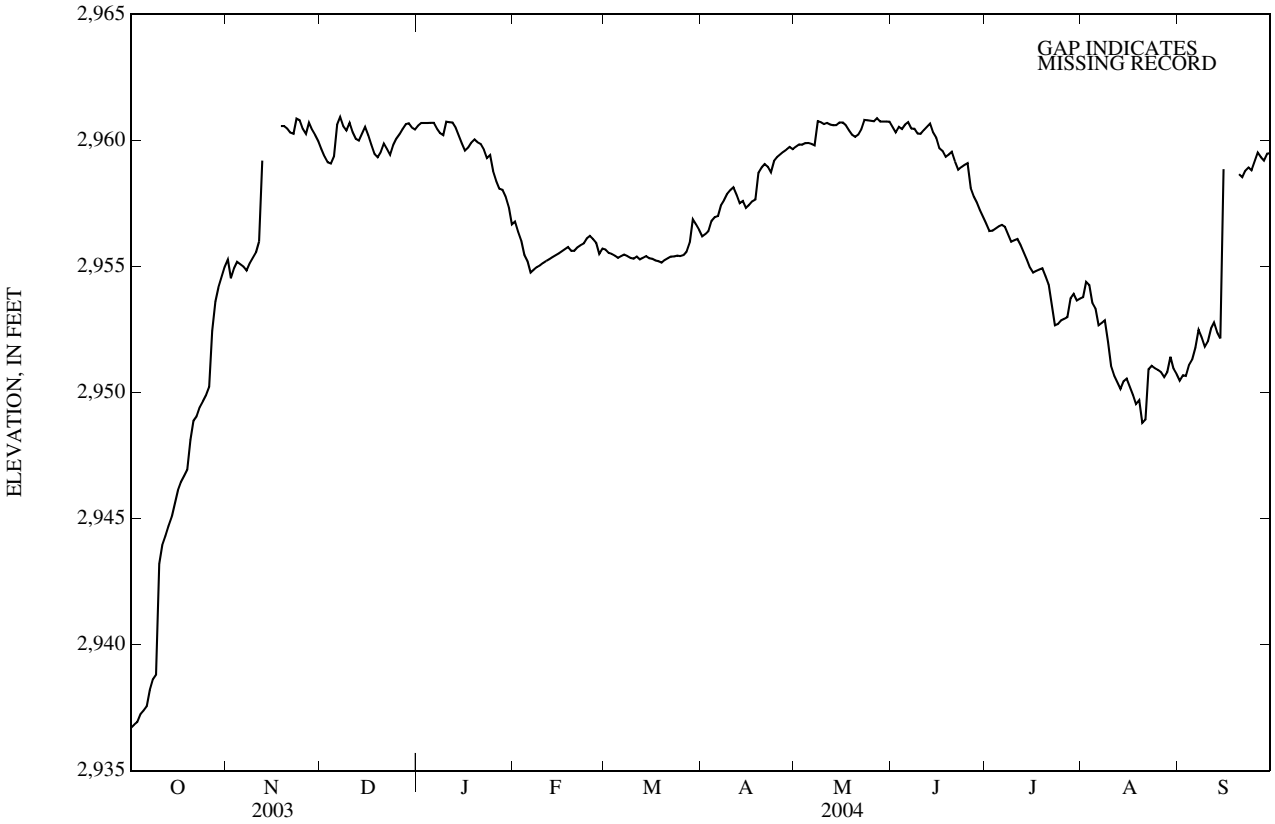
Elevation	Contents	Elevation	Contents
2,872	0	2,950	1,308
2,919	361	2,961	1,852
2,925	491	2,966	2,180
2,943	1,029		

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,936.70	2,955.27	2,959.65	2,960.59	2,956.78	2,955.67	2,956.19	2,959.75	2,960.52	2,956.70	2,953.78	2,950.47
2	2,936.83	2,954.53	2,959.35	2,960.69	2,956.38	2,955.54	2,956.28	2,959.84	2,960.32	2,956.41	2,954.39	2,950.68
3	2,936.93	2,954.93	2,959.13	2,960.69	2,956.02	2,955.50	2,956.41	2,959.83	2,960.54	2,956.42	2,954.26	2,950.66
4	2,937.24	2,955.18	2,959.08	2,960.69	2,955.46	2,955.43	2,956.81	2,959.89	2,960.45	2,956.51	2,953.55	2,951.10
5	2,937.38	2,955.09	2,959.36	2,960.70	2,955.21	2,955.34	2,956.95	2,959.90	2,960.63	2,956.59	2,953.32	2,951.31
6	2,937.55	2,954.99	2,960.63	2,960.70	2,954.76	2,955.41	2,957.00	2,959.86	2,960.72	2,956.65	2,952.66	2,951.78
7	2,938.19	2,954.84	2,960.93	2,960.46	2,954.87	2,955.47	2,957.43	2,959.80	2,960.47	2,956.57	2,952.76	2,952.49
8	2,938.63	2,955.13	2,960.56	2,960.29	2,954.97	2,955.41	2,957.64	2,960.76	2,960.46	2,956.27	2,952.86	2,952.20
9	2,938.81	2,955.34	2,960.39	2,960.21	2,955.04	2,955.34	2,957.88	2,960.72	2,960.27	2,955.98	2,952.00	2,951.82
10	2,943.20	2,955.56	2,960.70	2,960.74	2,955.14	2,955.31	2,958.03	2,960.65	2,960.26	2,956.04	2,951.06	2,952.03
11	2,943.94	2,955.99	2,960.33	2,960.72	2,955.22	2,955.39	2,958.14	2,960.69	2,960.41	2,956.09	2,950.67	2,952.54
12	2,944.31	2,959.20	2,960.06	2,960.71	2,955.29	2,955.28	2,957.84	2,960.63	2,960.54	2,955.85	2,950.41	2,952.78
13	2,944.70	A	2,959.99	2,960.51	2,955.37	2,955.34	2,957.51	2,960.60	2,960.67	2,955.57	2,950.14	2,952.38
14	2,945.06	A	2,960.27	2,960.20	2,955.44	2,955.41	2,957.60	2,960.61	2,960.32	2,955.27	2,950.44	2,952.14
15	2,945.57	A	2,960.54	2,959.88	2,955.52	2,955.33	2,957.33	2,960.71	2,960.10	2,954.96	2,950.55	2,958.86
16	2,946.12	A	2,960.20	2,959.60	2,955.60	2,955.30	2,957.44	2,960.71	2,959.69	2,954.76	2,950.24	A
17	2,946.45	A	2,959.83	2,959.72	2,955.69	2,955.24	2,957.58	2,960.60	2,959.58	2,954.82	2,949.91	A
18	2,946.69	2,960.57	2,959.46	2,959.91	2,955.77	2,955.21	2,957.66	2,960.40	2,959.35	2,954.88	2,949.54	A
19	2,946.93	2,960.57	2,959.33	2,960.04	2,955.62	2,955.15	2,958.72	2,960.23	2,959.44	2,954.93	2,949.69	A
20	2,948.12	2,960.47	2,959.54	2,959.93	2,955.62	2,955.26	2,958.93	2,960.14	2,959.55	2,954.61	2,948.80	2,958.66
21	2,948.88	2,960.31	2,959.87	2,959.86	2,955.76	2,955.33	2,959.06	2,960.23	2,959.16	2,954.29	2,948.93	2,958.54
22	2,949.06	2,960.26	2,959.65	2,959.64	2,955.84	2,955.39	2,958.95	2,960.45	2,958.84	2,953.43	2,950.92	2,958.80
23	2,949.41	2,960.86	2,959.42	2,959.30	2,955.91	2,955.40	2,958.73	2,960.81	2,958.94	2,952.66	2,951.06	2,958.93
24	2,949.65	2,960.80	2,959.82	2,959.42	2,956.11	2,955.43	2,959.19	2,960.80	2,959.03	2,952.72	2,950.97	2,958.81
25	2,949.88	2,960.46	2,960.07	2,958.78	2,956.21	2,955.41	2,959.34	2,960.78	2,959.10	2,952.86	2,950.90	2,959.17
26	2,950.22	2,960.26	2,960.25	2,958.38	2,956.09	2,955.45	2,959.45	2,960.76	2,958.11	2,952.92	2,950.81	2,959.52
27	2,952.45	2,960.71	2,960.45	2,958.08	2,955.94	2,955.58	2,959.55	2,960.88	2,957.78	2,952.99	2,950.61	2,959.33
28	2,953.61	2,960.42	2,960.64	2,958.04	2,955.50	2,955.95	2,959.64	2,960.75	2,957.53	2,953.74	2,950.81	2,959.20
29	2,954.17	2,960.21	2,960.68	2,957.78	2,955.71	2,956.87	2,959.74	2,960.75	2,957.23	2,953.91	2,951.42	2,959.47
30	2,954.57	2,959.96	2,960.51	2,957.35	---	2,956.67	2,959.65	2,960.75	2,956.95	2,953.65	2,950.95	2,959.50
31	2,954.98	---	2,960.43	2,956.67	---	2,956.46	---	2,960.74	---	2,953.72	2,950.73	---
MAX	2,954.98	---	2,960.93	2,960.74	2,956.78	2,956.87	2,959.74	2,960.88	2,960.72	2,956.70	2,954.39	---
MIN	2,936.70	---	2,959.08	2,956.67	2,954.76	2,955.15	2,956.19	2,959.75	2,956.95	2,952.66	2,948.80	---

A No gage-height record

50032290 LAGO EL GUINEO AT DAMSITE NEAR VILLALBA, PR—Continued



50032590 LAGO DE MATRULLAS AT DAMSITE NEAR OROCOVIS, PR

LOCATION.--Lat 18°12'46", long 66°28'50", Hydrologic Unit 21010001, in shelter house at damsite, and 5.8 mi (9.3 km) southwest of Orocovis.

DRAINAGE AREA.--4.46 mi^2 (11.6 km^2).

PERIOD OF RECORD.--May 1988 to current year. Prior to October 1994, published as Lago de Matrullas at Damsite.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago Matrullas was completed in 1934. The dam is an earthfill structure about 120 ft (37 m) height, a top width of 30 ft (9 m) and a length of 710 ft (216 m), and has a maximum storage capacity of about 4,274 acre-feet (5.220 hm^3) at top of dam elevation. The Matrullas Dam is owned by the Puerto Rico Electric Power Authority (PREPA) and is part of the Toro Negro Hydroelectric Project; a project developed by the PREPA for the primary purpose of generating electric power. Discharges from the power plants are collected by the Jacaguas River which flows into Guayabal Dam, at which are regulated for irrigation of lands served by the Juana Díaz Canal. Gage-height and precipitation satellite telemetry at station.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation 2,419.90 ft (737.58 m), September 10, 1996; minimum elevation, 2,375.55 ft (724.06 m), September 24 and 25, 1994.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 2,418.13 ft (737.05 m); September 16; minimum elevation, 2,413.46 ft (735.62 m) August 12.

Capacity Table
(based on data from the Puerto Rico Electric Power Authority)
(Elevation in ft, capacity in acre-ft)

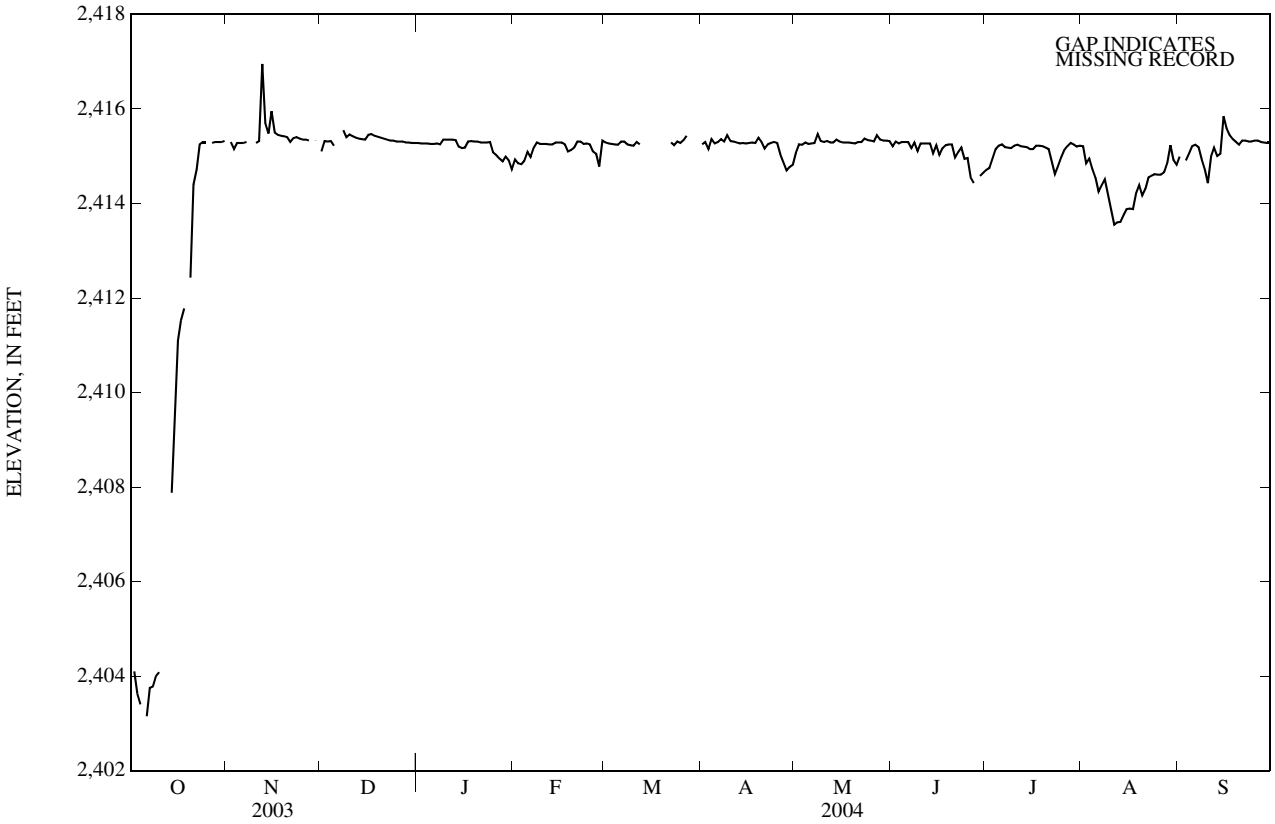
Elevation	Contents	Elevation	Contents
2,338	2	2,399	1,845
2,360	302	2,420	3,331

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	A	A	2,415.10	2,415.28	2,414.93	2,415.29	2,415.25	2,415.07	2,415.21	2,414.71	2,415.21	2,414.99
2	2,404.10	2,415.30	2,415.32	2,415.27	2,414.85	2,415.27	2,415.30	2,415.25	2,415.31	2,414.75	2,414.85	A
3	2,403.63	2,415.15	2,415.31	2,415.27	2,414.83	2,415.26	2,415.15	2,415.24	2,415.27	2,414.94	2,414.95	2,414.91
4	2,403.40	2,415.28	2,415.32	2,415.27	2,414.90	2,415.25	2,415.36	2,415.29	2,415.30	2,415.15	2,414.73	2,415.06
5	A	2,415.28	2,415.22	2,415.26	2,415.09	2,415.24	2,415.27	2,415.26	2,415.30	2,415.22	2,414.54	2,415.21
6	2,403.15	2,415.28	A	2,415.26	2,414.98	2,415.31	2,415.30	2,415.27	2,415.30	2,415.25	2,414.25	2,415.24
7	2,403.75	2,415.30	A	2,415.27	2,415.18	2,415.31	2,415.36	2,415.28	2,415.17	2,415.19	2,414.39	2,415.19
8	2,403.78	A	2,415.55	2,415.25	2,415.29	2,415.25	2,415.31	2,415.47	2,415.29	2,415.18	2,414.51	2,414.94
9	2,404.00	A	2,415.40	2,415.35	2,415.26	2,415.23	2,415.44	2,415.32	2,415.11	2,415.17	2,414.20	2,414.72
10	2,404.08	2,415.28	2,415.46	2,415.35	2,415.26	2,415.22	2,415.32	2,415.30	2,415.27	2,415.22	2,413.88	2,414.43
11	A	2,415.32	2,415.42	2,415.35	2,415.26	2,415.30	2,415.31	2,415.32	2,415.27	2,415.24	2,413.55	2,414.99
12	A	2,416.95	2,415.39	2,415.35	2,415.25	2,415.25	2,415.29	2,415.29	2,415.27	2,415.21	2,413.60	2,415.18
13	A	2,415.70	2,415.37	2,415.34	2,415.25	A	2,415.27	2,415.29	2,415.27	2,415.20	2,413.61	2,415.00
14	2,407.88	2,415.48	2,415.36	2,415.20	2,415.29	A	2,415.28	2,415.35	2,415.06	2,415.19	2,413.75	2,415.05
15	2,409.53	2,415.95	2,415.35	2,415.17	2,415.29	A	2,415.27	2,415.31	2,415.23	2,415.15	2,413.88	2,415.84
16	2,411.10	2,415.50	2,415.45	2,415.18	2,415.29	A	2,415.28	2,415.29	2,415.03	2,415.15	2,413.89	2,415.59
17	2,411.53	2,415.45	2,415.47	2,415.31	2,415.25	A	2,415.29	2,415.29	2,415.17	2,415.22	2,413.88	2,415.44
18	2,411.78	2,415.43	2,415.43	2,415.32	2,415.10	A	2,415.28	2,415.29	2,415.23	2,415.22	2,414.21	2,415.36
19	A	2,415.42	2,415.41	2,415.31	2,415.13	A	2,415.39	2,415.28	2,415.25	2,415.21	2,414.39	2,415.30
20	2,412.43	2,415.40	2,415.39	2,415.31	2,415.18	A	2,415.30	2,415.27	2,415.25	2,415.18	2,414.17	2,415.24
21	2,414.40	2,415.30	2,415.37	2,415.29	2,415.31	A	2,415.16	2,415.30	2,414.97	2,415.15	2,414.31	2,415.33
22	2,414.72	2,415.38	2,415.35	2,415.29	2,415.31	2,415.29	2,415.25	2,415.30	2,415.09	2,414.88	2,414.55	2,415.33
23	2,415.25	2,415.40	2,415.33	2,415.29	2,415.26	2,415.23	2,415.28	2,415.37	2,415.18	2,414.62	2,414.59	2,415.31
24	2,415.30	2,415.37	2,415.33	2,415.30	2,415.27	2,415.31	2,415.30	2,415.34	2,414.94	2,414.79	2,414.62	2,415.31
25	2,415.30	2,415.35	2,415.31	2,415.08	2,415.25	2,415.28	2,415.28	2,415.33	2,414.96	2,414.97	2,414.61	2,415.33
26	A	2,415.35	2,415.31	2,415.02	2,415.10	2,415.34	2,415.04	2,415.31	2,414.54	2,415.13	2,414.61	2,415.33
27	2,415.28	2,415.33	2,415.31	2,414.95	2,415.05	2,415.43	2,414.87	2,415.44	2,414.43	2,415.21	2,414.66	2,415.30
28	2,415.30	A	2,415.29	2,414.89	2,414.78	A	2,414.70	2,415.35	A	2,415.28	2,414.85	2,415.29
29	2,415.30	2,415.33	2,415.29	2,414.99	2,415.33	A	2,414.77	2,415.33	2,414.58	2,415.25	2,415.23	2,415.28
30	2,415.30	A	2,415.28	2,414.91	---	A	2,414.82	2,415.33	2,414.65	2,415.20	2,414.92	2,415.28
31	2,415.32	---	2,415.28	2,414.72	---	A	---	2,415.32	---	2,415.22	2,414.82	---
MAX	---	---	---	2,415.35	2,415.33	---	2,415.44	2,415.47	---	2,415.28	2,415.23	---
MIN	---	---	---	2,414.72	2,414.78	---	2,414.70	2,415.07	---	2,414.62	2,413.55	---

A No gage-height record

50032590 LAGO DE MATRULLAS AT DAMSITE NEAR OROCOVIS, PR—Continued



50034000 RIO BAUTA NEAR OROCOVIS, PR

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

DRAINAGE AREA.--16.7 mi^2 (43.3 km^2).

PERIOD OF RECORD.--February 1959 to April 1966 (annual low-flow measurements only), February to September 1969 (occasional measurements only), October 1969 to September 1982, October 1988 to current year.

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

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	81	38	e42	16	25	41	27	39	e14	22	70
2	21	69	36	e41	16	16	26	25	37	e14	e36	37
3	28	44	35	e37	16	14	20	22	36	e14	e28	18
4	29	36	34	e33	15	e13	63	36	36	e13	e34	14
5	19	34	33	e28	15	e13	51	34	33	e13	e26	13
6	43	32	137	e26	14	e12	71	26	33	e12	e25	29
7	41	33	327	e24	14	e12	120	67	32	e20	e24	32
8	34	36	251	e22	14	e11	88	119	31	e18	20	16
9	23	31	126	20	14	e11	126	134	30	e16	19	11
10	237	138	91	20	14	11	90	88	31	e15	19	9.5
11	114	140	78	25	13	11	41	81	29	e14	19	58
12	43	246	69	29	13	10	31	73	28	e15	20	39
13	28	1,300	65	22	13	9.9	25	61	28	e13	22	29
14	110	423	60	21	13	10	22	104	27	e12	20	17
15	168	187	57	20	13	10	21	78	27	e12	20	658
16	138	579	55	19	13	9.9	22	64	26	e11	19	1,230
17	94	227	53	19	13	9.7	21	48	e28	e12	19	228
18	43	222	51	19	13	11	20	45	e27	e18	66	140
19	39	126	48	19	13	12	151	40	e23	e17	92	124
20	119	86	47	20	14	11	73	41	e21	e15	35	90
21	97	68	48	20	20	10	e37	49	e20	e13	14	69
22	45	66	44	24	16	9.6	e35	47	e20	e12	23	60
23	90	119	42	41	14	9.5	e33	205	e19	e11	14	76
24	51	125	41	30	13	20	31	135	e18	e200	9.3	64
25	35	98	e67	21	12	18	30	128	e17	38	8.9	48
26	30	66	e45	19	e17	28	e28	73	e17	35	9.0	40
27	29	53	e40	18	13	47	e27	149	e16	31	9.9	34
28	61	47	e45	17	e13	159	26	105	e15	56	19	31
29	74	43	e55	18	24	87	25	57	e15	70	36	29
30	113	40	e53	17	---	39	25	46	e14	30	23	30
31	104	---	e48	16	---	44	---	42	---	24	19	---
TOTAL	2,114	4,795	2,219	747	421	713.6	1,420	2,249	773	808	770.1	3,343.5
MEAN	68.2	160	71.6	24.1	14.5	23.0	47.3	72.5	25.8	26.1	24.8	111
MAX	237	1,300	327	42	24	159	151	205	39	200	92	1,230
MIN	14	31	33	16	12	9.5	20	22	14	11	8.9	9.5
AC-FT	4,190	9,510	4,400	1,480	835	1,420	2,820	4,460	1,530	1,600	1,530	6,630
CFSM	4.08	9.57	4.29	1.44	0.87	1.38	2.83	4.34	1.54	1.56	1.49	6.67
IN.	4.71	10.68	4.94	1.66	0.94	1.59	3.16	5.01	1.72	1.80	1.72	7.45

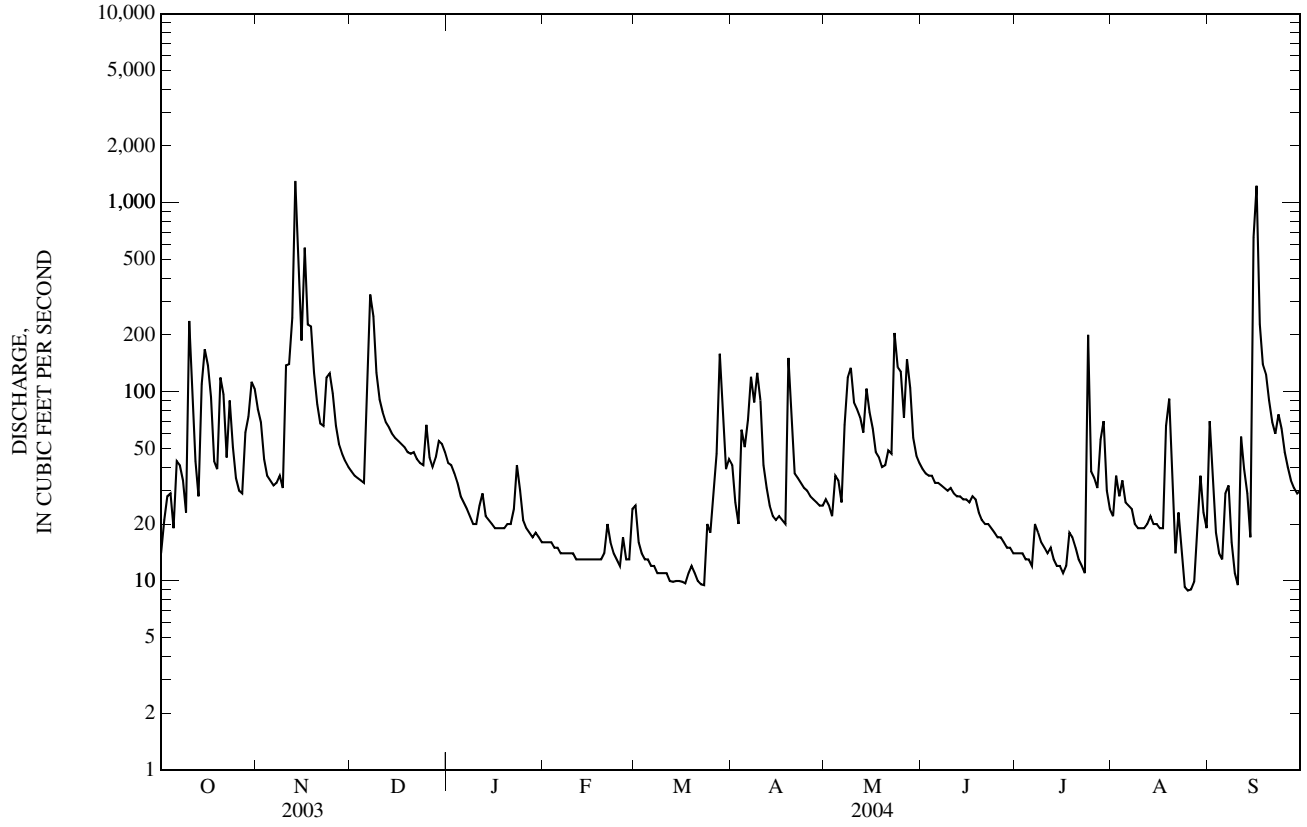
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 2004, BY WATER YEAR (WY)

MEAN	78.5	60.1	31.2	21.3	16.7	15.6	33.0	48.7	20.3	15.4	21.0	106
MAX	392	205	108	83.4	43.5	59.9	119	179	78.6	104	152	1,104
(WY)	(1971)	(1971)	(1971)	(1992)	(1998)	(1972)	(2002)	(1981)	(1979)	(1979)	(1979)	(1996)
MIN	12.6	7.12	4.29	3.66	5.70	4.18	4.92	4.24	3.59	3.22	3.97	3.55
(WY)	(2002)	(1995)	(1995)	(1995)	(1994)	(1994)	(1995)	(1994)	(1994)	(1994)	(1994)	(1994)

50034000 RIO BAUTA NEAR OROCOVIS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1969 - 2004	
ANNUAL TOTAL	15,901.6		20,373.2			
ANNUAL MEAN	43.6		55.7		39.0	
HIGHEST ANNUAL MEAN					117	1996
LOWEST ANNUAL MEAN					6.56	1994
HIGHEST DAILY MEAN	1,300	Nov 13	1,300	Nov 13	19,500	Sep 10, 1996
LOWEST DAILY MEAN	5.0	Mar 17	8.9	Aug 25	2.8	Jul 23, 1994
ANNUAL SEVEN-DAY MINIMUM	5.3	Mar 12	10	Mar 11	2.8	Jul 23, 1994
MAXIMUM PEAK FLOW			3,710	Sep 16	28,200	Sep 22, 1998
MAXIMUM PEAK STAGE			13.87	Sep 16	25.93	Sep 22, 1998
INSTANTANEOUS LOW FLOW			6.8	Sep 11	2.6	Jul 26, 1994
ANNUAL RUNOFF (AC-FT)	31,540		40,410		28,280	
ANNUAL RUNOFF (CFSM)	2.61		3.33		2.34	
ANNUAL RUNOFF (INCHES)	35.42		45.38		31.76	
10 PERCENT EXCEEDS	98		116		69	
50 PERCENT EXCEEDS	13		29		14	
90 PERCENT EXCEEDS	7.1		13		5.7	

e Estimated



50035000 RIO GRANDE DE MANATI AT CIALES, PR

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

DRAINAGE AREA.--128 mi^2 (332 km^2), excludes 6.0 mi^2 (15.5 km^2), the runoff from which is diverted through El Guineo and Matrullas reservoirs.

PERIOD OF RECORD.--September 1946 to September 1953, May 1956 to December 1957 (unpublished, available in files of Caribbean District Office), February 1959 to September 1960 (monthly discharge measurements only), October 1960 to current year. Equivalent record from January 1971 to December 1972 published as 50035200 Río Grande de Manatí at Highway 145 at Ciales at site 1.6 mi (2.6 km) downstream, drainage area 132 mi^2 (342 km^2).

GAGE.--Water-stage recorder. Elevation of gage is 140 ft (43 m), from topographic map. Prior to April 1, 1962, staff gage read twice daily, at site 100 ft (30 m) upstream at same datum. January 1971 to December 1972 at site 1.6 mi (2.6 km) downstream at different datum. Since October 1, 1997, 2.0 ft (0.6 m) were added to gage datum.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate gage heights of major floods, pointed out by local residents are as follows: August 1899, 50 ft (15 m), September 1928, 36 ft (11 m), and September 1932, 34 ft (10 m) at site 1.6 mi (2.6 km) upstream.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	134	609	253	198	113	299	334	122	307	105	82	221
2	386	522	228	229	115	145	209	140	268	110	82	180
3	433	382	216	256	118	117	167	130	259	104	134	109
4	368	322	205	207	113	101	238	191	257	109	102	93
5	165	306	208	197	105	91	472	322	262	149	106	111
6	128	280	844	207	106	83	319	169	242	105	109	135
7	243	271	1,170	231	112	83	555	612	227	114	89	169
8	266	293	1,150	181	101	83	610	1,080	211	101	82	108
9	260	330	702	e178	106	79	428	1,470	207	90	84	103
10	777	350	515	e175	111	76	552	1,550	252	86	89	81
11	713	543	433	e370	99	76	264	1,030	226	99	85	210
12	343	697	349	e300	95	74	193	978	195	176	82	310
13	208	2,940	315	e220	92	72	161	927	184	123	114	423
14	249	1,930	316	e190	90	84	145	812	171	106	101	288
15	849	970	275	172	96	99	141	995	158	96	119	1,240
16	622	e3,500	255	158	95	78	134	894	148	85	99	1,750
17	459	e2,200	232	149	102	71	147	603	154	82	87	1,450
18	290	1,070	222	154	98	70	202	505	153	82	126	941
19	220	727	209	150	88	86	564	456	138	86	195	632
20	563	545	211	145	94	86	544	391	138	83	134	489
21	591	459	305	225	194	95	245	594	133	92	72	396
22	366	540	361	169	149	76	181	579	126	79	64	327
23	333	728	206	232	108	70	159	1,040	120	74	115	318
24	341	959	193	243	93	90	162	878	115	102	113	288
25	243	687	199	162	95	237	172	707	115	128	90	236
26	292	486	196	141	86	254	143	507	112	130	74	223
27	387	389	195	131	88	636	132	730	111	89	74	200
28	594	340	294	131	77	1,620	124	742	127	83	257	175
29	720	284	356	157	197	1,000	121	477	123	175	286	181
30	747	269	295	126	---	534	122	389	133	110	181	180
31	863	---	223	118	---	443	---	347	---	82	147	---
TOTAL	13,153	23,928	11,131	5,902	3,136	7,008	7,940	20,367	5,372	3,235	3,574	11,567
MEAN	424	798	359	190	108	226	265	657	179	104	115	386
MAX	863	3,500	1,170	370	197	1,620	610	1,550	307	176	286	1,750
MIN	128	269	193	118	77	70	121	122	111	74	64	81
AC-FT	26,090	47,460	22,080	11,710	6,220	13,900	15,750	40,400	10,660	6,420	7,090	22,940
CFSM	3.31	6.23	2.81	1.49	0.84	1.77	2.07	5.13	1.40	0.82	0.90	3.01
IN.	3.82	6.95	3.23	1.72	0.91	2.04	2.31	5.92	1.56	0.94	1.04	3.36

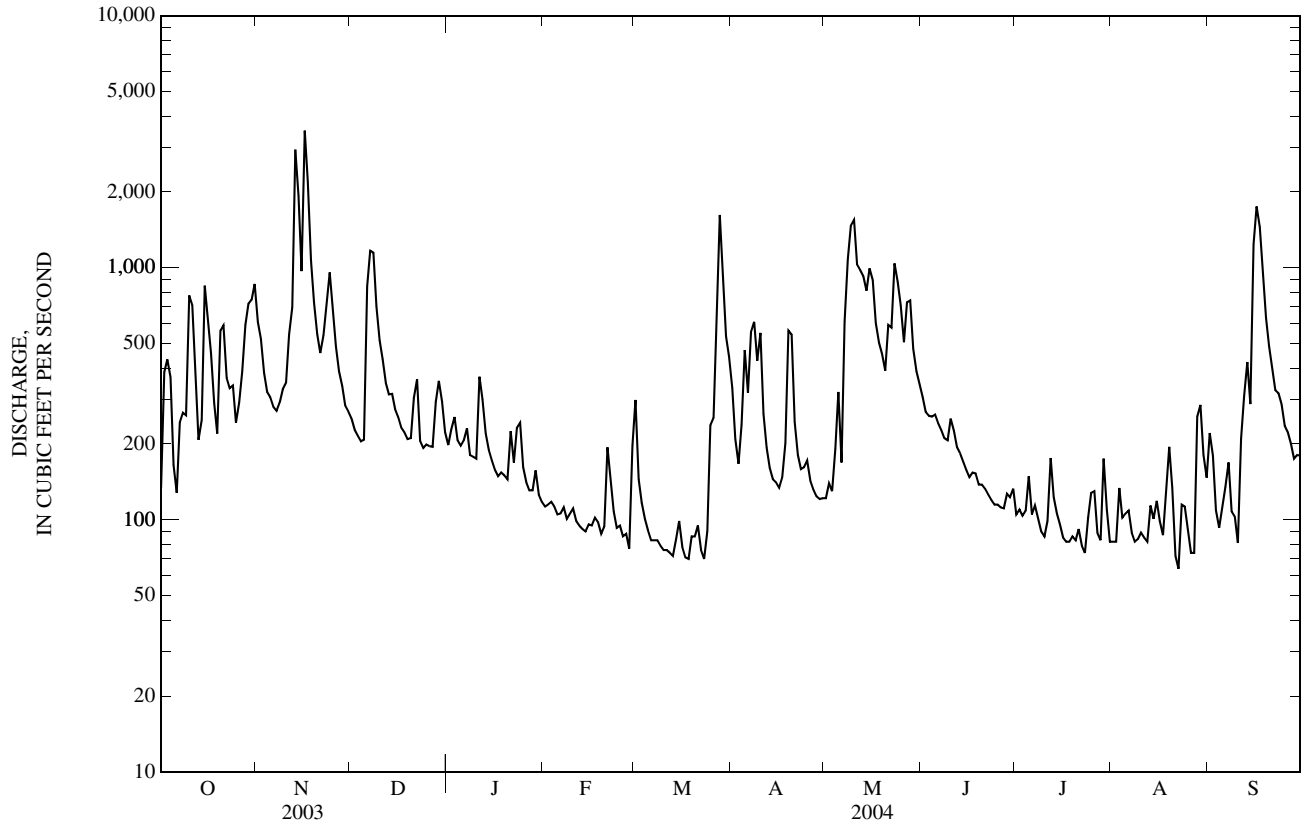
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2004, BY WATER YEAR (WY)

MEAN	412	363	261	191	161	133	256	395	154	102	145	310
MAX	2,422	1,029	1,296	679	1,393	477	1,174	2,293	512	438	1,212	1,295
(WY)	(1971)	(2000)	(1966)	(1952)	(1950)	(1969)	(1969)	(1985)	(1999)	(1979)	(1979)	(1996)
MIN	66.7	34.7	29.7	26.2	41.6	29.7	28.5	29.6	17.8	14.1	27.0	23.9
(WY)	(2002)	(1995)	(1995)	(1995)	(1957)	(1994)	(1984)	(1994)	(1994)	(1994)	(1994)	(1994)

50035000 RIO GRANDE DE MANATI AT CIALES, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1946 - 2004	
ANNUAL TOTAL	86,063		116,313			
ANNUAL MEAN	236		318		241	
HIGHEST ANNUAL MEAN					520	1971
LOWEST ANNUAL MEAN					47.3	1994
HIGHEST DAILY MEAN	3,500	Nov 16	3,500	Nov 16	42,700	May 18, 1985
LOWEST DAILY MEAN	31	Mar 18	64	Aug 22	8.5	Jul 28, 1994
ANNUAL SEVEN-DAY MINIMUM	33	Mar 12	78	Mar 7	9.5	Jul 24, 1994
MAXIMUM PEAK FLOW			10,300	Nov 13	128,000	Sep 10, 1996
MAXIMUM PEAK STAGE			10.19	Nov 13	25.20	Sep 10, 1996
INSTANTANEOUS LOW FLOW			60	Aug 22	8.5	Jul 27, 1994
ANNUAL RUNOFF (AC-FT)	170,700		230,700		174,700	
ANNUAL RUNOFF (CFSM)	1.84		2.48		1.88	
ANNUAL RUNOFF (INCHES)	25.01		33.80		25.60	
10 PERCENT EXCEEDS	565		715		447	
50 PERCENT EXCEEDS	99		194		114	
90 PERCENT EXCEEDS	37		86		50	

e Estimated



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

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--136 mi^2 (352 km^2), this excludes the 6 mi^2 (15.5 km^2) upstream from Lago El Guineo and Lago de Matrullas, flow from which is diverted to Río Jacaguas.

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
16...	1150	300	<2.0	8.6	8.0	226	23.3	95	23.9	8.45	2.13	.5	11.9
APR													
15...	1300	180	6.4	8.5	8.0	244	26.0	95	23.7	8.65	1.79	.5	11.4
JUN													
08...	1020	220	2.5	9.9	8.1	244	25.6	--	--	--	--	--	--
AUG													
05...	0900	96	3.6	7.5	7.9	246	27.5	92	23.7	7.98	1.61	.5	11.7

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
DEC													
16...	90	13.2	<.2	26.2	7.7	--	148	--	<10	.50	.03	.750	<.01
APR													
15...	95	12.3	<.2	26.2	7.8	<.1	149	--	<10	<.20	.02	.540	<.01
JUN													
08...	95	--	--	--	--	--	--	--	<10	<.20	.01	.390	<.01
AUG													
05...	93	12.7	<.2	25.3	7.8	--	146	37.9	<10	--	--	--	--

Date	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)
DEC													
16...	.47	1.2	5.5	.05	<10	96	2,500	--	--	--	--	--	--
APR													
15...	--	--	--	.05	<10	--	--	<2	44.1	20	<.2	E.7	M
JUN													
08...	--	--	--	.03	<10	E10	2,200	--	--	--	--	--	--
AUG													
05...	--	--	--	--	<10	350	7,000	E1	41.4	21	<.2	<.8	<4

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Manganese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
DEC										
16...	--	--	--	--	--	--	--	--	--	--
APR										
15...	<.01	300	<1.0	20.9	<.02	<3	<.3	<4	<.10	<16
JUN										
08...	--	--	--	--	--	--	--	--	--	--
AUG										
05...	<.01	90	<1.0	16.9	<.02	<3	<.3	<4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50035950 RIO CIALITOS AT HIGHWAY 649 AT CIALES, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'18", long 66°28'28", 100 ft (30 m) upstream from bridge on Highway 649, 0.7 mi (1.1 km) upstream from mouth, and about 0.4 mi (0.6 km) west of Ciales Plaza.

DRAINAGE AREA.--17.0 mi^2 (44.0 km^2).

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
16...	1340	--	4.2	9.1	8.3	210	23.4	91	25.8	6.35	1.56	.5	10.6
APR													
15...	1015	--	3.1	11.1	8.2	224	23.5	87	24.3	6.39	1.56	.5	10.8
JUN													
08...	1255	30	<2.0	11.2	8.4	222	27.4	--	--	--	--	--	--
AUG													
05...	1110	17	7.5	9.3	8.4	259	28.2	96	27.9	6.51	1.56	.5	11.4

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
DEC													
16...	86	10.5	<.2	31.1	5.2	--	143	--	<10	.30	<.01	.840	<.01
APR													
15...	94	10.7	<.2	30.7	5.2	<.1	146	--	<10	<.20	.02	.520	<.01
JUN													
08...	89	--	--	--	--	--	--	--	<10	<.20	.01	.640	<.01
AUG													
05...	102	12.1	<.2	30.6	5.9	--	158	7.40	<10	--	--	--	--

Date	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)
DEC													
16...	1.1	5.0	.08	<10	E740	E9,900	--	--	--	--	--	--	--
APR													
15...	--	--	.06	<10	--	--	<2	48.0	14	<.2	<.8	<4	<.01
JUN													
08...	--	--	.06	<10	E10	E2,400	--	--	--	--	--	--	--
AUG													
05...	--	--	--	<10	240	3,800	<2	53.6	16	<.2	E.4	M	<.01

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC									
16...	--	--	--	--	--	--	--	--	--
APR									
15...	110	<1.0	10.2	<.02	<3	<.3	<4	<.10	<16
JUN									
08...	--	--	--	--	--	--	--	--	--
AUG									
05...	180	<1.0	17.0	<.02	<3	<.3	<4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

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

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

DRAINAGE AREA.--197 mi^2 (510 km^2), approximately, of which about 38 mi^2 (98 km^2) is partly or entirely noncontributing, excludes 6.0 mi^2 (15.5 km^2) upstream from Lago El Guineo and Lago de Matrullas.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WRD PR-86-1: 1970-71 (M), 1975, 1979, 1982-85 (P).

GAGE.--Water-stage recorder. Elevation of gage is 14 ft (4 m), from topographic map. Prior to 1968 crest-stage gage at same site and datum 3.57 ft (1.09 m) lower.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station. Possible water extraction about 500 ft (152.4 m) upstream of gage by unknown source affecting low flow.

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

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	908	424	327	212	478	519	196	441	242	187	243
2	121	755	399	326	208	266	385	213	412	236	184	267
3	509	407	433	382	213	207	315	212	391	236	206	208
4	317	382	499	336	207	188	309	221	375	228	194	189
5	164	323	486	314	203	176	689	393	380	258	198	186
6	127	309	1,080	314	197	169	405	256	365	233	196	192
7	208	273	2,000	354	205	164	544	868	352	235	187	228
8	163	285	2,430	299	197	164	1,130	2,760	341	230	178	197
9	377	402	1,230	288	192	164	457	6,650	330	218	175	200
10	565	394	770	279	200	163	932	4,220	344	211	175	181
11	1,330	726	608	298	192	158	401	2,110	341	210	173	171
12	346	490	538	674	186	157	311	2,560	321	259	170	468
13	212	23,500	479	402	183	156	274	2,050	310	263	172	445
14	169	25,500	474	312	179	159	253	1,380	303	241	184	418
15	726	2,220	434	287	178	185	240	1,790	295	220	178	20,100
16	966	18,900	405	282	179	166	230	1,840	285	208	186	61,100
17	435	3,510	381	261	181	155	234	1,060	288	204	176	e11,600
18	268	2,370	368	258	184	153	231	773	295	201	174	e2,000
19	186	1,810	351	255	174	158	433	693	272	202	234	e1,300
20	368	1,120	341	249	173	163	1,210	594	269	203	249	e1,000
21	1,210	849	370	328	239	168	367	696	266	204	188	e750
22	374	890	685	268	300	160	278	905	258	201	173	e550
23	263	1,190	365	323	198	152	243	1,230	252	193	186	e500
24	298	1,810	324	337	183	156	239	1,790	244	190	203	e460
25	325	1,520	321	272	179	290	254	1,040	247	243	197	e430
26	255	812	315	247	175	278	227	716	251	227	179	e400
27	550	628	311	234	170	1,260	216	635	242	211	174	e380
28	636	555	367	227	166	3,450	207	1,460	250	198	209	e360
29	886	485	481	258	225	2,710	203	613	250	232	374	e350
30	1,020	449	451	228	---	1,020	206	526	283	222	297	e350
31	1,380	---	373	219	---	765	---	480	---	196	231	---
TOTAL	14,855	93,772	18,493	9,438	5,678	14,158	11,942	40,930	9,253	6,855	6,187	105,223
MEAN	479	3,126	597	304	196	457	398	1,320	308	221	200	3,507
MAX	1,380	25,500	2,430	674	300	3,450	1,210	6,650	441	263	374	61,100
MIN	101	273	311	219	166	152	203	196	242	190	170	171
AC-FT	29,460	186,000	36,680	18,720	11,260	28,080	23,690	81,180	18,350	13,600	12,270	208,700
CFSM	2.43	15.9	3.03	1.55	0.99	2.32	2.02	6.70	1.57	1.12	1.01	17.8
IN.	2.81	17.71	3.49	1.78	1.07	2.67	2.26	7.73	1.75	1.29	1.17	19.87

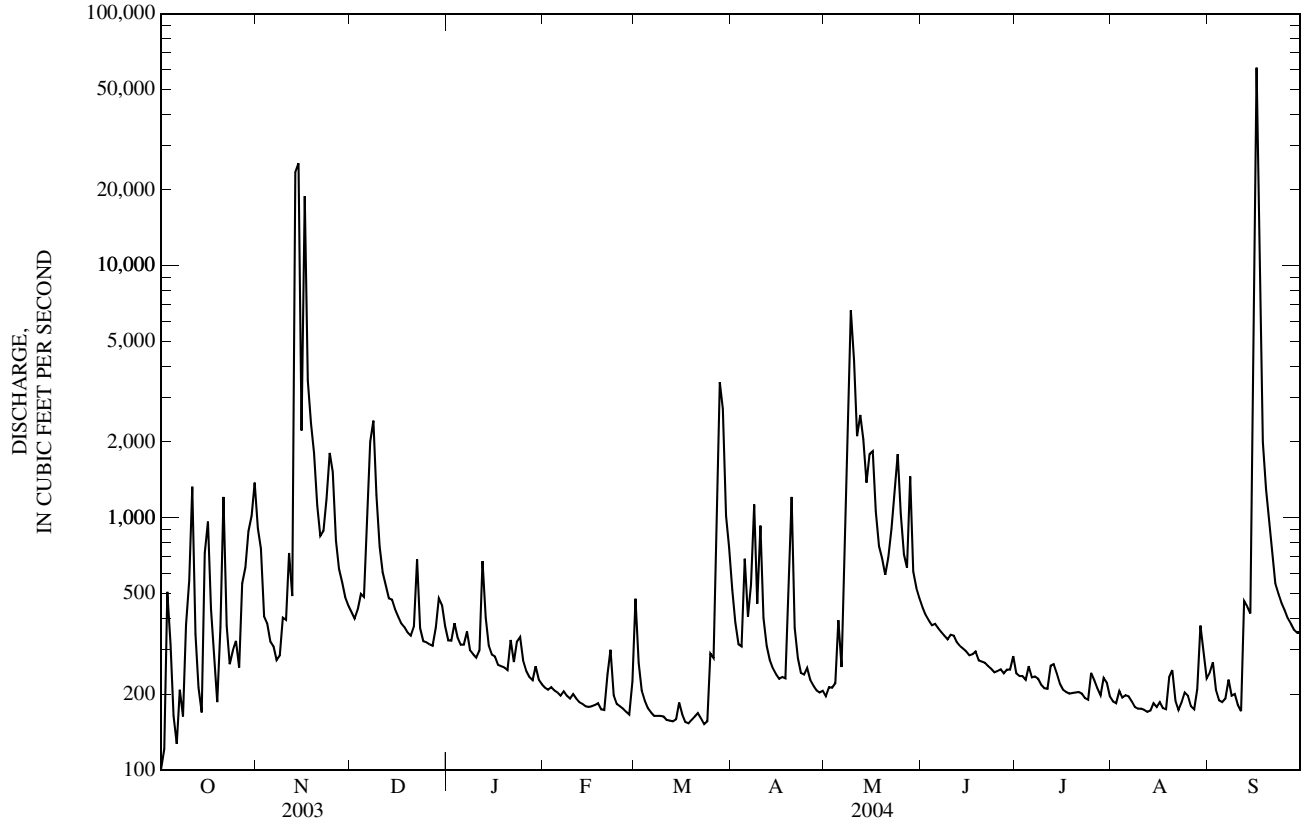
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2004, BY WATER YEAR (WY)

MEAN	680	707	415	265	203	184	372	632	236	152	205	678
MAX	2,958	3,126	1,717	879	444	521	1,187	3,178	815	577	1,644	3,732
(WY)	(1971)	(2004)	(2000)	(1997)	(1988)	(1972)	(2002)	(1985)	(1999)	(1979)	(1979)	(1998)
MIN	130	71.0	55.1	59.1	72.0	56.2	49.9	93.7	63.8	53.0	67.9	67.4
(WY)	(2002)	(1995)	(1998)	(1995)	(1994)	(1994)	(1995)	(1989)	(1994)	(1994)	(1984)	(1994)

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

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1970 - 2004	
ANNUAL TOTAL	186,882		336,784			
ANNUAL MEAN	512		920		393	
HIGHEST ANNUAL MEAN					920	2004
LOWEST ANNUAL MEAN					96.5	1994
HIGHEST DAILY MEAN	25,500	Nov 14	61,100	Sep 16	80,400	Sep 22, 1998
LOWEST DAILY MEAN	53	Mar 16	101	Oct 1	31	Jan 24, 1995
ANNUAL SEVEN-DAY MINIMUM	54	Mar 12	158	Mar 17	33	Jul 23, 1994
MAXIMUM PEAK FLOW			107,000	Sep 16	198,000	Sep 10, 1996
MAXIMUM PEAK STAGE			34.10	Sep 16	36.39	Sep 10, 1996
INSTANTANEOUS LOW FLOW			94	Oct 2	28	Jan 23, 1995
ANNUAL RUNOFF (AC-FT)	370,700		668,000		284,600	
ANNUAL RUNOFF (CFSM)	2.60		4.67		1.99	
ANNUAL RUNOFF (INCHES)	35.29		63.60		27.10	
10 PERCENT EXCEEDS	864		1,200		680	
50 PERCENT EXCEEDS	118		285		166	
90 PERCENT EXCEEDS	67		175		82	

e Estimated



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

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
09...	1130	--	78	8.5	7.5	206	23.4	70	19.0	5.44	1.80	.4	8.45
FEB													
24...	1505	184	32	8.6	7.6	279	26.7	120	35.3	7.91	2.14	.4	11.2
JUN													
22...	1050	--	11	7.8	7.7	315	27.7	--	--	--	--	--	--
SEP													
07...	1500	--	12	8.4	8.0	308	30.4	100	30.7	6.50	1.50	.4	9.96

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
09...	71	9.26	<.2	22.1	7.0	--	116	--	107	.60	<.01	--	.540
FEB													
24...	128	12.5	<.2	18.3	7.8	<.1	172	85.4	26	.40	.06	.95	.960
JUN													
22...	118	--	--	--	--	--	--	--	15	.30	.02	.61	.620
SEP													
07...	115	14.1	<.2	22.7	7.1	--	164	--	17	--	.02	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC													
09...	<.01	--	1.1	5.0	.22	<10	3,000	57,000	--	--	--	--	--
FEB													
24...	.01	.34	1.4	6.0	.11	<10	E1,500	5,300	<2	47.3	16	<.2	.9
JUN													
22...	.01	.28	.92	4.1	.07	<10	E1,600	2,900	--	--	--	--	--
SEP													
07...	--	--	--	--	.10	<10	210	2,900	<2	44.0	24	<.2	1.3

Date	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
DEC											
09...	--	--	--	--	--	--	--	--	--	--	--
FEB											
24...	M	<.01	920	<1.0	69.8	<.02	<3	<.3	E3	<.10	<16
JUN											
22...	--	--	--	--	--	--	--	--	--	--	--
SEP											
07...	M	<.01	650	E.9	48.2	<.02	<3	<.3	5	E.07	<16

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

PESTICIDES ANALYSIS

Date	Time	2,4,5-T water unfltrd ug/L (39740)	2,4-D water unfltrd ug/L (39730)	Aldrin, water, unfltrd ug/L (39330)	alpha-Endosulfan, water, unfltrd ug/L (39388)	Carbophenothion, water, unfltrd ug/L (39786)	Chlordane, technical, water, unfltrd ug/L (39350)	Chlorpyrifos water unfltrd ug/L (38932)	Diazinon, water, unfltrd ug/L (39570)	Dichlorprop, water, unfltrd ug/L (82183)	Dieldrin, water, unfltrd ug/L (39380)	Disulfoton, water, unfltrd ug/L (39011)	Endrin, water, unfltrd ug/L (39390)
SEP 07...	1500	<.01	<.01	<.01	<.03	<.02	<.1	<.01	<.02	<.02	<.016	<.10	<.01

Date	Ethion, water, unfltrd ug/L (39398)	Fonofos water unfltrd ug/L (82614)	Heptachlor epoxide water unfltrd ug/L (39420)	Heptachlor, water, unfltrd ug/L (39410)	Lindane water, unfltrd ug/L (39340)	Malathion, water, unfltrd ug/L (39530)	Methyl parathion, water, unfltrd ug/L (39600)	Mirex, water, unfltrd ug/L (39755)	p,p'-DDD, water, unfltrd ug/L (39360)	p,p'-DDE, water, unfltrd ug/L (39365)	p,p'-DDT, water, unfltrd ug/L (39370)	p,p'-Methoxychlor, water, unfltrd ug/L (39480)	Parathion, water, unfltrd ug/L (39540)
SEP 07...	<.01	<.01	<.009	<.01	<.014	<.10	<.01	<.006	<.016	<.014	<.010	<.006	<.01

Date	PCBs, water, unfltrd ug/L (39516)	Phorate water unfltrd ug/L (39023)	Silvex, water, unfltrd ug/L (39760)	Toxaphene, water, unfltrd ug/L (39400)	Tribuphos, water, unfltrd ug/L (39040)
SEP 07...	<.1	<.02	<.02	<1	<.02

< Actual value is known to be less than the value shown
E Estimated value
M Presence verified, not quantified

50038200 LAGUNA TORTUGUERO OUTLET NEAR VEGA BAJA, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--Indeterminate.

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Sulfide water unfltrd mg/L (00745)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
NOV													
24...	1540	33	5.5	7.3	962	28.0	76	--	<10	.80	.20	.730	.02
FEB													
24...	1053	10	8.4	8.0	1,030	27.0	121	<.1	<10	.80	.05	.320	<.01
JUN													
02...	1120	23	6.7	7.8	992	29.3	135	--	<10	.80	.18	1.00	.01
AUG													
16...	1015	9.8	6.9	8.2	921	29.7	101	--	<10	--	.12	--	--

Date	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Boron, water, unfltrd recoverable, ug/L (01022)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Manganese, water, unfltrd recoverable, ug/L (01055)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
NOV													
24...	6.8	<.02	30	E55	750	--	--	--	--	--	--	--	--
FEB													
24...	5.0	<.02	30	47	540	47	M	<.01	20	2.8	<4	<.10	<16
JUN													
02...	8.0	<.02	20	E45	400	--	--	--	--	--	--	--	--
AUG													
16...	--	.01	20	58	180	53	<4	<.01	20	1.7	<4	E.07	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

THIS PAGE IS INTENTIONALLY BLANK

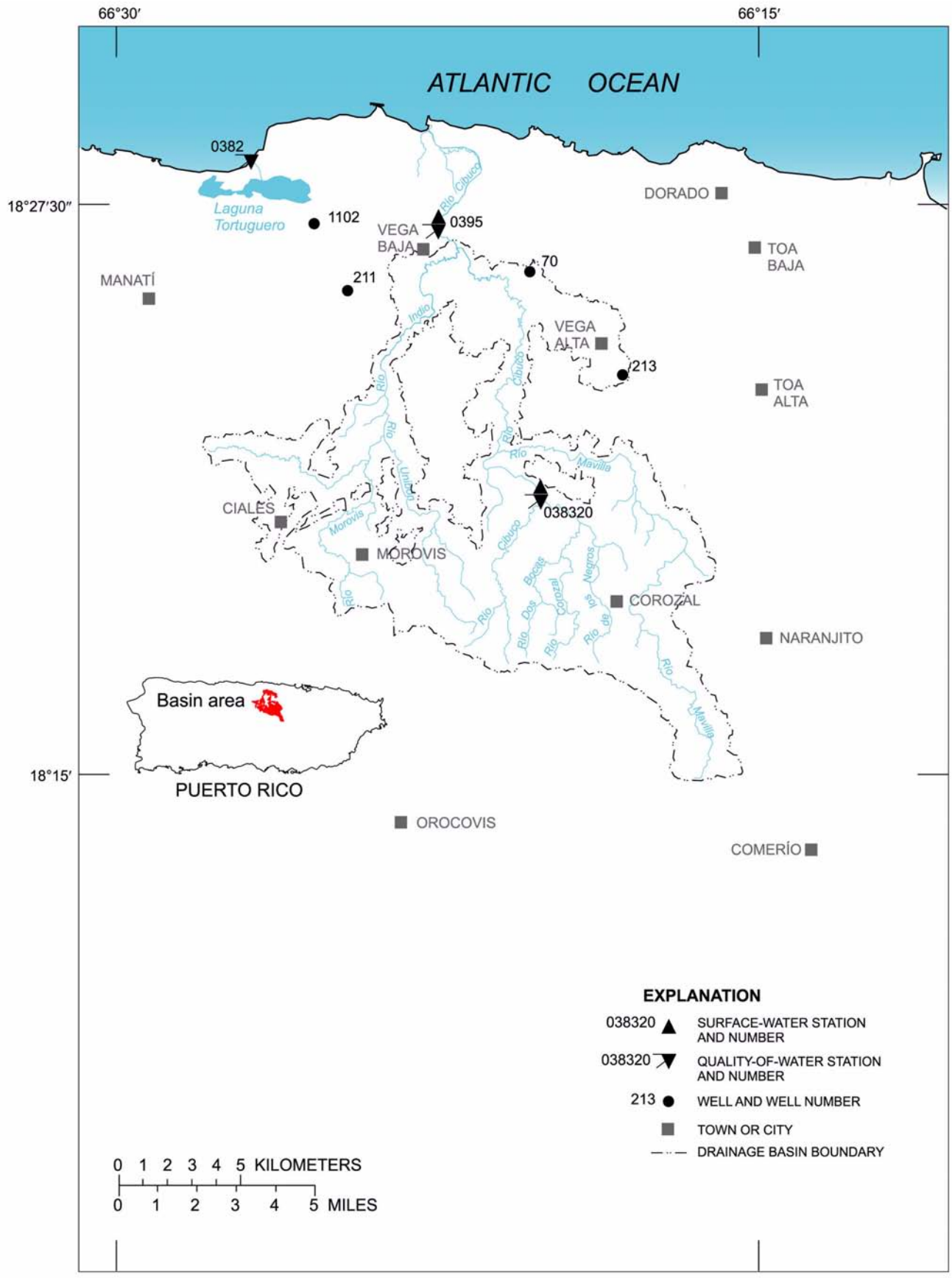


Figure 14. Río Cibuco basin.

50038320 RIO CIBUCO BELOW COROZAL, PR

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

DRAINAGE AREA.--15.1 mi^2 (39.1 km^2).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 195 ft (59 m), from topographic map.

REMARKS.--Records poor. Gage-height and precipitation satellite telemetry at station. Daily discharge affected by sewage treatment plant about 0.6 mi (1.0 km) upstream from station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	49	21	e15	e12	33	e81	e21	e35	e34	e14	e18
2	107	29	21	e14	e12	25	e60	e19	e34	e36	e16	e15
3	39	54	20	e14	e12	e18	e52	e27	e36	e32	e22	e14
4	16	46	20	e13	e21	e16	215	74	e46	e30	e18	e12
5	13	54	22	e13	e15	e15	126	56	e32	e29	e21	31
6	12	56	311	e13	e13	e14	e100	44	e58	e36	e26	e27
7	44	42	27	e13	28	e13	164	214	e40	e44	e29	e18
8	18	56	29	e12	e22	e12	84	165	e29	e33	e23	e13
9	14	65	23	e12	e18	e11	67	784	e45	e25	e26	32
10	66	42	e21	26	e15	e11	e54	672	e27	e23	e24	e26
11	30	99	e19	264	e14	e11	e44	774	e25	e27	e20	e20
12	17	89	e17	43	e13	e10	e37	694	e22	47	e22	63
13	14	691	e16	32	e12	e10	e31	572	e20	128	e26	38
14	14	199	e17	e25	e12	24	e26	525	e19	21	e22	150
15	16	83	21	e22	e12	22	e22	645	e18	e18	e19	1,280
16	14	434	22	e20	e12	17	e20	394	e17	e16	e18	609
17	12	173	19	e18	21	e13	e19	165	e17	e16	e17	246
18	12	87	17	e18	e18	e12	218	76	e16	e15	e16	e110
19	12	59	e16	e16	e15	e12	93	67	e16	e15	e15	e92
20	84	47	e15	e16	e14	e21	65	98	e16	e14	e15	e76
21	17	40	101	e26	53	e19	e50	211	e16	e14	e15	e64
22	11	175	20	e23	29	e16	e42	92	e16	e28	e17	e54
23	10	54	15	e17	23	e12	e35	174	e15	e16	e24	e49
24	10	82	e14	e15	e17	e10	e43	87	e15	64	e22	e44
25	9.5	40	e13	e24	e15	e10	e37	e56	e49	67	e26	e40
26	16	29	e13	e17	e13	138	e29	e48	e36	e47	46	e37
27	87	26	e15	e15	e12	223	e24	e44	e52	e56	35	e34
28	93	24	38	e14	e12	278	e22	e41	e45	e33	80	e31
29	83	23	e27	e14	e12	390	e19	e39	e49	e22	39	125
30	40	22	e18	e13	---	e170	e25	e37	e41	e16	31	101
31	205	---	e16	e13	---	e125	---	e36	---	e14	e23	---
TOTAL	1,150.5	2,969	984	810	497	1,711	1,904	6,951	902	1,016	767	3,469
MEAN	37.1	99.0	31.7	26.1	17.1	55.2	63.5	224	30.1	32.8	24.7	116
MAX	205	691	311	264	53	390	218	784	58	128	80	1,280
MIN	9.5	22	13	12	12	10	19	19	15	14	14	12
AC-FT	2,280	5,890	1,950	1,610	986	3,390	3,780	13,790	1,790	2,020	1,520	6,880
CFSM	2.46	6.55	2.10	1.73	1.13	3.66	4.20	14.8	1.99	2.17	1.64	7.66
IN.	2.83	7.31	2.42	2.00	1.22	4.22	4.69	17.12	2.22	2.50	1.89	8.55

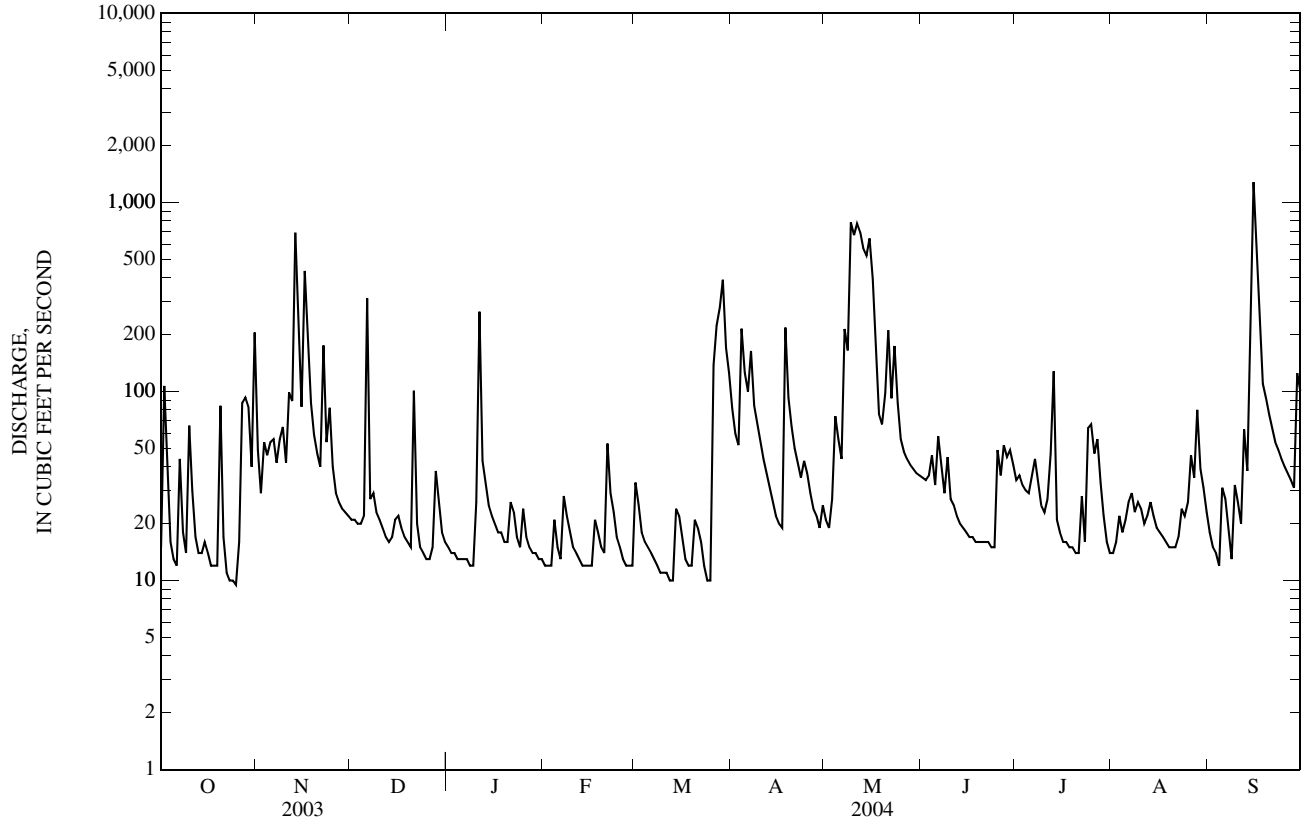
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 2004, BY WATER YEAR (WY)

MEAN	40.5	52.0	38.9	24.6	20.7	20.7	32.1	46.0	15.0	12.6	15.9	35.6
MAX	135	155	169	69.6	51.3	65.1	111	224	44.4	35.6	50.8	191
(WY)	(1991)	(1971)	(1971)	(1992)	(1988)	(1981)	(1973)	(2004)	(1987)	(1999)	(1979)	(1996)
MIN	8.05	5.63	1.94	6.93	7.57	4.36	3.32	3.20	1.63	2.19	3.44	3.88
(WY)	(1979)	(1998)	(1998)	(1995)	(2003)	(1984)	(1984)	(1977)	(1994)	(1994)	(1978)	(1994)

50038320 RIO CIBUCO BELOW COROZAL, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1969 - 2004	
ANNUAL TOTAL	8,498.2		23,130.5			
ANNUAL MEAN	23.3		63.2		29.7	
HIGHEST ANNUAL MEAN					63.2	2004
LOWEST ANNUAL MEAN					7.47	1994
HIGHEST DAILY MEAN	691	Nov 13	1,280	Sep 15	3,190	Nov 8, 2001
LOWEST DAILY MEAN	2.4	Aug 11	9.5	Oct 25	0.91	Jul 17, 1994
ANNUAL SEVEN-DAY MINIMUM	2.8	Aug 8	11	Mar 7	1.2	Jun 21, 1994
MAXIMUM PEAK FLOW			10,400	Sep 15	21,400	Nov 8, 2001
MAXIMUM PEAK STAGE			18.22	Sep 15	22.68	Nov 8, 2001
ANNUAL RUNOFF (AC-FT)	16,860		45,880		21,490	
ANNUAL RUNOFF (CFSM)	1.54		4.19		1.96	
ANNUAL RUNOFF (INCHES)	20.94		56.98		26.69	
10 PERCENT EXCEEDS	51		125		52	
50 PERCENT EXCEEDS	6.6		24		13	
90 PERCENT EXCEEDS	4.7		13		5.2	

e Estimated



50038320 RIO CIBUCO BELOW COROZAL, PR

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-76, 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
10...	0930	45	25	8.5	7.5	353	22.1	140	32.9	13.5	2.88	.6	15.1
APR													
16...	0940	20	2.1	8.6	7.9	382	23.2	150	36.3	14.2	3.25	.7	18.6
JUN													
10...	0947	27	7.2	9.3	7.7	344	24.8	--	--	--	--	--	--
AUG													
19...	0930	11	<2.0	7.4	7.9	380	25.0	140	35.0	12.6	3.00	.7	18.5

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
10...	126	22.1	<.2	28.0	16.2	--	206	--	25	.70	.10	1.57	1.60
APR													
16...	138	26.0	<.2	31.5	14.4	<.1	227	--	<10	.50	.41	1.56	1.60
JUN													
10...	120	--	--	--	--	--	--	--	<10	.50	.13	1.77	1.80
AUG													
19...	130	27.5	<.2	33.7	12.9	--	231	6.98	<10	--	.03	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC													
10...	.03	.60	2.3	10.2	.19	<10	3,500	E120,000	--	--	--	--	--
APR													
16...	.04	.09	2.1	9.3	.22	<10	--	--	<2	58.8	25	<.2	<.8
JUN													
10...	.03	.37	2.3	10.2	.19	<10	24,000	E110,000	--	--	--	--	--
AUG													
19...	--	--	--	--	.37	10	E1,500	40,000	<2	49.9	29	<.2	<.8

50038320 RIO CIBUCO BELOW COROZAL, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC											
10...	--	--	--	--	--	--	--	--	--	--	--
APR											
16...	M	<.01	120	<1.0	16.3	<.02	<3	<.3	E2	E.09	<16
JUN											
10...	--	--	--	--	--	--	--	--	--	--	--
AUG											
19...	M	<.01	70	E.5	14.1	<.02	<3	<.3	E4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50039500 RIO CIBUCO AT VEGA BAJA, PR

LOCATION.--Lat 18°26'53", long 66°22'29", Hydrologic Unit 21010002, on left bank, at bridge on Highway 2, 0.6 mi (1.0 km) downstream from Río Indio and 0.8 mi (1.3 km) east of Vega Baja.

DRAINAGE AREA.--99.1 mi^2 (256.7 km^2), of which 25.4 mi^2 (65.8 km^2), does not contribute directly to surface runoff.

WATER-DISCHARGE RECORDS

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

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

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 11, 1965, reached a stage of 26.2 ft (7.99 m), datum unknown, discharge about 28,000 ft^3/s (793 m^3/s).

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	401	120	82	56	189	209	56	153	153	63	69
2	30	355	104	88	57	80	173	69	143	164	61	51
3	320	241	93	153	64	63	149	88	138	127	73	45
4	60	258	86	92	58	59	e278	134	164	91	60	43
5	37	310	101	87	56	49	e190	148	128	84	102	51
6	30	234	831	89	64	46	173	80	299	71	83	63
7	30	196	814	119	85	45	244	530	198	124	85	46
8	142	183	469	73	57	45	343	552	145	86	107	52
9	37	361	e321	78	54	42	159	1,530	186	62	111	72
10	120	354	e242	65	62	42	138	2,540	194	57	122	48
11	194	239	206	485	52	40	110	1,170	144	67	114	48
12	59	292	172	505	49	39	95	2,040	120	178	111	74
13	45	959	151	231	48	39	92	e1,540	108	283	128	186
14	52	1,770	184	165	46	53	81	1,220	102	306	121	199
15	34	739	128	140	46	132	77	1,270	95	156	130	2,590
16	74	1,650	112	122	44	52	77	1,230	89	116	124	5,420
17	31	939	117	111	64	43	74	555	85	93	114	1,130
18	26	543	101	104	56	40	111	426	90	87	96	351
19	24	373	90	95	44	42	388	372	78	81	101	224
20	30	255	84	89	43	46	173	438	73	101	94	233
21	158	201	287	120	188	80	100	772	74	105	88	239
22	34	351	e267	84	145	42	84	508	67	79	88	158
23	27	605	e150	79	61	36	76	776	65	71	83	151
24	25	369	114	86	55	85	76	606	60	83	110	101
25	40	470	102	74	47	159	84	363	105	196	93	87
26	90	238	127	69	47	187	68	294	125	165	122	78
27	265	190	140	68	46	1,030	64	284	123	97	142	68
28	434	162	140	64	40	1,450	59	224	221	96	190	62
29	354	139	170	69	108	e907	57	197	147	103	199	68
30	349	130	116	62	---	e587	64	187	243	71	84	159
31	635	---	93	59	---	373	---	185	---	66	81	---
TOTAL	3,825	13,507	6,232	3,807	1,842	6,122	4,066	20,384	3,962	3,619	3,280	12,166
MEAN	123	450	201	123	63.5	197	136	658	132	117	106	406
MAX	635	1,770	831	505	188	1,450	388	2,540	299	306	199	5,420
MIN	24	130	84	59	40	36	57	56	60	57	60	43
AC-FT	7,590	26,790	12,360	7,550	3,650	12,140	8,060	40,430	7,860	7,180	6,510	24,130
CFSM	1.25	4.54	2.03	1.24	0.64	1.99	1.37	6.64	1.33	1.18	1.07	4.09
IN.	1.44	5.07	2.34	1.43	0.69	2.30	1.53	7.65	1.49	1.36	1.23	4.57

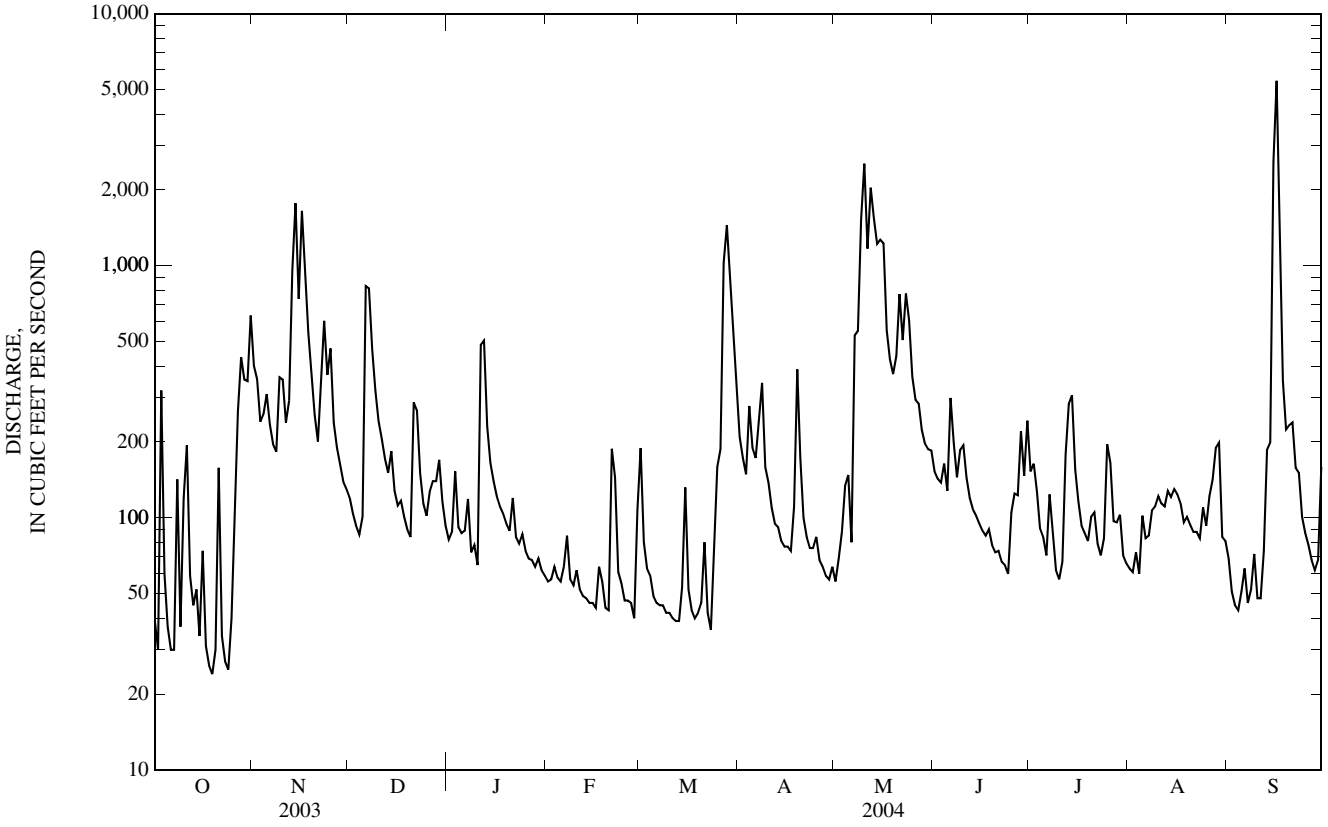
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 2004, BY WATER YEAR (WY)

MEAN	154	208	200	105	85.8	80.3	141	187	70.8	57.4	76.0	149
MAX	559	523	1,316	339	190	339	667	658	239	235	461	690
(WY)	(1986)	(1980)	(1982)	(1997)	(1988)	(1990)	(1987)	(2004)	(1987)	(1999)	(1979)	(1996)
MIN	45.9	28.3	12.9	30.2	27.2	20.5	16.2	24.7	12.5	14.0	21.2	26.7
(WY)	(1974)	(1998)	(1998)	(1995)	(1994)	(1994)	(1984)	(1977)	(1994)	(1994)	(1978)	(1994)

50039500 RIO CIBUCO AT VEGA BAJA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1973 - 2004	
ANNUAL TOTAL	39,602		82,812			
ANNUAL MEAN	108		226		125	
HIGHEST ANNUAL MEAN					236	1982
LOWEST ANNUAL MEAN					38.5	1994
HIGHEST DAILY MEAN	1,770	Nov 14	5,420	Sep 16	14,600	Dec 13, 1981
LOWEST DAILY MEAN	15	Jun 27	24	Oct 19	7.2	May 3, 1995
ANNUAL SEVEN-DAY MINIMUM	16	Jun 23	39	Oct 14	8.1	Apr 28, 1995
MAXIMUM PEAK FLOW			10,100	Sep 16	34,000	Apr 12, 1987
MAXIMUM PEAK STAGE			17.02	Sep 16	19.10	Apr 12, 1987
INSTANTANEOUS LOW FLOW			20	Oct 20	7.2	May 2, 1995
ANNUAL RUNOFF (AC-FT)	78,550		164,300		90,670	
ANNUAL RUNOFF (CFSM)	1.09		2.28		1.26	
ANNUAL RUNOFF (INCHES)	14.87		31.09		17.16	
10 PERCENT EXCEEDS	287		447		242	
50 PERCENT EXCEEDS	33		104		57	
90 PERCENT EXCEEDS	19		46		22	

e Estimated



50039500 RIO CIBUCO AT VEGA BAJA, PR

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
APR													
16...	1230	78	9.5	7.1	7.8	449	25.8	190	58.1	10.1	3.05	.5	17.0
JUN													
10...	1235	163	33	3.6	7.8	381	26.1	--	--	--	--	--	--
AUG													
16...	1250	55	12	5.5	7.7	394	28.6	160	52.1	7.07	2.99	.5	14.3

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
APR													
16...	175	25.1	<.2	20.9	15.6	<.1	255	--	12	.30	.12	1.38	1.40
JUN													
10...	163	--	--	--	--	--	--	--	33	.40	.05	1.39	1.40
AUG													
16...	151	22.0	<.2	18.0	14.4	--	227	33.6	<10	--	.09	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
APR													
16...	.02	.18	1.7	7.5	.14	<10	1,800	58,000	<2	53.8	29	<.2	1.0
JUN													
10...	.01	.35	1.8	8.0	.14	<10	3,700	44,000	--	--	--	--	--
AUG													
16...	--	--	--	--	.16	<10	1,000	63,000	<2	44.3	32	<.2	.9

Date	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
APR											
16...	40	<.01	470	<1.0	41.7	<.02	<3	<.3	E3	<.20	<16
JUN											
10...	--	--	--	--	--	--	--	--	--	--	--
AUG											
16...	M	<.01	320	<1.0	37.3	<.02	<3	<.3	5	E.06	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

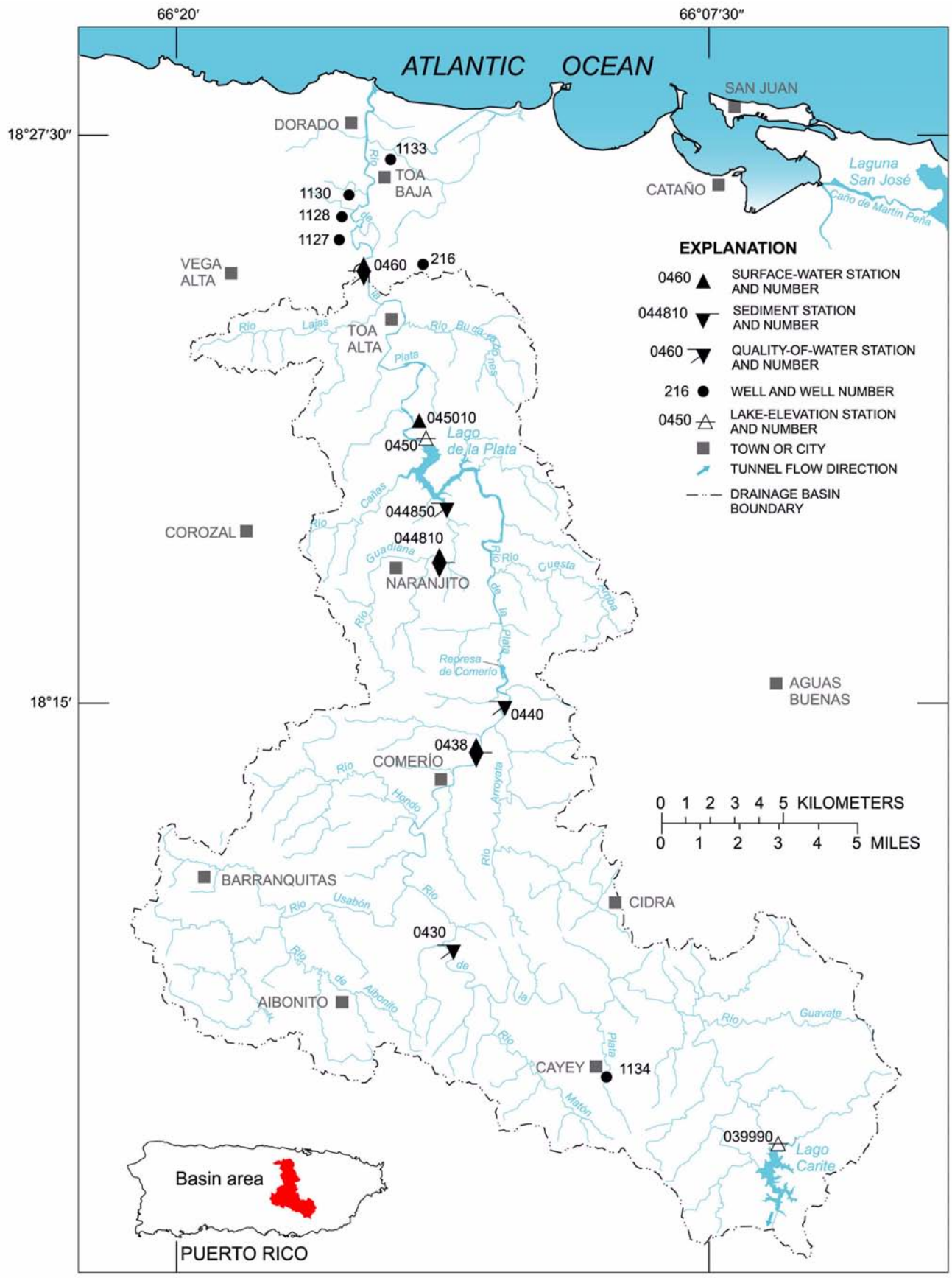


Figure 15. Río de la Plata basin.

50039990 LAGO CARITE AT GATE TOWER NEAR CAYEY, PR

LOCATION.--Lat 18°03'46", long 66°05'58", Hydrologic Unit 21010005, on top of a concrete tower at diversion tunnel on Carite Reservoir, 0.7 mi (1.1 km) northwest from Escuela Carite Chino, 1.2 mi (1.9 km) northeast from Central Hidroeléctrica de Carite Número 1 and 1.8 mi (2.9 km) northeast from Escuela Segunda Unidad.

DRAINAGE AREA.--8.20 mi^2 (21.2 km^2).

PERIOD OF RECORD.--May 1989 to current year. Prior to October 1994, published as Lago Carite at Gate Tower.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago Carite Dam was completed in 1913. The operation of the reservoir is controlled by the utilization of water to meet the demands for domestic, industrial, and agricultural purposes in the Guayama area. The dam is an earthfill with crest elevation of 1,806 ft (550 m) above mean sea level, with a structural height of 104 ft (32 m) and a length of 500 ft (152 m). The dam has a capacity of approximately 11,310 acre-feet (13.9 hm^3). The Dam is operated by the Puerto Rico Electric and Power Authority. Gage-height and precipitation satellite telemetry at station.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation 1,789.62 ft (545.48 m), September 21, 1998; minimum elevation, 1,761.22 ft (536.81 m), May 28, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum elevation 1,785.09 ft (544.09 m), September 15; minimum elevation, 1,779.99 ft (542.54 m), April 19.

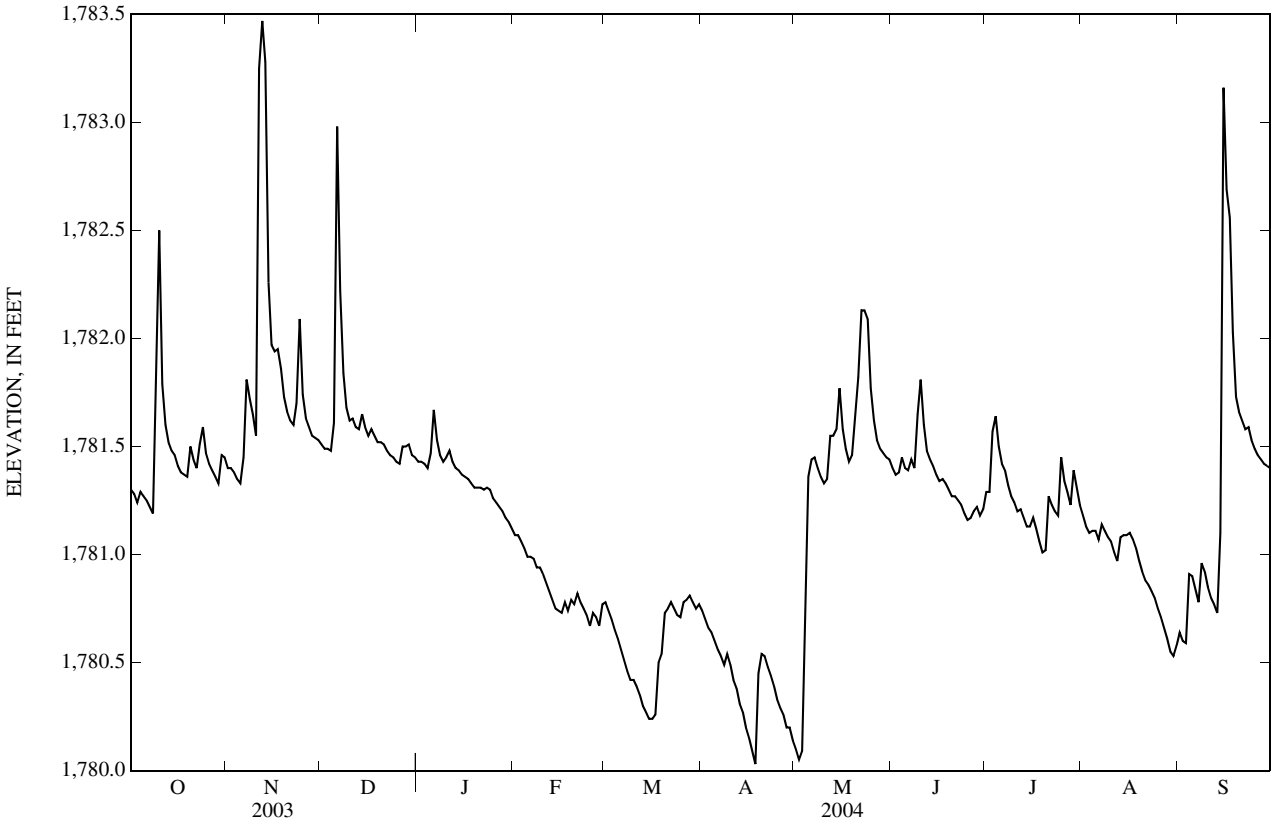
Capacity Table
(based on data from Puerto Rico Electric Power Authority)
(Elevation in ft, capacity in acre-ft)

Elevation	Contents	Elevation	Contents
1,746	0	1,775	6,194
1,760	2,471	1,780	7,704
1,769	4,561	1,790	11,048

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,781.30	1,781.40	1,781.51	1,781.43	1,781.09	1,780.78	1,780.74	1,780.10	1,781.40	1,781.29	1,781.18	1,780.64
2	1,781.28	1,781.40	1,781.49	1,781.43	1,781.09	1,780.74	1,780.70	1,780.05	1,781.37	1,781.29	1,781.13	1,780.60
3	1,781.24	1,781.38	1,781.49	1,781.42	1,781.06	1,780.70	1,780.66	1,780.09	1,781.38	1,781.57	1,781.10	1,780.59
4	1,781.29	1,781.35	1,781.48	1,781.40	1,781.03	1,780.65	1,780.64	1,780.66	1,781.45	1,781.64	1,781.11	1,780.91
5	1,781.27	1,781.33	1,781.61	1,781.47	1,780.99	1,780.61	1,780.60	1,781.36	1,781.40	1,781.50	1,781.11	1,780.90
6	1,781.25	1,781.45	1,782.98	1,781.67	1,780.99	1,780.56	1,780.56	1,781.44	1,781.39	1,781.42	1,781.07	1,780.84
7	1,781.22	1,781.81	1,782.22	1,781.53	1,780.98	1,780.51	1,780.53	1,781.45	1,781.44	1,781.39	1,781.14	1,780.78
8	1,781.19	1,781.72	1,781.84	1,781.46	1,780.94	1,780.46	1,780.49	1,781.40	1,781.40	1,781.32	1,781.11	1,780.96
9	1,781.74	1,781.65	1,781.68	1,781.43	1,780.94	1,780.42	1,780.54	1,781.36	1,781.65	1,781.27	1,781.08	1,780.92
10	1,782.50	1,781.55	1,781.62	1,781.45	1,780.91	1,780.42	1,780.49	1,781.33	1,781.81	1,781.24	1,781.06	1,780.85
11	1,781.79	1,783.25	1,781.63	1,781.48	1,780.87	1,780.39	1,780.42	1,781.35	1,781.60	1,781.20	1,781.01	1,780.80
12	1,781.60	1,783.47	1,781.59	1,781.43	1,780.83	1,780.35	1,780.38	1,781.55	1,781.48	1,781.21	1,780.97	1,780.77
13	1,781.52	1,783.28	1,781.58	1,781.40	1,780.79	1,780.30	1,780.31	1,781.55	1,781.44	1,781.17	1,781.08	1,780.73
14	1,781.48	1,782.26	1,781.65	1,781.39	1,780.75	1,780.27	1,780.27	1,781.58	1,781.41	1,781.13	1,781.09	1,781.10
15	1,781.46	1,781.97	1,781.59	1,781.37	1,780.74	1,780.24	1,780.20	1,781.77	1,781.37	1,781.13	1,781.09	1,783.16
16	1,781.41	1,781.94	1,781.55	1,781.36	1,780.73	1,780.24	1,780.15	1,781.58	1,781.34	1,781.17	1,781.10	1,782.69
17	1,781.38	1,781.95	1,781.58	1,781.35	1,780.78	1,780.26	1,780.09	1,781.49	1,781.35	1,781.12	1,781.07	1,782.56
18	1,781.37	1,781.86	1,781.55	1,781.33	1,780.74	1,780.50	1,780.03	1,781.43	1,781.33	1,781.06	1,781.03	1,782.03
19	1,781.36	1,781.73	1,781.52	1,781.31	1,780.79	1,780.54	1,780.45	1,781.46	1,781.30	1,781.01	1,780.97	1,781.73
20	1,781.50	1,781.66	1,781.52	1,781.31	1,780.77	1,780.73	1,780.54	1,781.64	1,781.27	1,781.02	1,780.92	1,781.66
21	1,781.44	1,781.62	1,781.51	1,781.31	1,780.82	1,780.75	1,780.53	1,781.82	1,781.27	1,781.27	1,780.88	1,781.62
22	1,781.40	1,781.60	1,781.48	1,781.30	1,780.78	1,780.78	1,780.48	1,782.13	1,781.25	1,781.23	1,780.86	1,781.58
23	1,781.51	1,781.70	1,781.46	1,781.31	1,780.75	1,780.75	1,780.44	1,782.13	1,781.23	1,781.20	1,780.83	1,781.59
24	1,781.59	1,782.09	1,781.45	1,781.30	1,780.72	1,780.72	1,780.39	1,782.09	1,781.19	1,781.18	1,780.80	1,781.53
25	1,781.47	1,781.74	1,781.43	1,781.26	1,780.67	1,780.71	1,780.33	1,781.77	1,781.16	1,781.45	1,780.75	1,781.49
26	1,781.42	1,781.63	1,781.42	1,781.24	1,780.73	1,780.78	1,780.29	1,781.62	1,781.17	1,781.34	1,780.71	1,781.46
27	1,781.39	1,781.59	1,781.50	1,781.22	1,780.71	1,780.79	1,780.26	1,781.53	1,781.20	1,781.29	1,780.66	1,781.44
28	1,781.36	1,781.55	1,781.50	1,781.20	1,780.67	1,780.81	1,780.20	1,781.49	1,781.22	1,781.23	1,780.61	1,781.42
29	1,781.33	1,781.54	1,781.51	1,781.17	1,780.77	1,780.78	1,780.20	1,781.47	1,781.18	1,781.39	1,780.55	1,781.41
30	1,781.46	1,781.53	1,781.46	1,781.15	---	1,780.75	1,780.14	1,781.45	1,781.21	1,781.31	1,780.53	1,781.40
31	1,781.45	---	1,781.45	1,781.12	---	1,780.77	---	1,781.44	---	1,781.23	1,780.58	---
MAX	1,782.50	1,783.47	1,782.98	1,781.67	1,781.09	1,780.81	1,780.74	1,782.13	1,781.81	1,781.64	1,781.18	1,783.16
MIN	1,781.19	1,781.33	1,781.42	1,781.12	1,780.67	1,780.24	1,780.03	1,780.05	1,781.16	1,781.01	1,780.53	1,780.59

50039990 LAGO CARITE AT GATE TOWER NEAR CAYEY, PR—Continued



50043000 RIO DE LA PLATA AT PROYECTO LA PLATA, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--63.0 mi^2 (163.2 km^2), excludes 8.2 mi^2 (21.1 km^2) upstream from Lago Carite, the flow of which is diverted to Río Guamaní.

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
11...	1340	220	15	8.1	7.8	339	23.8	130	33.0	12.0	1.54	.7	19.0
MAR													
17...	1330	46	4.4	11.4	8.3	496	26.7	160	40.3	15.5	3.10	1	35.8
JUN													
18...	1253	71	5.2	9.8	8.3	392	29.3	--	--	--	--	--	--
SEP													
09...	1015	131	25	7.2	7.7	323	26.3	100	26.0	8.46	2.54	1	22.9

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
11...	125	21.5	<.2	24.6	11.9	--	198	118	<10	.40	.14	1.13	1.20
MAR													
17...	158	40.2	<.2	21.7	17.9	.2	269	--	<10	.50	.10	1.22	1.30
JUN													
18...	132	--	--	--	--	--	--	--	<10	.50	.06	1.88	2.00
SEP													
09...	106	25.4	<.2	20.0	9.9	--	186	65.7	25	--	.74	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC													
11...	.07	.26	1.6	7.1	.09	<10	E7,800	34,000	--	--	--	--	--
MAR													
17...	.08	.40	1.8	8.0	.20	<10	--	--	<2	22.8	68	<.2	<.8
JUN													
18...	.12	.44	2.5	11.1	.16	<10	E20	200	--	--	--	--	--
SEP													
09...	--	--	--	--	.19	<10	E600	E800	<2	20.1	49	<.2	E.8

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC											
11...	--	--	--	--	--	--	--	--	--	--	--
MAR											
17...	M	M	200	<1.0	29.0	<.02	<3	<.3	5	E.06	25
JUN											
18...	--	--	--	--	--	--	--	--	--	--	--
SEP											
09...	M	<.01	850	E.8	64.9	<.02	<3	<.3	8	.19	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50043800 RIO DE LA PLATA AT COMERIO, PR

LOCATION.--Lat 18°13'23", long 66°13'30", Hydrologic Unit 21010005, on right bank 50 ft (15 m) upstream from bridge off Highway 167 in the Town of Comerío, 0.4 mi (0.6 km) southwest of Comerío High School, and 0.2 mi (0.3 km) northeast of Plaza de Comerío.

DRAINAGE AREA.--109 mi^2 (282 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1988 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 604.2 ft (184.160 m) above mean sea level.

REMARKS.--Records fair, except those for estimated daily discharges, which are poor. Filtration plant more or less 500 feet upstream from station. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	578	193	135	44	260	126	69	146	82	77	86
2	61	315	176	149	45	127	87	68	133	110	60	94
3	178	124	163	146	66	88	65	50	128	147	53	51
4	178	89	150	117	46	76	137	481	147	168	54	74
5	66	89	144	117	41	61	205	1,000	163	248	72	184
6	60	84	9,220	294	41	55	121	521	122	118	73	145
7	65	949	4,330	368	53	50	386	1,090	115	83	53	58
8	57	562	2,540	178	48	47	349	643	126	75	51	50
9	42	971	838	139	38	47	679	517	118	65	59	127
10	5,430	458	514	115	40	45	430	354	307	58	51	87
11	2,330	2,760	407	158	36	46	186	415	278	52	53	60
12	599	13,000	362	201	33	49	108	502	197	60	56	57
13	279	16,800	309	122	30	46	83	912	129	56	68	74
14	284	6,730	327	100	29	46	70	581	105	51	88	260
15	636	2,570	294	93	30	52	60	465	94	48	66	19,900
16	267	8,410	255	82	36	50	56	489	84	54	115	16,600
17	116	2,080	244	81	38	62	57	308	83	70	91	3,570
18	86	1,560	247	76	49	73	48	292	83	53	60	2,150
19	72	949	210	70	39	173	179	262	74	46	59	855
20	61	574	194	77	108	124	341	242	68	54	49	468
21	60	419	201	121	94	170	122	547	65	120	45	296
22	79	390	210	73	108	100	80	715	e67	109	40	228
23	64	1,400	174	143	46	73	66	2,950	65	59	38	252
24	376	1,440	161	150	34	68	77	1,570	59	69	38	199
25	193	1,070	152	76	31	103	77	1,040	56	192	41	162
26	126	480	149	61	40	134	53	461	59	247	43	142
27	114	343	208	62	67	421	49	315	59	116	51	129
28	135	284	393	55	41	717	54	256	99	82	58	131
29	268	241	239	57	90	360	47	222	97	91	46	379
30	191	214	214	55	---	184	54	185	74	182	48	244
31	739	---	161	48	---	125	---	164	---	115	57	---
TOTAL	13,256	65,933	23,379	3,719	1,441	4,032	4,452	17,686	3,400	3,080	1,813	47,112
MEAN	428	2,198	754	120	49.7	130	148	571	113	99.4	58.5	1,570
MAX	5,430	16,800	9,220	368	108	717	679	2,950	307	248	115	19,900
MIN	42	84	144	48	29	45	47	50	56	46	38	50
MED	126	576	214	115	41	73	82	465	98	82	54	154
AC-FT	26,290	130,800	46,370	7,380	2,860	8,000	8,830	35,080	6,740	6,110	3,600	93,450
CFSM	3.94	20.3	6.95	1.11	0.46	1.20	1.37	5.26	1.04	0.92	0.54	14.5
IN.	4.54	22.61	8.02	1.28	0.49	1.38	1.53	6.06	1.17	1.06	0.62	16.15

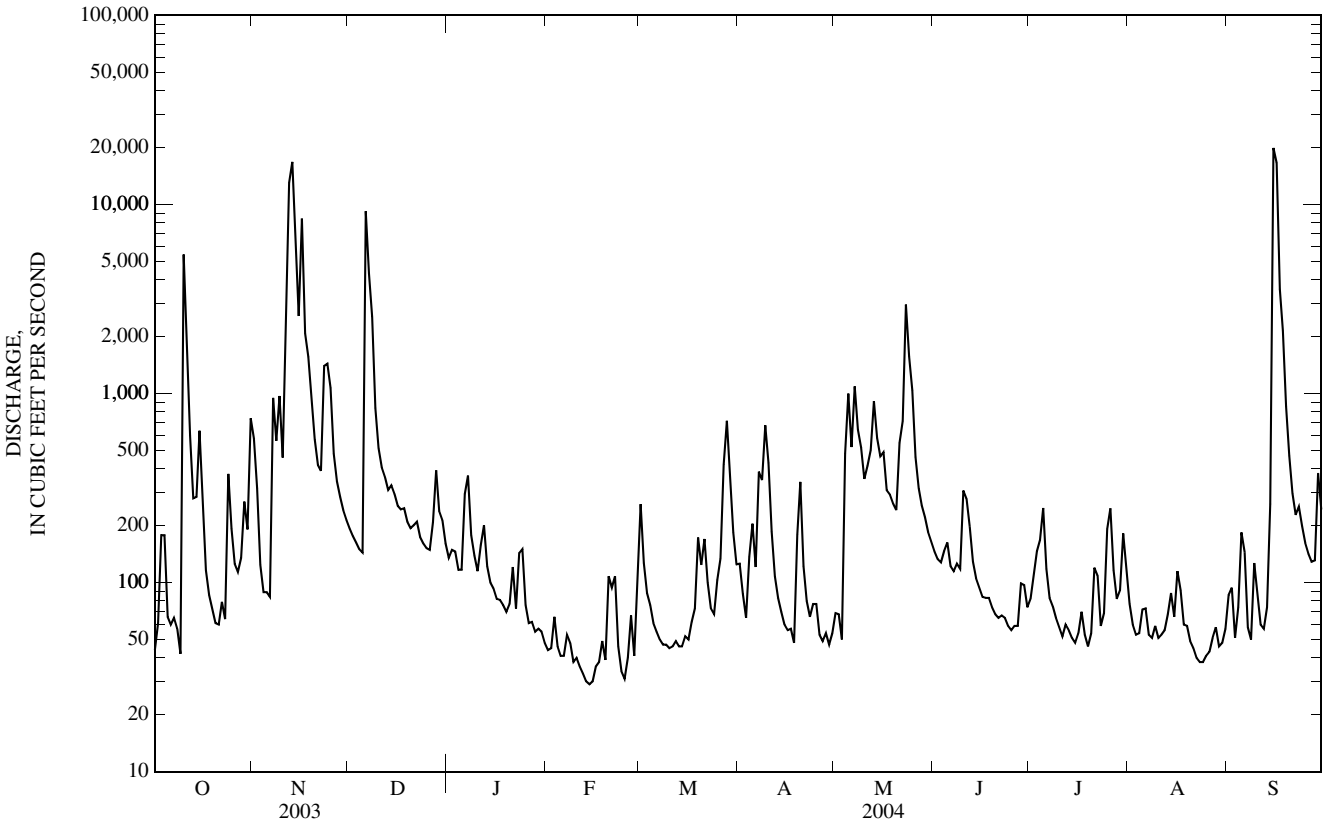
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 2004, BY WATER YEAR (WY)

MEAN	223	378	167	126	86.7	51.6	122	121	84.2	82.7	130	473
MAX	866	2,198	754	732	268	130	807	571	292	291	563	1,570
(WY)	(1991)	(2004)	(2004)	(1992)	(1998)	(2004)	(2003)	(2004)	(2002)	(1993)	(2000)	(2004)
MIN	40.6	19.0	17.1	21.3	24.4	20.6	22.3	19.7	13.2	10.4	12.7	26.2
(WY)	(1992)	(1995)	(1995)	(1995)	(1990)	(1993)	(1991)	(1994)	(1994)	(1994)	(1994)	(1997)

50043800 RIO DE LA PLATA AT COMERIO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1989 - 2004	
ANNUAL TOTAL	158,194.5		189,303			
ANNUAL MEAN	433		517		170	
HIGHEST ANNUAL MEAN					517	2004
LOWEST ANNUAL MEAN					35.3	1994
HIGHEST DAILY MEAN	16,800	Nov 13	19,900	Sep 15	32,400	Sep 10, 1996
LOWEST DAILY MEAN	9.0	Mar 25	29	Feb 14	5.8	Jun 25, 1994
ANNUAL SEVEN-DAY MINIMUM	10	Mar 13	33	Feb 11	7.3	Jul 31, 1994
MAXIMUM PEAK FLOW			75,100	Sep 15	127,000	Jan 5, 1992
MAXIMUM PEAK STAGE			24.08	Sep 15	29.22	Jan 5, 1992
ANNUAL RUNOFF (AC-FT)	313,800		375,500		123,200	
ANNUAL RUNOFF (CFSM)	3.99		4.77		1.57	
ANNUAL RUNOFF (INCHES)	54.24		64.90		21.29	
10 PERCENT EXCEEDS	715		638		249	
50 PERCENT EXCEEDS	64		115		44	
90 PERCENT EXCEEDS	19		47		17	

e Estimated



50043800 RIO DE LA PLATA AT COMERIO, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORDS.-- Water year 1989 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: October 1989 to current year.

INSTRUMENTATION.-- USD-77 sediment sampler since 1989. Automatic sediment sampler since 1989.

REMARKS.--Sediment samples were collected by a local observer on a weekly basis. During high flow events sediment samples were collected with automatic sediment sampler.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 8,800 mg/L January 05, 1992; Minimum daily mean, 1 mg/L several years.
SEDIMENT LOADS: Maximum daily mean, 950,000 tons (862,000 tonnes) January 05, 1992; Minimum daily mean, 0.04 tons (0.04 tonne) November 28, 1994.

EXTREMES FOR WATER YEARS 2004.--
SEDIMENT CONCENTRATION: Maximun daily mean, 2,770 mg/L November 13, 2003; Minimun daily mean, 2 mg/L several days.
SEDIMENT LOADS: Maximun daily mean, 359,000 tons (326,000 tonnes) September 15, 2004; Minimun daily mean, 0.23 ton (0.21 tonne) August 24, 2004.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER			NOVEMBER			DECEMBER		
1	44	6	0.71	578	95	193	193	3	1.8
2	61	6	0.98	315	48	46	176	2	1.0
3	178	21	33	124	35	12	163	2	0.88
4	178	30	20	89	34	8.1	150	2	0.81
5	66	15	2.6	89	33	7.8	144	2	0.78
6	60	14	2.3	84	31	7.1	9,220	952	41,600
7	65	14	2.5	949	157	767	4,330	396	5,290
8	57	15	2.3	562	233	375	2,540	246	2,350
9	42	14	1.6	971	176	527	838	66	156
10	5,430	829	26,400	458	135	169	514	40	56
11	2,330	401	3,260	2,760	447	11,100	407	28	30
12	599	98	166	13,000	1,850	93,100	362	16	15
13	279	43	33	16,800	2,770	189,000	309	6	5.4
14	284	40	47	6,730	1,100	30,300	327	5	4.8
15	636	60	238	2,570	490	5,020	294	5	4.2
16	267	21	17	8,410	1,330	39,500	255	7	4.8
17	116	8	2.5	2,080	419	2,280	244	9	5.8
18	86	7	1.7	1,560	244	1,030	247	11	7.2
19	72	7	1.4	949	205	536	210	13	7.2
20	61	8	1.3	574	102	161	194	14	7.5
21	60	8	1.4	419	75	85	201	12	6.2
22	79	9	1.9	390	68	72	210	8	4.4
23	64	10	1.6	1,400	384	4,090	174	7	3.3
24	376	58	101	1,440	309	1,770	161	7	3.0
25	193	36	19	1,070	306	1,030	152	7	2.9
26	126	21	7.1	480	64	88	149	7	2.8
27	114	19	5.8	343	34	32	208	14	12
28	135	24	25	284	20	15	393	48	63
29	268	46	61	241	8	5.2	239	14	9.2
30	191	30	33	214	5	3.0	214	13	7.7
31	739	125	670	---	---	---	161	13	5.6
TOTAL	13,256	---	31,160.69	65,933	---	381,329.2	23,379	---	49,669.27

50043800 RIO DE LA PLATA AT COMERIO, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	135	12	4.6	44	16	1.9	260	15	13
2	149	12	4.9	45	5	0.56	127	7	2.3
3	146	12	4.7	66	6	1.0	88	8	1.8
4	117	12	3.7	46	8	1.0	76	8	1.7
5	117	11	3.6	41	11	1.2	61	9	1.5
6	294	39	67	41	13	1.5	55	8	1.2
7	368	119	125	53	15	2.2	50	7	1.0
8	178	42	21	48	13	1.7	47	7	0.84
9	139	9	3.3	38	10	1.0	47	6	0.81
10	115	7	2.0	40	7	0.70	45	8	0.98
11	158	12	7.1	36	5	0.46	46	10	1.2
12	201	29	16	33	7	0.60	49	12	1.5
13	122	17	5.7	30	9	0.73	46	13	1.6
14	100	10	2.6	29	10	0.81	46	13	1.6
15	93	4	0.94	30	9	0.69	52	13	1.8
16	82	4	0.86	36	7	0.64	50	13	1.7
17	81	5	1.0	38	5	0.52	62	13	2.1
18	76	6	1.1	49	5	0.66	73	13	2.5
19	70	6	1.2	39	5	0.52	173	12	5.8
20	77	7	1.5	108	5	1.5	124	12	4.1
21	121	8	2.7	94	5	1.3	170	12	5.6
22	73	9	1.9	108	5	1.5	100	12	3.3
23	143	22	9.4	46	5	0.63	73	12	2.4
24	150	21	9.0	34	5	0.49	68	12	2.3
25	76	7	1.5	31	7	0.60	103	16	4.5
26	61	7	1.1	40	9	1.0	134	21	7.9
27	62	15	2.4	67	11	2.0	421	125	164
28	55	24	3.5	41	7	0.81	717	224	556
29	57	33	5.1	90	10	6.1	360	95	96
30	55	40	6.0	---	---	---	184	48	25
31	48	30	3.9	---	---	---	125	25	8.5
TOTAL	3,719	---	324.30	1,441	---	34.32	4,032	---	924.53
		APRIL			MAY			JUNE	
1	126	21	7.1	69	24	4.5	146	4	1.4
2	87	21	4.9	68	24	4.4	133	5	1.6
3	65	21	3.7	50	24	3.2	128	5	1.9
4	137	25	13	481	94	256	147	6	2.5
5	205	37	24	1,000	197	563	163	8	3.5
6	121	30	10	521	114	191	122	10	3.2
7	386	65	98	1,090	243	1,580	115	11	3.4
8	349	56	69	643	143	305	126	11	3.6
9	679	134	534	517	105	167	118	10	3.3
10	430	186	229	354	111	107	307	40	39
11	186	123	63	415	126	189	278	32	26
12	108	67	20	502	123	179	197	10	5.5
13	83	26	6.0	912	185	622	129	8	2.6
14	70	27	5.0	581	134	332	105	8	2.3
15	60	29	4.7	465	105	145	94	8	2.0
16	56	31	4.7	489	94	128	84	8	1.8
17	57	34	5.1	308	57	49	83	8	1.8
18	48	42	5.4	292	45	35	83	8	1.7
19	179	78	90	262	43	31	74	7	1.5
20	341	141	167	242	42	28	68	7	1.3
21	122	40	14	547	84	155	65	7	1.2
22	80	34	7.3	715	112	274	e67	e8	e1.4
23	66	29	5.2	2,950	506	4,270	65	9	1.5
24	77	26	5.3	1,570	365	1,740	59	9	1.5
25	77	25	5.2	1,040	228	688	56	10	1.5
26	53	25	3.5	461	86	109	59	10	1.5
27	49	25	3.2	315	49	42	59	9	1.5
28	54	25	3.6	256	13	9.8	99	9	2.5
29	47	24	3.1	222	6	3.7	97	9	2.4
30	54	24	3.6	185	9	4.4	74	9	1.7
31	---	---	---	164	8	3.8	---	---	---
TOTAL	4,452	---	1,417.6	17,686	---	12,218.8	3,400	---	126.6

50043800 RIO DE LA PLATA AT COMERIO, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	82	9	1.9	77	10	2.0	86	21	5.0
2	110	8	2.5	60	9	1.5	94	23	5.8
3	147	17	8.7	53	9	1.3	51	24	3.4
4	168	13	6.1	54	9	1.3	74	26	5.1
5	248	24	20	72	9	1.7	184	34	22
6	118	8	2.6	73	9	1.7	145	28	12
7	83	9	2.1	53	8	1.2	58	22	3.4
8	75	11	2.2	51	8	1.1	50	20	2.6
9	65	11	1.9	59	8	1.3	127	17	5.6
10	58	11	1.7	51	8	1.1	87	14	3.3
11	52	11	1.5	53	8	1.1	60	11	1.8
12	60	11	1.8	56	7	1.1	57	12	1.8
13	56	11	1.7	68	7	1.3	74	12	2.4
14	51	11	1.5	88	7	1.6	260	47	87
15	48	10	1.4	66	7	1.2	19,900	2,560	359,000
16	54	10	1.5	115	6	2.0	16,600	2,240	122,000
17	70	10	1.9	91	6	1.5	3,570	563	5,890
18	53	10	1.4	60	6	0.98	2,150	341	2,290
19	46	10	1.2	59	6	0.93	855	143	345
20	54	10	1.5	49	6	0.75	468	77	100
21	120	15	7.2	45	5	0.65	296	46	37
22	109	17	5.3	40	5	0.56	228	15	9.3
23	59	12	2.0	38	4	0.38	252	4	3.0
24	69	12	2.2	38	2	0.23	199	4	2.0
25	192	29	25	41	2	0.27	162	3	1.3
26	247	37	28	43	3	0.31	142	2	0.93
27	116	12	3.8	51	3	0.43	129	2	0.71
28	82	11	2.5	58	6	1.0	131	2	0.71
29	91	14	4.9	46	11	1.3	379	45	174
30	182	22	12	48	15	1.9	244	27	28
31	115	10	3.1	57	19	3.0	---	---	---
TOTAL	3,080	---	161.1	1,813	---	36.69	47,112	---	490,043.15
YEAR	189,303	967,446.25							

e Estimated

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

SILT AND CLAY PERCENT OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
DEC 06...	1300	21,600	92	1,490	87,100

50044000 RIO DE LA PLATA NEAR COMERIO, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--139 mi^2 (360 km^2), excludes 8.2 mi^2 (21.1 km^2) upstream from Lago Carite, the flow of which is diverted to Río Guamaní.

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
12...	0915	348	5.8	8.3	7.8	377	22.3	140	35.0	13.3	2.24	.7	18.6
APR													
19...	1322	93	3.8	9.2	8.2	437	27.8	160	39.0	16.3	3.14	.9	26.6
JUN													
03...	1235	153	<2.0	10.3	8.2	434	27.8	--	--	--	--	--	--
AUG													
18...	1045	70	4.7	8.1	8.3	327	28.4	130	31.5	13.6	2.23	.8	21.2

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
12...	136	23.9	<.2	25.3	12.8	--	213	200	<10	.20	.02	--	1.40
APR													
19...	157	32.2	<.2	26.2	15.7	<.1	254	--	<10	.30	.02	1.58	1.60
JUN													
03...	154	--	--	--	--	--	--	--	<10	.20	.02	1.09	1.10
AUG													
18...	129	25.6	<.2	27.5	11.7	--	214	40.6	14	--	.04	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC													
12...	<.01	.18	1.6	7.1	.10	<10	3,000	48,000	--	--	--	--	--
APR													
19...	.02	.28	1.9	8.4	.10	<10	--	--	E1	44.4	59	<.2	<.8
JUN													
03...	.01	.18	1.3	5.8	.09	<10	350	E8,400	--	--	--	--	--
AUG													
18...	--	--	--	--	.13	<10	82	830	<2	29.4	49	<.2	E.6

50044000 RIO DE LA PLATA NEAR COMERIO, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC											
12...	--	--	--	--	--	--	--	--	--	--	--
APR											
19...	M	<.01	190	<1.0	16.6	<.02	<3	<.3	<4	<.10	<16
JUN											
03...	--	--	--	--	--	--	--	--	--	--	--
AUG											
18...	M	<.01	190	<1.0	15.7	<.02	<3	<.3	<4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50044810 RIO GUADIANA NEAR GUADIANA, PR

LOCATION.--Lat 18°13'42", long 66°18'05", Hydrologic Unit 21010005, at right bank 1.1 mi (2.1 km) east of Plaza de Naranjito, 0.9 mi (1.4 km) west from intersection of Roads 167 and 164 at km 1.77, and 2.6 mi (4.2 km) northwest from Represa Comerío.

DRAINAGE AREA.--8.60 mi^2 (22.3 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 2001 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 229 ft (69.8 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	31	15	16	9.8	21	30	10	17	14	7.6	9.3
2	46	26	14	24	12	11	28	13	17	14	7.6	7.4
3	22	25	14	23	11	9.4	27	14	16	12	7.9	6.6
4	15	23	14	18	10	8.8	47	26	16	12	7.9	6.5
5	14	39	18	18	10	8.4	36	18	15	13	7.3	8.0
6	13	34	438	20	11	8.5	31	16	14	11	6.9	8.1
7	14	30	75	17	11	8.3	185	23	14	12	6.9	7.0
8	13	40	50	15	9.6	8.3	46	41	14	11	6.6	8.4
9	13	39	35	15	11	8.3	22	156	16	10	7.6	8.5
10	39	28	29	14	9.9	7.9	17	320	15	10	6.9	6.2
11	21	26	25	30	9.5	7.8	15	124	13	14	6.5	6.3
12	16	63	23	20	10	8.8	14	149	12	11	6.5	17
13	15	265	24	16	9.7	8.1	13	157	12	11	7.7	12
14	14	122	22	15	9.7	12	13	281	11	10	6.8	79
15	16	124	21	14	9.6	9.0	12	271	11	10	6.4	741
16	14	386	21	13	8.5	8.3	12	108	11	9.4	7.3	228
17	13	86	21	14	12	7.8	11	57	11	9.4	6.6	44
18	13	36	20	13	8.7	8.6	11	49	11	9.2	6.4	21
19	13	24	20	13	8.6	8.9	12	38	11	9.0	6.2	18
20	22	22	19	14	11	21	11	79	11	10	6.1	16
21	15	22	118	13	28	9.5	11	106	11	10	6.2	15
22	14	141	38	12	11	7.3	11	67	10	8.7	5.6	14
23	15	35	23	15	9.6	6.7	11	143	10	8.2	7.4	14
24	14	35	20	13	8.8	25	12	73	10	14	6.3	14
25	14	30	19	12	8.5	16	11	39	10	22	6.1	14
26	14	22	25	11	8.1	45	10	28	9.9	13	5.9	13
27	15	e19	21	11	8.0	106	11	25	19	10	7.1	13
28	52	17	27	11	8.2	189	10	22	24	9.3	7.9	13
29	51	16	29	12	22	141	11	21	17	10	12	15
30	43	17	22	11	---	42	11	20	14	8.6	18	14
31	37	---	18	11	---	34	---	18	---	8.0	16	---
TOTAL	638.2	1,823	1,278	474	314.8	821.7	702	2,512	402.9	343.8	238.2	1,397.3
MEAN	20.6	60.8	41.2	15.3	10.9	26.5	23.4	81.0	13.4	11.1	7.68	46.6
MAX	52	386	438	30	28	189	185	320	24	22	18	741
MIN	8.2	16	14	11	8.0	6.7	10	10	9.9	8.0	5.6	6.2
AC-FT	1,270	3,620	2,530	940	624	1,630	1,390	4,980	799	682	472	2,770
CFSM	2.55	7.54	5.11	1.90	1.35	3.29	2.90	10.1	1.67	1.38	0.95	5.78
IN.	2.95	8.41	5.90	2.19	1.45	3.79	3.24	11.59	1.86	1.59	1.10	6.45

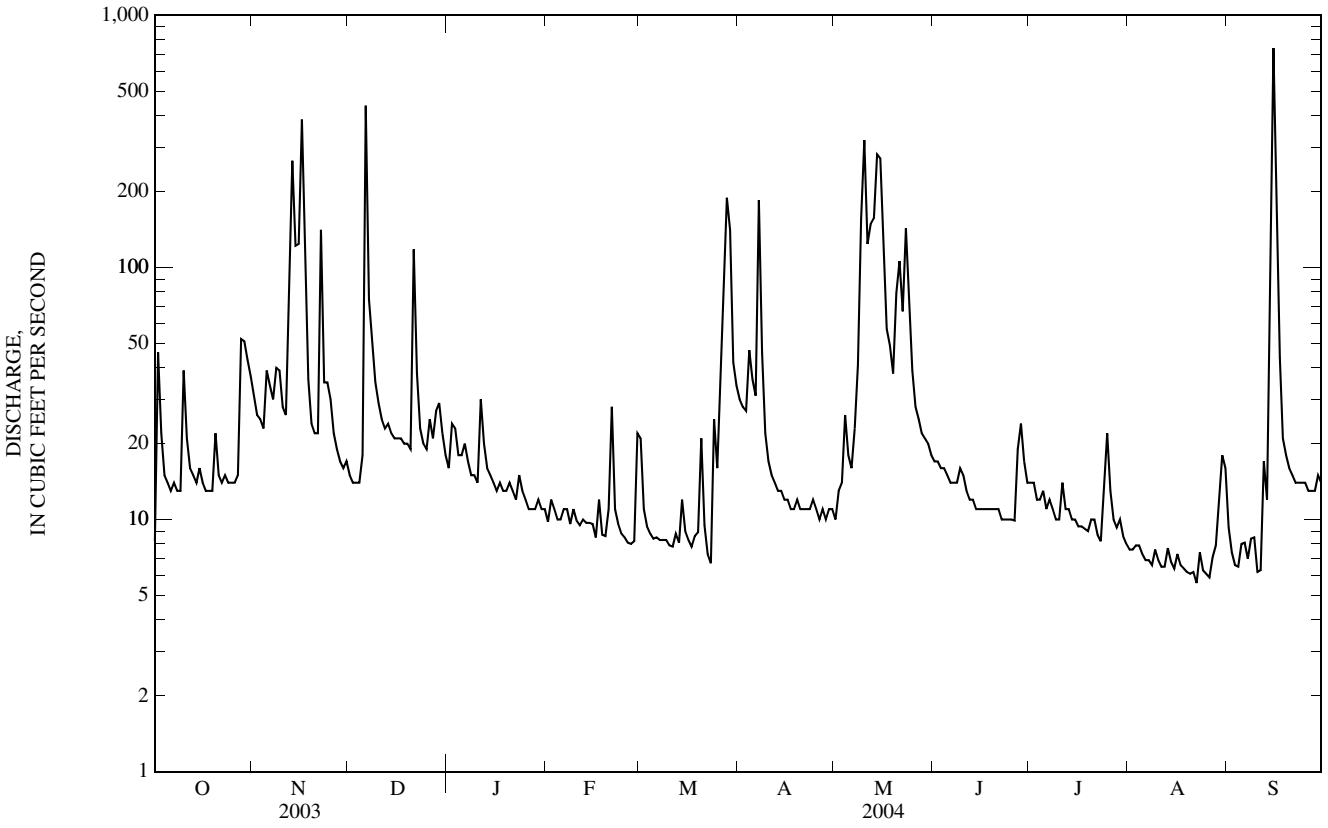
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

MEAN	10.7	42.6	21.8	11.4	8.56	13.0	15.3	28.7	6.97	6.17	5.89	17.3
MAX	20.6	63.5	41.2	15.3	10.9	26.5	23.4	81.0	13.4	11.1	7.68	46.6
(WY)	(2004)	(2002)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)
MIN	3.93	3.43	3.15	6.45	4.19	3.31	6.68	6.62	3.31	4.02	4.11	2.65
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2001)	(2003)	(2003)	(2001)	(2002)	(2001)

50044810 RIO GUADIANA NEAR GUADIANA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2001 - 2004	
ANNUAL TOTAL	5,566.2		10,945.9			
ANNUAL MEAN	15.2		29.9		17.0	
HIGHEST ANNUAL MEAN					29.9	2004
LOWEST ANNUAL MEAN					5.89	2003
HIGHEST DAILY MEAN	438	Dec 6	741	Sep 15	1,570	Nov 8, 2001
LOWEST DAILY MEAN	1.6	Jan 22	5.6	Aug 22	1.6	Jan 22, 2003
ANNUAL SEVEN-DAY MINIMUM	2.0	Jan 17	6.2	Aug 20	2.0	Sep 28, 2001
MAXIMUM PEAK FLOW			6,200	Sep 15	8,280	Nov 8, 2001
MAXIMUM PEAK STAGE			11.05	Sep 15	12.69	Nov 8, 2001
ANNUAL RUNOFF (AC-FT)	11,040		21,710		12,280	
ANNUAL RUNOFF (CFSM)	1.89		3.71		2.10	
ANNUAL RUNOFF (INCHES)	25.69		50.52		28.58	
10 PERCENT EXCEEDS	29		46		24	
50 PERCENT EXCEEDS	4.4		14		8.1	
90 PERCENT EXCEEDS	2.9		7.9		3.1	

e Estimated



50044810 RIO GUADIANA NR GUADIANA, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 2001 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: October 2001 to current year.

INSTRUMENTATION.--USDH-48 sediment sampler and automatic sediment sampler since 2001.

REMARKS.--Sediment samples were collected by local observer on a weekly basis. During high flow events sediment samples were collected with automatic sediment sampler.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 3,620 mg/L September 15, 2004; Minimum daily mean, 1 mg/L May 16-19, 2003.
SEDIMENT LOADS: Maximum daily mean, 26,000 tons (23,600 tonnes) September 15, 2004; Minimum daily mean, <0.01 ton (<0.01 tonne) May 16, 17, 19, 2003.

EXTREMES FOR CURRENT YEAR 2004.--
SEDIMENT CONCENTRATION: Maximum daily mean, 3,620 mg/L September 15, 2004; Minimum daily mean, 3 mg/L April 19, 2004.
SEDIMENT LOADS: Maximum daily mean, 26,000 tons (23,600 tonnes) September 15, 2004; Minimum daily mean, .09 ton (.08 tonne) several days.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		OCTOBER			NOVEMBER			DECEMBER	
1	8.2	6	0.13	31	42	3.7	15	11	0.44
2	46	151	122	26	35	2.5	14	9	0.36
3	22	29	2.0	25	34	2.6	14	9	0.34
4	15	5	0.20	23	33	2.1	14	9	0.35
5	14	5	0.17	39	65	7.5	18	17	1.4
6	13	4	0.15	34	59	6.7	438	3,490	10,700
7	14	4	0.15	30	40	3.3	75	210	52
8	13	4	0.14	40	70	10	50	73	9.8
9	13	4	0.14	39	56	5.8	35	41	4.0
10	39	63	10	28	47	3.6	29	11	0.89
11	21	26	1.6	26	38	2.6	25	9	0.62
12	16	5	0.21	63	150	42	23	9	0.54
13	15	5	0.19	265	1,360	3,170	24	8	0.53
14	14	5	0.18	122	446	317	22	7	0.42
15	16	5	0.19	124	587	961	21	6	0.35
16	14	4	0.17	386	2,110	4,710	21	5	0.29
17	13	4	0.15	86	225	72	21	5	0.28
18	13	4	0.15	36	59	6.5	20	5	0.27
19	13	4	0.14	24	16	1.1	20	5	0.26
20	22	30	7.4	22	16	0.94	19	5	0.26
21	15	4	0.16	22	15	0.91	118	590	1,390
22	14	4	0.15	141	609	779	38	27	4.1
23	15	4	0.16	35	52	6.8	23	7	0.43
24	14	4	0.16	35	64	14	20	7	0.35
25	14	4	0.15	30	42	3.4	19	6	0.33
26	14	4	0.15	22	20	1.2	25	18	1.8
27	15	4	0.16	e19	e18	e0.93	21	7	0.41
28	52	149	105	17	16	0.76	27	7	0.51
29	51	122	37	16	14	0.62	29	21	1.9
30	43	91	19	17	13	0.56	22	25	1.5
31	37	61	6.9	---	---	---	18	22	1.1
TOTAL	638.2	---	314.45	1,823	---	10,139.12	1,278	---	12,175.83

50044810 RIO GUADIANA NR GUADIANA, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	16	19	0.85	9.8	6	0.15	21	58	3.5
2	24	16	1.0	12	5	0.16	11	50	1.5
3	23	14	0.89	11	5	0.16	9.4	40	1.0
4	18	19	0.91	10	6	0.17	8.8	29	0.68
5	18	26	1.2	10	7	0.18	8.4	17	0.40
6	20	34	1.8	11	7	0.20	8.5	7	0.15
7	17	36	1.6	11	7	0.19	8.3	4	0.09
8	15	26	1.1	9.6	6	0.17	8.3	4	0.10
9	15	16	0.67	11	6	0.18	8.3	5	0.11
10	14	6	0.24	9.9	6	0.15	7.9	5	0.11
11	30	41	6.7	9.5	5	0.13	7.8	5	0.10
12	20	11	0.62	10	5	0.12	8.8	4	0.10
13	16	10	0.43	9.7	4	0.11	8.1	4	0.10
14	15	9	0.36	9.7	4	0.10	12	9	0.33
15	14	7	0.28	9.6	4	0.10	9.0	16	0.39
16	13	6	0.20	8.5	4	0.09	8.3	22	0.49
17	14	5	0.17	12	4	0.13	7.8	19	0.41
18	13	7	0.22	8.7	4	0.09	8.6	14	0.32
19	13	9	0.30	8.6	5	0.12	8.9	8	0.20
20	14	11	0.43	11	24	0.74	21	7	0.39
21	13	10	0.36	28	37	4.5	9.5	7	0.18
22	12	7	0.22	11	10	0.30	7.3	7	0.14
23	15	6	0.26	9.6	9	0.24	6.7	6	0.11
24	13	6	0.21	8.8	9	0.22	25	41	4.2
25	12	6	0.19	8.5	9	0.20	16	10	0.58
26	11	6	0.18	8.1	7	0.16	45	73	14
27	11	6	0.19	8.0	6	0.12	106	338	170
28	11	6	0.20	8.2	5	0.12	189	761	546
29	12	7	0.21	22	11	0.99	141	526	478
30	11	7	0.20	---	---	---	42	39	4.7
31	11	6	0.18	---	---	---	34	17	1.6
TOTAL	474	---	22.37	314.8	---	10.29	821.7	---	1,229.98
		APRIL			MAY			JUNE	
1	30	13	1.0	10	20	0.54	17	10	0.47
2	28	8	0.62	13	19	0.69	17	9	0.42
3	27	7	0.47	14	19	0.73	16	8	0.35
4	47	76	17	26	40	4.0	16	8	0.32
5	36	42	4.2	18	24	1.2	15	7	0.29
6	31	24	2.0	16	23	0.99	14	7	0.25
7	185	965	2,370	23	41	4.1	14	6	0.23
8	46	84	14	41	102	34	14	6	0.23
9	22	16	1.0	156	543	363	16	6	0.29
10	17	7	0.35	320	1,640	4,850	15	7	0.27
11	15	6	0.25	124	387	224	13	7	0.24
12	14	8	0.29	149	493	371	12	8	0.26
13	13	7	0.27	157	581	554	12	9	0.29
14	13	7	0.22	281	1,330	1,990	11	10	0.32
15	12	6	0.19	271	1,250	1,730	11	12	0.35
16	12	5	0.16	108	294	100	11	13	0.38
17	11	4	0.13	57	56	9.0	11	13	0.40
18	11	4	0.11	49	59	8.6	11	13	0.39
19	12	3	0.10	38	63	6.6	11	13	0.39
20	11	4	0.13	79	208	79	11	13	0.38
21	11	6	0.17	106	307	194	11	13	0.38
22	11	8	0.22	67	98	20	10	13	0.37
23	11	10	0.31	143	461	286	10	13	0.36
24	12	13	0.42	73	137	31	10	13	0.35
25	11	15	0.44	39	36	3.9	10	13	0.36
26	10	17	0.49	28	21	1.6	9.9	13	0.35
27	11	19	0.53	25	10	0.67	19	32	5.3
28	10	19	0.52	22	8	0.50	24	58	6.8
29	11	20	0.60	21	10	0.56	17	37	1.7
30	11	20	0.57	20	12	0.62	14	37	1.4
31	---	---	---	18	11	0.54	---	---	---
TOTAL	702	---	2,416.76	2,512	---	10,870.84	402.9	---	23.89

50044810 RIO GUADIANA NR GUADIANA, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	14	36	1.3	7.6	14	0.30	9.3	10	0.26
2	14	33	1.2	7.6	15	0.30	7.4	10	0.19
3	12	29	0.97	7.9	15	0.32	6.6	9	0.17
4	12	26	0.85	7.9	16	0.33	6.5	9	0.16
5	13	23	0.81	7.3	16	0.31	8.0	9	0.20
6	11	19	0.59	6.9	18	0.33	8.1	9	0.20
7	12	16	0.50	6.9	20	0.37	7.0	9	0.17
8	11	14	0.41	6.6	19	0.34	8.4	13	0.45
9	10	13	0.36	7.6	18	0.38	8.5	33	0.79
10	10	13	0.35	6.9	18	0.33	6.2	24	0.40
11	14	19	1.2	6.5	17	0.30	6.3	22	0.38
12	11	18	0.57	6.5	17	0.29	17	42	7.6
13	11	15	0.44	7.7	23	0.47	12	20	0.62
14	10	12	0.35	6.8	29	0.54	79	1,040	976
15	10	10	0.28	6.4	26	0.45	741	3,620	26,000
16	9.4	18	0.45	7.3	21	0.41	228	770	667
17	9.4	27	0.70	6.6	16	0.28	44	99	13
18	9.2	27	0.68	6.4	11	0.19	21	63	3.7
19	9.0	24	0.57	6.2	6	0.11	18	37	1.8
20	10	20	0.55	6.1	7	0.11	16	13	0.57
21	10	17	0.46	6.2	8	0.14	15	6	0.26
22	8.7	16	0.37	5.6	7	0.11	14	6	0.22
23	8.2	15	0.34	7.4	5	0.11	14	5	0.21
24	14	26	1.6	6.3	6	0.11	14	9	0.35
25	22	39	2.6	6.1	8	0.12	14	14	0.52
26	13	16	0.56	5.9	9	0.14	13	14	0.51
27	10	15	0.44	7.1	8	0.15	13	13	0.47
28	9.3	15	0.38	7.9	7	0.15	13	12	0.43
29	10	15	0.40	12	20	1.8	15	11	0.45
30	8.6	14	0.33	18	28	4.3	14	10	0.38
31	8.0	14	0.31	16	16	1.2	---	---	---
TOTAL	343.8	---	20.92	238.2	---	14.79	1,397.3	---	27,677.46
YEAR	10,945.9	64,916.70							

e Estimated

50044850 RIO GUADIANA NEAR NARANJITO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°18'39", long 66°13'28", at steel-cross bridge 0.8 mi (1.3 km) northwest of Highway 164, 1.2 mi (1.9 km) upstream from mouth and about 2.0 mi (3.2 km) northeast of Naranjito Plaza.

DRAINAGE AREA.--4.0 mi^2 (10.3 km^2).

PERIOD OF RECORD.--Water year 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV													
24...	1140	40	--	8.4	7.7	326	24.7	130	28.2	14.2	1.99	.5	14.2
APR													
19...	0950	13	<2.0	13.1	8.4	362	24.5	140	32.5	15.4	2.14	.6	17.0
JUN													
03...	1030	25	<2.0	10.7	8.3	332	25.0	--	--	--	--	--	--
AUG													
18...	1300	7.7	4.1	7.0	8.3	372	30.4	150	33.2	15.1	2.15	.6	16.9

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
NOV													
24...	110	20.9	<.2	25.2	23.1	--	194	21.2	<10	--	--	--	--
APR													
19...	130	24.2	<.2	26.2	17.8	<.1	213	--	<10	.50	.01	1.09	1.10
JUN													
03...	116	--	--	--	--	--	--	--	<10	<.20	.02	--	1.30
AUG													
18...	131	29.5	<.2	29.2	15.8	--	227	4.71	<10	--	.04	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
NOV													
24...	--	--	--	--	--	<10	E1,900	54,000	--	--	--	--	--
APR													
19...	.01	.49	1.6	7.1	.12	<10	--	--	E1	59.3	26	<.2	<.8
JUN													
03...	<.01	--	--	--	.10	<10	2,100	3,500	--	--	--	--	--
AUG													
18...	--	--	--	--	.22	<10	2,000	5,400	<2	60.7	30	<.2	E.7

50044850 RIO GUADIANA NEAR NARANJITO, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
NOV 24...	--	--	--	--	--	--	--	--	--	--	--
APR 19...	M	<.01	40	<1.0	12.6	<.02	<3	<.3	<4	<.10	<16
JUN 03...	--	--	--	--	--	--	--	--	--	--	--
AUG 18...	M	<.01	240	<1.0	24.3	<.02	<3	<.3	6	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50045000 LAGO LA PLATA AT DAMSITE NEAR TOA ALTA, PR

LOCATION.--Lat 18°20'40", long 66°14'10", Hydrologic Unit 21010005, 2.9 mi (4.7 km) at northeast of Plaza de Naranjito, 2.7 mi (4.3 km) west of Road 167, km 15.3, Buena Vista, Bayamón, 5.2 mi (8.4 km) east of Plaza de Corozal.

DRAINAGE AREA.--181 mi^2 (469 km^2).

PERIOD OF RECORD.--February 1989 to current year. Prior to October 1994, published as Lago La Plata at Damsite.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago La Plata first construction phase was completed in 1974 and the second construction phase to provide the spillway with bascule gates was completed in October 1989. The maximum storage is 37,000 acre-feet (45.6 hm^3) and its purpose is the supply of water for domestic and industrial use. La Plata Dam is a concrete gravity structure located across the Río de la Plata, the dam has an overall length of 774 ft (236 m) and a maximum height of about 131 ft (40 m). The dam spillway is provided with six bascule gates. The spillway crest has a total clear length of 690 ft (210 m), an elevation of 155 ft (47 m). The Dam is owned and operated by the Puerto Rico Aqueduct and Sewer Authority. Gage-height and precipitation satellite telemetry at station. New capacity table based on U.S. Geological Survey Water-Resources Investigations Report 00-4045, October 1998.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation, 170.90 ft (52.09 m), September 10, 1996; minimum elevation, 107.95 ft (32.90 m), February 21, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 169.27 ft (51.59 m), November 13; minimum elevation, 161.70 ft (49.29 m), September 16.

Capacity Table
(based on data from U.S. Geological Survey Water-Resources Investigations Report 00-4045, Puerto Rico, 1998)
(Elevation in ft, capacity in acre-ft)

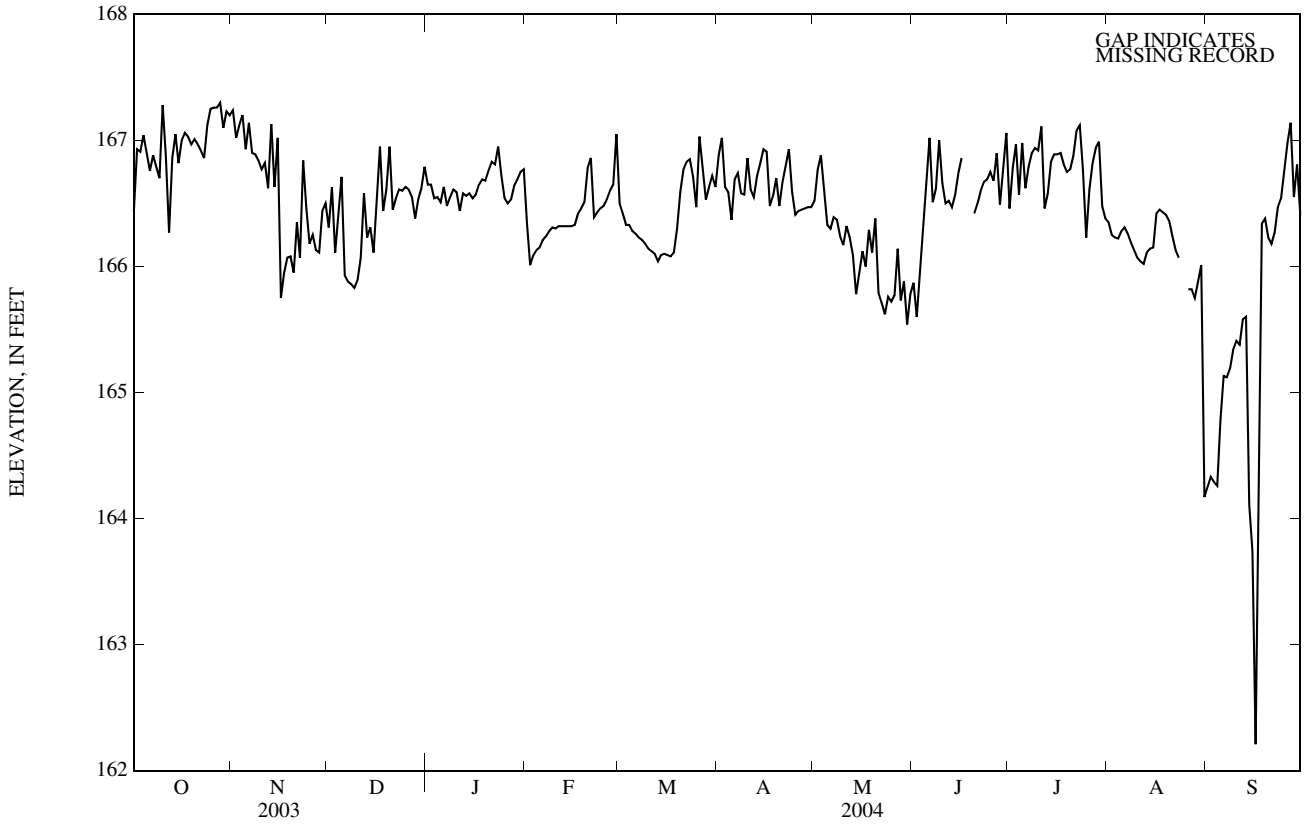
Elevation	Contents	Elevation	Contents
82	0	144	12,915
105	1,873	164	24,021
125	5,943	171	28,748

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	166.44	167.24	166.31	166.65	166.34	166.50	166.88	166.52	165.87	166.46	166.35	164.25
2	166.93	167.02	166.63	166.65	166.01	166.42	167.02	166.77	165.60	166.78	166.25	164.33
3	166.91	167.12	166.11	166.54	166.09	166.33	166.63	166.88	165.94	166.97	166.23	164.29
4	167.04	167.20	166.40	166.55	166.13	166.33	166.59	166.62	166.29	166.57	166.22	164.26
5	166.90	166.93	166.71	166.51	166.15	166.28	166.37	166.33	166.68	166.98	166.28	164.78
6	166.76	167.14	165.93	166.63	166.21	166.26	166.69	166.30	167.02	166.62	166.31	165.13
7	166.88	166.90	165.88	166.48	166.24	166.23	166.74	166.39	166.51	166.79	166.26	165.12
8	166.79	166.89	165.86	166.55	166.28	166.21	166.58	166.37	166.62	166.90	166.19	165.19
9	166.70	166.84	165.83	166.61	166.31	166.18	166.57	166.24	167.00	166.94	166.13	165.34
10	167.28	166.77	165.89	166.59	166.30	166.14	166.86	166.17	166.66	166.92	166.07	165.41
11	166.87	166.82	166.07	166.44	166.32	166.12	166.61	166.32	166.50	167.11	166.04	165.38
12	166.27	166.62	166.58	166.58	166.32	166.10	166.55	166.23	166.52	166.46	166.02	165.58
13	166.86	167.13	166.23	166.56	166.32	166.04	166.72	166.09	166.47	166.58	166.11	165.60
14	167.05	166.63	166.31	166.58	166.32	166.09	166.82	165.78	166.57	166.83	166.14	164.11
15	166.82	167.02	166.11	166.54	166.32	166.10	166.93	165.95	166.74	166.89	166.15	163.74
16	167.00	165.75	166.53	166.57	166.33	166.09	166.91	166.12	166.86	166.89	166.42	162.21
17	167.06	165.95	166.95	166.65	166.42	166.08	166.48	166.00	A	166.90	166.45	165.25
18	167.03	166.07	166.44	166.69	166.46	166.11	166.56	166.29	A	166.81	166.43	166.34
19	166.97	166.08	166.61	166.68	166.51	166.30	166.70	166.11	A	166.75	166.41	166.38
20	167.01	165.95	166.95	166.76	166.78	166.59	166.48	166.38	166.42	166.77	166.36	166.23
21	166.97	166.35	166.45	166.83	166.86	166.77	166.67	165.79	166.50	166.88	166.24	166.18
22	166.92	166.07	166.54	166.81	166.39	166.83	166.80	165.71	166.60	167.08	166.13	166.27
23	166.86	166.84	166.61	166.95	166.43	166.85	166.93	165.62	166.67	167.12	166.07	166.47
24	167.12	166.46	166.60	166.72	166.46	166.71	166.59	165.76	166.69	166.76	A	166.54
25	167.25	166.18	166.63	166.54	166.48	166.47	166.41	165.72	166.75	166.23	A	166.75
26	167.26	166.25	166.61	166.50	166.53	167.03	166.44	165.77	166.68	166.61	165.82	166.98
27	167.26	166.13	166.55	166.53	166.60	166.79	166.45	166.14	166.90	166.82	165.82	167.14
28	167.30	166.11	166.38	166.64	166.65	166.53	166.46	165.73	166.49	166.94	165.75	166.55
29	167.10	166.44	166.53	166.69	167.05	166.63	166.47	165.88	166.80	166.99	165.88	166.81
30	167.23	166.50	166.62	166.75	---	166.72	166.47	165.54	167.06	166.48	166.01	166.41
31	167.20	---	166.79	166.77	---	166.63	---	165.78	---	166.38	164.17	---
MAX	167.30	167.24	166.95	166.95	167.05	167.03	167.02	166.88	---	167.12	---	167.14
MIN	166.27	165.75	165.83	166.44	166.01	166.04	166.37	165.54	---	166.23	---	162.21

A No gage-height record

50045000 LAGO LA PLATA AT DAMSITE NEAR TOA ALTA, PR—Continued



50045010 RIO DE LA PLATA BELOW LA PLATA DAM

LOCATION.--Lat 18°20'45", long 66°14'17", Hydrologic Unit 21010005, 2.8 mi (4.5 km) west of Road 167, km 15.3, Buena Vista, Bayamón, 5.0 mi (8.0 km) east of Plaza de Corozal, 3.0 mi (4.8 km) northeast of Plaza de Naranjito.

DRAINAGE AREA.--173 mi^2 (448 km^2).

PERIOD OF RECORD.--July 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage 66 ft (20 m), from topographic map.

REMARKS.--Records poor. Regulation at all stages by the Puerto Rico Aqueduct and Sewer Authority reservoir upstream from gage. Gage-height satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	429	260	172	189	464	20	0.75	134	331	42	3.1
2	14	286	27	181	168	101	13	1.1	286	37	53	1.8
3	62	37	366	231	5.4	65	200	2.5	16	4.5	6.3	1.4
4	77	26	27	133	8.0	19	496	612	37	324	6.3	1.4
5	54	199	30	156	3.9	23	312	1,330	18	77	6.3	2.2
6	53	88	10,900	183	1.8	12	2.3	693	2.2	271	6.2	4.1
7	43	565	4,160	512	1.9	12	1,400	1,120	314	2.4	7.2	8.5
8	42	556	2,740	156	2.8	2.7	644	843	79	4.4	13	9.2
9	6.5	740	979	109	5.9	2.8	641	1,740	6.2	11	26	2.2
10	3,280	380	585	113	10	2.9	464	1,610	542	27	16	2.7
11	1,620	1,530	412	369	2.1	2.7	301	1,230	337	44	2.9	3.6
12	170	10,500	185	187	2.2	2.7	143	1,560	181	313	4.5	5.5
13	263	e15,000	473	142	3.2	2.6	13	1,840	129	3.3	6.2	9.9
14	6.4	e13,000	288	e88	6.4	3.2	20	2,160	54	5.5	6.9	1,370
15	494	e2,400	389	e100	13	3.5	6.4	2,220	11	8.0	11	24,100
16	80	e14,000	85	e70	11	2.0	52	1,060	17	14	17	16,100
17	3.3	e2,800	63	e64	4.4	2.2	231	631	20	35	31	1,980
18	7.9	1,480	472	e66	2.6	2.9	7.3	426	37	59	13	1,620
19	4.4	966	131	e68	1.5	4.2	8.2	514	44	30	2.5	860
20	7.5	626	22	e70	2.0	5.7	463	482	318	14	3.8	619
21	5.3	277	921	e74	114	7.4	30	1,240	14	22	12	383
22	9.2	1,230	233	78	302	2.4	16	1,060	2.6	18	8.0	266
23	8.1	829	133	66	26	3.9	2.1	3,570	4.3	5.5	3.1	221
24	17	1,570	142	262	4.8	215	179	1,840	10	217	3.6	233
25	24	1,240	129	146	1.7	206	134	1,280	26	520	4.6	82
26	20	482	199	73	2.0	134	3.9	610	52	141	8.1	25
27	39	401	199	43	2.1	1,030	0.35	287	25	7.8	12	30
28	57	280	531	5.9	3.1	1,980	0.65	479	320	8.1	9.5	354
29	296	96	212	7.5	5.6	1,110	0.60	211	4.0	14	1.4	122
30	35	183	162	8.2	---	278	0.56	381	5.6	346	1.9	522
31	640	---	72	15	---	208	---	105	---	118	737	---
TOTAL	7,444.3	72,196	25,527	3,948.6	906.4	5,910.8	5,804.36	31,138.35	3,045.9	3,032.5	1,082.3	48,942.6
MEAN	240	2,407	823	127	31.3	191	193	1,004	102	97.8	34.9	1,631
MAX	3,280	15,000	10,900	512	302	1,980	1,400	3,570	542	520	737	24,100
MIN	3.3	26	22	5.9	1.5	2.0	0.35	0.75	2.2	2.4	1.4	1.4
AC-FT	14,770	143,200	50,630	7,830	1,800	11,720	11,510	61,760	6,040	6,010	2,150	97,080
CFSM	1.39	13.9	4.77	0.74	0.18	1.10	1.12	5.81	0.59	0.57	0.20	9.44
IN.	1.60	15.54	5.50	0.85	0.20	1.27	1.25	6.70	0.66	0.65	0.23	10.54

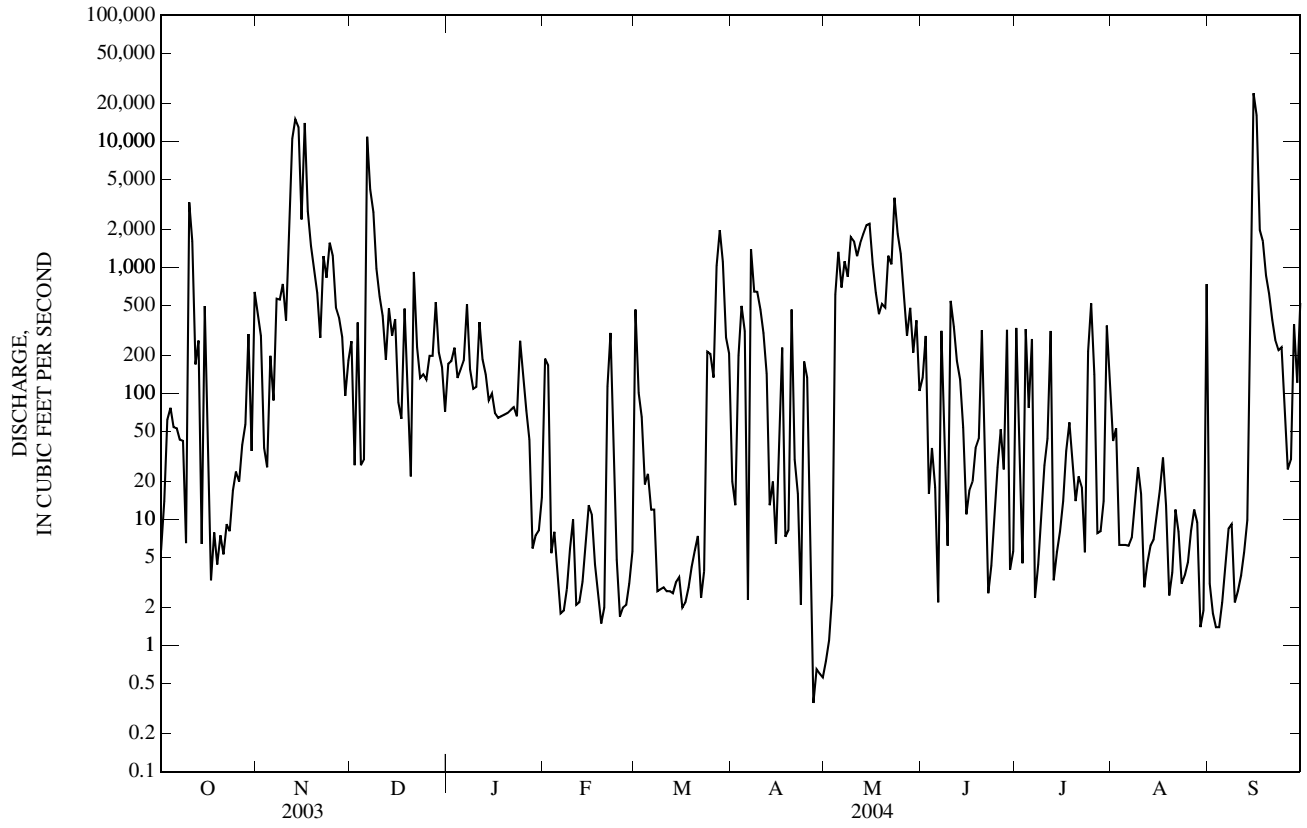
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 2004, BY WATER YEAR (WY)

MEAN	170	387	206	169	44.7	22.7	67.8	153	38.2	55.7	55.6	831
MAX	1,107	2,407	926	1,581	241	191	338	1,004	220	384	322	8,046
(WY)	(1991)	(2004)	(1999)	(1992)	(1998)	(2004)	(2003)	(2004)	(1993)	(1993)	(2000)	(1996)
MIN	0.05	0.00	0.00	0.19	0.14	0.02	0.01	0.00	0.00	0.04	0.02	0.00
(WY)	(1992)	(1995)	(1995)	(1990)	(1995)	(1995)	(1995)	(1994)	(1994)	(1994)	(1989)	(1991)

50045010 RIO DE LA PLATA BELOW LA PLATA DAM—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1989 - 2004	
ANNUAL TOTAL	129,921.41		208,979.11			
ANNUAL MEAN	356		571		187	
HIGHEST ANNUAL MEAN					714	1996
LOWEST ANNUAL MEAN					8.62	1997
HIGHEST DAILY MEAN	15,000	Nov 13	24,100	Sep 15	141,000	Sep 10, 1996
LOWEST DAILY MEAN	0.08	Jan 14	0.35	Apr 27	0.00	Jul 14, 1989
ANNUAL SEVEN-DAY MINIMUM	0.14	Jan 28	0.93	Apr 27	0.00	Jul 14, 1989
MAXIMUM PEAK FLOW			80,400	Sep 15	197,000	Sep 10, 1996
MAXIMUM PEAK STAGE			28.17	Sep 15	42.26	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	257,700		414,500		135,400	
ANNUAL RUNOFF (CFSM)	2.06		3.30		1.08	
ANNUAL RUNOFF (INCHES)	27.97		44.99		14.70	
10 PERCENT EXCEEDS	560		1,110		256	
50 PERCENT EXCEEDS	6.7		60		2.1	
90 PERCENT EXCEEDS	0.18		2.7		0.00	

e Estimated



50046000 RIO DE LA PLATA AT HIGHWAY 2 NEAR TOA ALTA, PR

LOCATION.--Lat 18°24'41", long 66°15'39", Hydrologic Unit 21010005, on left bank at downstream side of bridge on Highway 2, 1.3 mi (2.1 km) downstream from Río Lajas and 1.6 mi (2.6 km) northwest of Toa Alta, 11.3 mi (18.2 km) downstream from the Puerto Rico Aqueduct and Sewer Authority reservoir.

DRAINAGE AREA.--208 mi^2 (539 km^2), excludes 8.2 mi^2 (21.2 km^2) upstream from Lago Carite, flow from which is diverted to Río Guamaní. Area at site used prior to September 25, 1984, 200 mi^2 (518 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1959 (measurement only), January 1960 to current year. Prior to October 1984, published as Río de La Plata at Toa Alta, Puerto Rico; October 1984 to September 1988 published as 50046900.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 9.15 ft (2.789 m), above mean sea level. Prior to October 1984, at site about 1.0 mi (1.6 km) upstream at mean sea level datum.

REMARKS.--Records poor. Regulation at all stages by the Puerto Rico Aqueduct and Sewer Authority reservoir upstream from gage. Gage-height and precipitation satellite telemetry at station. Flow affected by water extraction for La Virgencita water treatment plant by the Puerto Rico Aqueduct and Sewer Authority of about 3.99 ft^3/s (0.11 m^3/s). Located about 1,000 ft upstream from station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate discharges and elevations of major floods, as pointed out by local residents are as follows: September 13, 1928, 120,000 ft^3/s (3,400 m^3/s), gage height 37.4 ft (11.40 m); June 16, 1943, 82,000 ft^3/s (2,322 m^3/s), gage height 34.4 ft (10.48 m), at site 1.0 mi upstream and different datum.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	912	493	295	93	565	111	29	79	437	79	99
2	25	473	51	333	412	220	83	30	525	296	93	41
3	58	121	269	390	73	148	74	191	81	84	70	37
4	51	123	151	240	44	81	635	482	186	324	48	34
5	57	192	39	328	36	49	570	1,500	119	153	49	118
6	43	498	10,700	367	42	47	406	1,170	367	399	44	85
7	131	271	7,800	583	50	42	1,650	1,250	401	117	44	43
8	183	1,380	4,040	474	34	36	1,250	1,750	243	55	45	44
9	53	1,570	1,500	261	36	29	462	3,430	235	43	52	43
10	2,790	1,030	920	251	39	29	1,180	2,730	530	48	66	35
11	4,100	1,010	680	634	38	29	213	1,980	582	102	46	50
12	683	12,700	364	563	32	28	494	3,610	336	542	39	38
13	74	16,000	400	337	32	31	59	3,200	229	279	44	43
14	424	15,100	468	213	30	40	54	3,240	162	512	51	870
15	273	3,430	416	226	33	41	47	4,210	69	187	50	21,000
16	586	15,500	261	188	40	35	38	1,930	58	96	76	23,500
17	50	3,710	65	125	51	29	333	1,030	64	82	68	4,110
18	31	2,260	419	127	40	33	100	725	75	106	62	2,170
19	29	1,670	274	132	33	31	342	1,010	87	110	50	1,230
20	89	956	54	140	30	38	625	790	365	76	41	811
21	79	744	978	148	83	40	128	1,580	87	71	43	485
22	32	2,350	864	163	512	32	79	1,410	47	72	50	400
23	30	1,250	304	128	112	26	48	3,980	38	55	43	357
24	27	2,350	308	300	45	274	42	3,220	36	62	41	309
25	32	1,960	312	327	37	551	406	e1,900	47	772	49	295
26	58	728	298	157	29	316	53	e1,100	80	437	54	180
27	117	448	475	127	30	1,940	41	e700	91	83	50	188
28	95	377	617	69	28	2,600	34	e410	245	99	50	363
29	399	274	489	46	119	2,460	30	e645	226	99	45	286
30	112	85	352	38	---	526	30	383	72	182	37	456
31	1,280	---	154	40	---	522	---	403	---	437	882	---
TOTAL	12,025	89,472	34,515	7,750	2,213	10,868	9,617	50,018	5,762	6,417	2,461	57,720
MEAN	388	2,982	1,113	250	76.3	351	321	1,613	192	207	79.4	1,924
MAX	4,100	16,000	10,700	634	512	2,600	1,650	4,210	582	772	882	23,500
MIN	25	85	39	38	28	26	30	29	36	43	37	34
AC-FT	23,850	177,500	68,460	15,370	4,390	21,560	19,080	99,210	11,430	12,730	4,880	114,500
CFSM	1.86	14.3	5.35	1.20	0.37	1.69	1.54	7.76	0.92	1.00	0.38	9.25
IN.	2.15	16.00	6.17	1.39	0.40	1.94	1.72	8.95	1.03	1.15	0.44	10.32

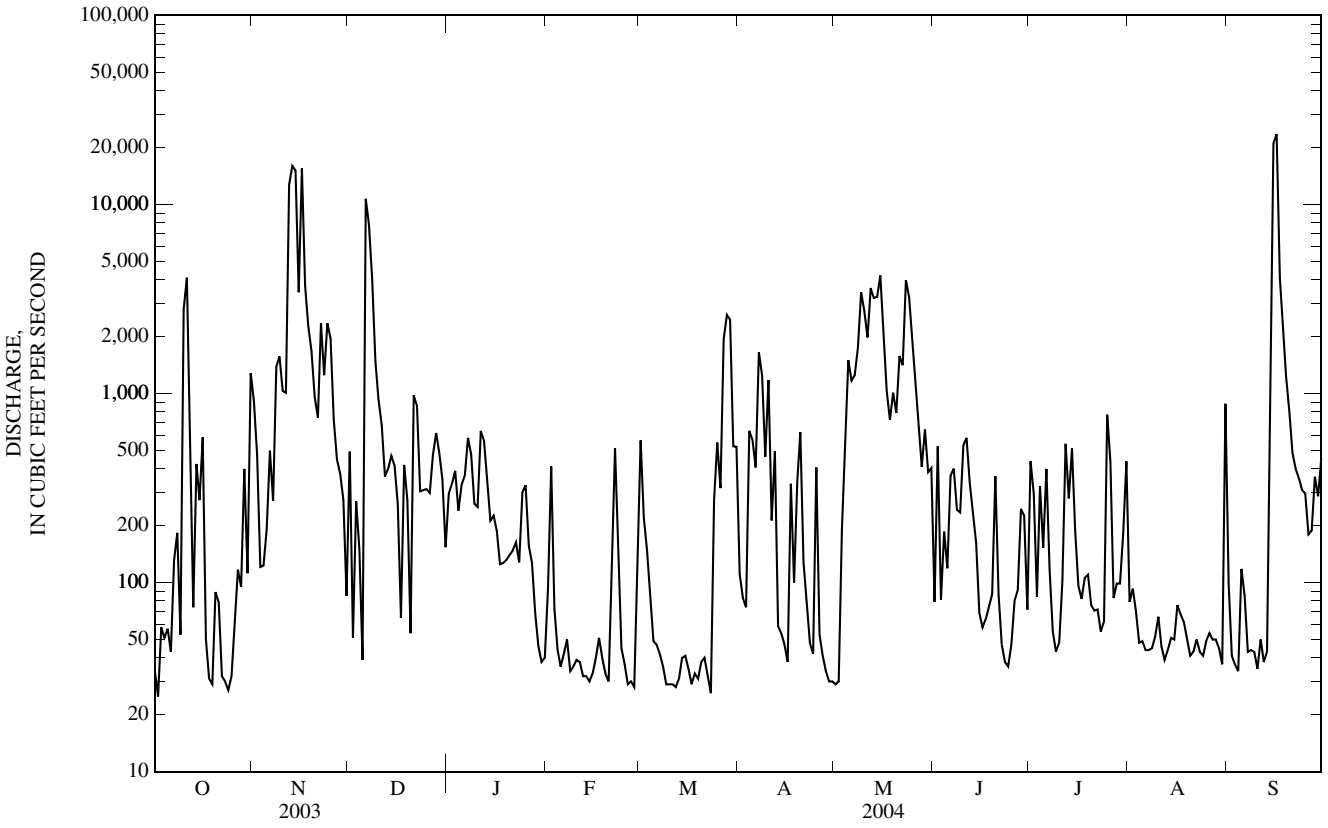
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2004, BY WATER YEAR (WY)

MEAN	441	522	356	180	124	94.3	185	338	148	137	232	453
MAX	4,813	2,982	1,352	929	409	468	722	1,939	847	690	1,677	3,173
(WY)	(1971)	(2004)	(1971)	(1992)	(1989)	(1969)	(1987)	(1985)	(1970)	(1961)	(1979)	(1996)
MIN	18.8	18.4	14.8	16.9	16.0	8.31	5.07	7.63	11.4	13.2	16.5	19.2
(WY)	(1995)	(1995)	(1995)	(1984)	(1983)	(1986)	(1984)	(1984)	(1977)	(1994)	(1976)	(1991)

50046000 RIO DE LA PLATA AT HIGHWAY 2 NEAR TOA ALTA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1960 - 2004	
ANNUAL TOTAL	181,960.5		288,838			
ANNUAL MEAN	499		789		266	
HIGHEST ANNUAL MEAN					824	1971
LOWEST ANNUAL MEAN					31.5	1994
HIGHEST DAILY MEAN	16,000	Nov 13	23,500	Sep 16	68,100	Sep 10, 1996
LOWEST DAILY MEAN	6.7	Mar 24	25	Oct 2	2.7	Apr 17, 1984
ANNUAL SEVEN-DAY MINIMUM	9.0	Mar 13	32	Mar 8	2.9	Apr 15, 1984
MAXIMUM PEAK FLOW			66,400	Sep 15	160,000	Sep 10, 1996
MAXIMUM PEAK STAGE			24.10	Sep 15	27.33	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	360,900		572,900		192,500	
ANNUAL RUNOFF (CFSM)	2.40		3.79		1.28	
ANNUAL RUNOFF (INCHES)	32.54		51.66		17.36	
10 PERCENT EXCEEDS	915		1,600		485	
50 PERCENT EXCEEDS	34		148		73	
90 PERCENT EXCEEDS	15		36		18	

e Estimated



50046000 RIO DE LA PLATA AT HIGHWAY 2 NEAR TOA ALTA, PR

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
APR													
13...	1045	61	4.5	7.2	7.3	386	26.8	150	38.9	12.5	2.71	.7	19.4
JUN													
02...	1502	--	25	7.6	7.7	273	28.8	--	--	--	--	--	--
AUG													
06...	0845	45	4.2	4.5	7.5	473	28.8	190	54.4	11.9	2.52	.7	20.9

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
APR													
13...	146	25.1	<.2	20.8	12.5	<.1	219	--	<10	.50	.10	.24	.270
JUN													
02...	100	--	--	--	--	--	--	--	11	.50	.06	.52	.540
AUG													
06...	180	30.2	<.2	21.3	15.2	--	265	32.0	<10	--	--	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
APR													
13...	.03	.40	.77	3.4	.03	<10	80	6,400	2	52.5	40	<.2	<.8
JUN													
02...	.02	.44	1.0	4.6	.06	<10	2,700	E12,000	--	--	--	--	--
AUG													
06...	--	--	--	--	--	<10	E54	E5,000	M	61.0	47	<.2	<.8

Date	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
APR											
13...	M	<.01	210	E.6	113	<.02	<3	<.3	<4	<.10	<16
JUN											
02...	--	--	--	--	--	--	--	--	--	--	--
AUG											
06...	<4	<.01	130	<1.0	130	<.02	E2	<.3	5	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

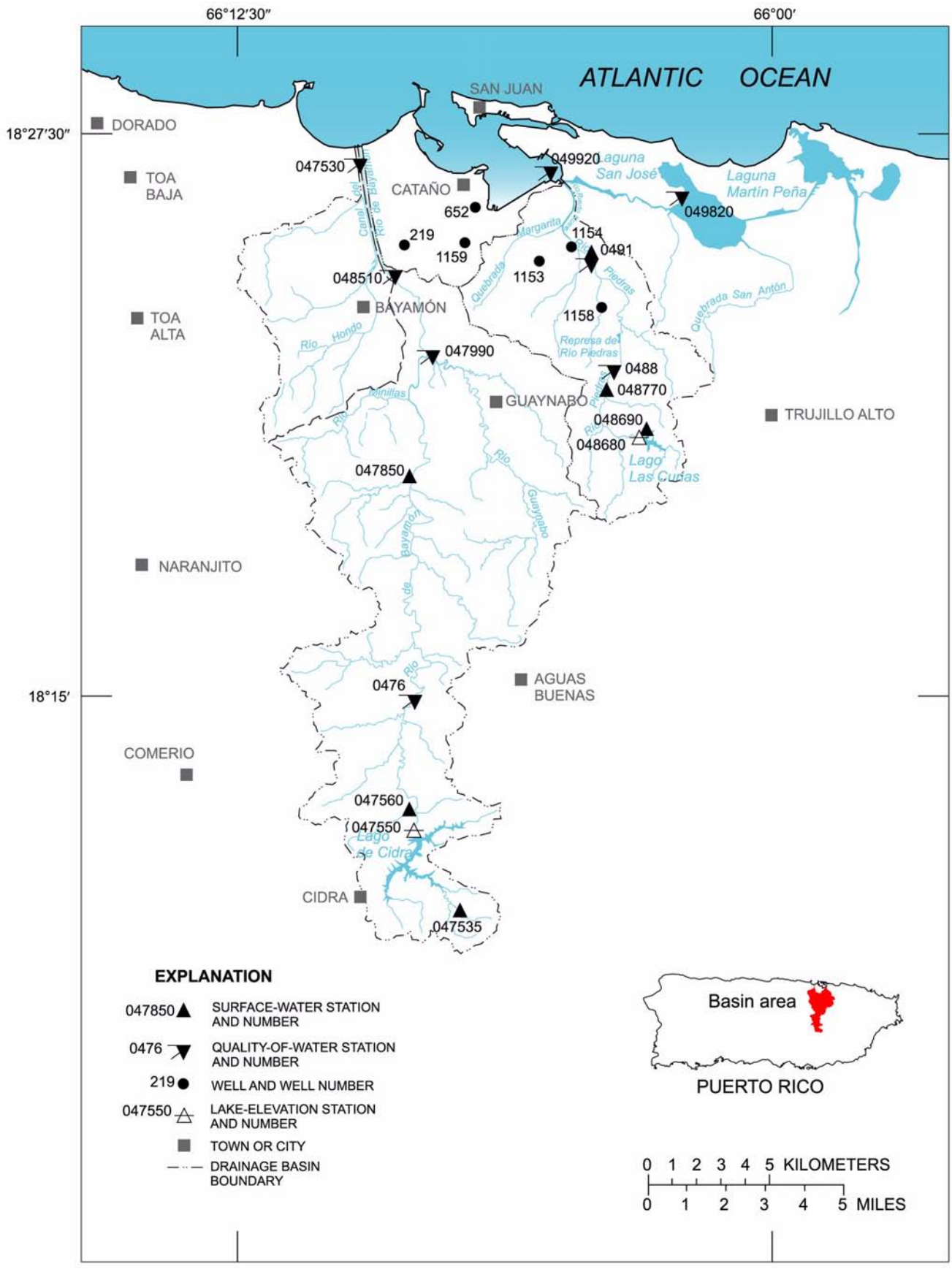


Figure 16. Río Hondo to Río Puerto Nuevo basins.

50047530 RIO HONDO AT FLOOD CHANNEL NEAR CATAÑO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°26'13", long 66°09'36", at Río Hondo Channel, 800 ft (245 m) below junction with Río Hondo, 0.9 mi (1.5 km) downstream from bridge on De Diego Expressway and 1.1 mi (1.8 km) above mouth.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)
FEB													
23...	1517	34	4.6	7.5	9,500	28.5	1,000	88.1	191	62.0	23	1,650	116
JUN													
04...	0855	9.7	4.0	7.3	9,500	28.5	--	--	--	--	--	--	174
AUG													
04...	1335	2.8	8.2	8.6	5,150	30.7	2,900	203	585	189	37	4,560	148

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)
FEB													
23...	3,000	.3	9.9	403	<.1	5,470	15	1.1	.61	.16	.200	.04	.49
JUN													
04...	--	--	--	--	--	--	12	1.2	.72	.23	.270	.04	.48
AUG													
04...	12,000	.8	6.9	1,630	--	19,300	15	--	--	--	--	--	--

Date	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)
FEB													
23...	1.3	5.8	.22	150	2,000	20,000	4	60.3	1,010	<.4	<.8	30	.03
JUN													
04...	1.5	6.5	.18	40	--	E100,000	--	--	--	--	--	--	--
AUG													
04...	--	--	--	130	E10	E1,400	<6	50.2	2,590	2.6	<.8	<40	E.03

Date	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
FEB									
23...	530	E1.2	336	<.02	E1	<.5	E12	.15	<16
JUN									
04...	--	--	--	--	--	--	--	--	--
AUG									
04...	150	<6.0	104	<.02	<8	<2.1	<40	.13	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50047535 RIO DE BAYAMON AT ARENAS, PR

LOCATION.--Lat 18°10'11", long 66°07'18", Hydrologic Unit 21010005, at left bank, 2.6 mi (4.2 km) southeast of Plaza de Cidra, 0.6 mi (0.9 km) southwest from Escuela Segunda Unidad de Bayamón, and 2.7 mi (4.3 km) northeast from Central Cayey.

DRAINAGE AREA.--0.45 mi^2 (1.16 km^2).

PERIOD OF RECORD.--July 1992 to September 1993, October 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,378 ft (420 m), from topographic map.

REMARKS.--Records fair. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

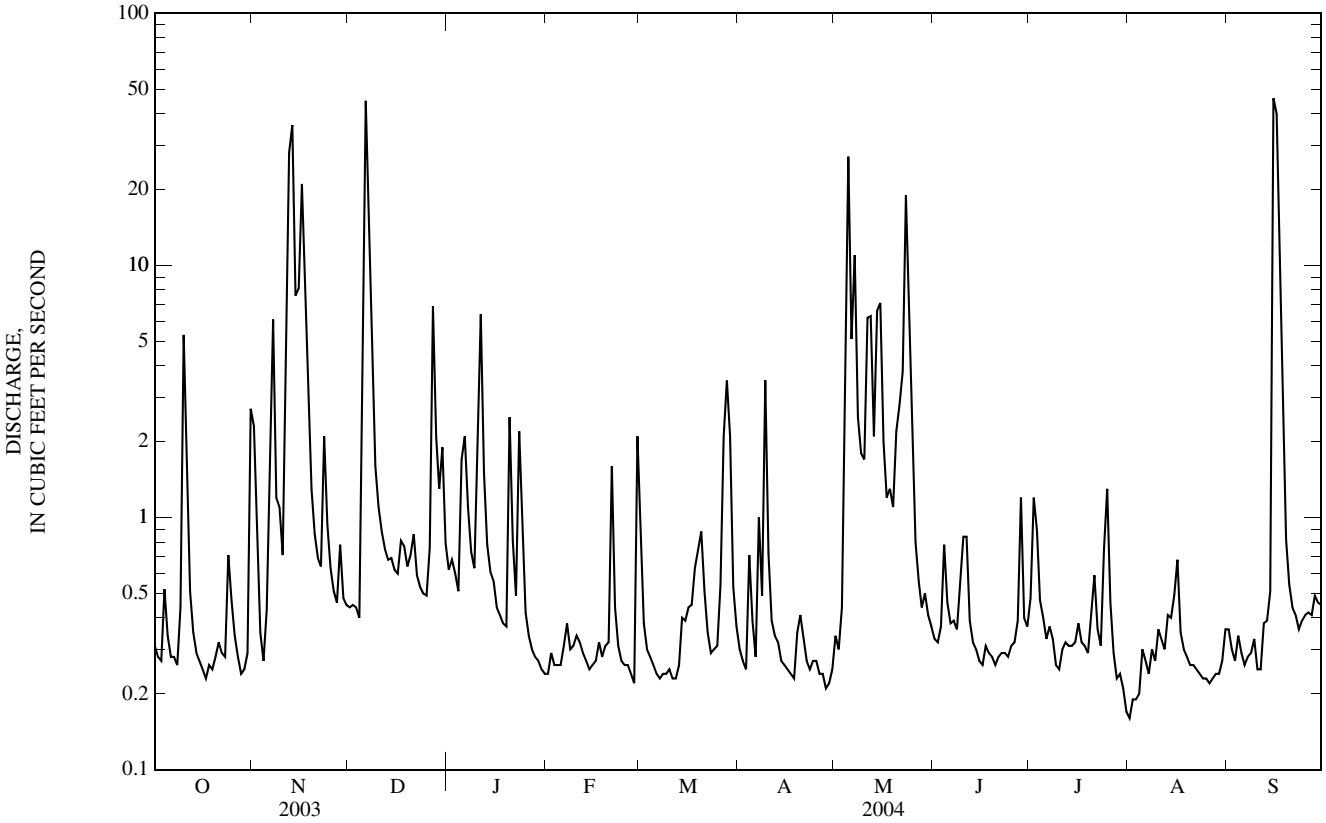
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.31	2.3	0.44	0.62	0.24	0.82	0.30	0.34	0.33	0.48	0.16	0.36
2	0.28	0.92	0.45	0.68	0.29	0.38	0.27	0.30	0.32	1.2	0.19	0.30
3	0.27	0.35	0.44	0.60	0.26	0.30	0.25	0.44	0.37	0.89	0.19	0.27
4	0.52	0.27	0.40	0.51	0.26	0.28	0.71	3.4	0.78	0.47	0.20	0.34
5	0.34	0.43	2.6	1.7	0.26	0.26	0.39	27	0.46	0.40	0.30	0.29
6	0.28	1.2	45	2.1	0.31	0.24	0.28	5.1	0.38	0.33	0.27	0.26
7	0.28	6.1	12	1.1	0.38	0.23	1.0	11	0.39	0.37	0.24	0.28
8	0.26	1.2	3.4	0.73	0.30	0.24	0.49	2.5	0.36	0.33	0.30	0.29
9	0.44	1.1	1.6	0.63	0.31	0.24	3.5	1.8	0.56	0.26	0.27	0.33
10	5.3	0.71	1.1	1.8	0.34	0.25	0.72	1.7	0.84	0.25	0.36	0.25
11	1.2	5.4	0.88	6.4	0.32	0.23	0.39	6.2	0.84	0.30	0.33	0.25
12	0.51	28	0.75	1.5	0.29	0.23	0.34	6.3	0.39	0.32	0.30	0.38
13	0.35	36	0.68	0.78	0.27	0.26	0.32	2.1	0.32	0.31	0.41	0.39
14	0.29	7.6	0.69	0.61	0.25	0.40	0.27	6.6	0.30	0.31	0.40	0.51
15	0.27	8.1	0.62	0.56	0.26	0.39	0.26	7.1	0.27	0.32	0.49	46
16	0.25	21	0.60	0.44	0.27	0.44	0.25	2.0	0.26	0.38	0.68	40
17	0.23	7.4	0.81	0.41	0.32	0.45	0.24	1.2	0.31	0.32	0.35	11
18	0.26	2.8	0.77	0.38	0.28	0.63	0.23	1.3	0.29	0.31	0.30	2.5
19	0.25	1.3	0.64	0.37	0.31	0.75	0.35	1.1	0.28	0.29	0.28	0.82
20	0.28	0.86	0.71	2.5	0.32	0.88	0.41	2.2	0.26	0.42	0.26	0.54
21	0.32	0.69	0.86	0.81	1.6	0.51	0.33	2.8	0.28	0.59	0.26	0.44
22	0.29	0.64	0.59	0.49	0.44	0.35	0.27	3.8	0.29	0.36	0.25	0.41
23	0.28	2.1	0.53	2.2	0.31	0.29	0.25	19	0.29	0.31	0.24	0.36
24	0.71	0.94	0.50	0.87	0.27	0.30	0.27	7.9	0.28	0.75	0.23	0.39
25	0.47	0.63	0.49	0.42	0.26	0.31	0.27	1.8	0.31	1.3	0.23	0.41
26	0.34	0.51	0.76	0.34	0.26	0.54	0.24	0.80	0.32	0.46	0.22	0.42
27	0.28	0.46	6.9	0.30	0.24	2.1	0.24	0.56	0.39	0.29	0.23	0.41
28	0.24	0.78	2.1	0.28	0.22	3.5	0.21	0.44	1.2	0.23	0.24	0.49
29	0.25	0.48	1.3	0.27	2.1	2.1	0.22	0.50	0.40	0.24	0.24	0.46
30	0.29	0.45	1.9	0.25	---	0.53	0.25	0.41	0.37	0.21	0.27	0.45
31	2.7	---	0.79	0.24	---	0.37	---	0.37	---	0.17	0.36	---
TOTAL	18.34	140.72	91.30	30.89	11.54	18.80	13.52	128.06	12.44	13.17	9.05	109.60
MEAN	0.59	4.69	2.95	1.00	0.40	0.61	0.45	4.13	0.41	0.42	0.29	3.65
MAX	5.3	36	45	6.4	2.1	3.5	3.5	27	1.2	1.3	0.68	46
MIN	0.23	0.27	0.40	0.24	0.22	0.23	0.21	0.30	0.26	0.17	0.16	0.25
AC-FT	36	279	181	61	23	37	27	254	25	26	18	217
CFSM	1.31	10.4	6.54	2.21	0.88	1.35	1.00	9.18	0.92	0.94	0.65	8.12
IN.	1.52	11.63	7.55	2.55	0.95	1.55	1.12	10.59	1.03	1.09	0.75	9.06

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2004, BY WATER YEAR (WY)

MEAN	0.59	1.44	1.28	0.63	0.55	0.29	0.64	0.85	0.57	0.70	0.90	2.19
MAX	1.73	4.69	4.63	1.17	2.38	0.65	2.86	4.13	1.79	2.12	1.87	6.52
(WY)	(1998)	(2004)	(1999)	(2000)	(1998)	(1998)	(2003)	(2004)	(1996)	(1993)	(1996)	(1998)
MIN	0.20	0.12	0.05	0.34	0.16	0.10	0.09	0.10	0.10	0.09	0.29	0.20
(WY)	(2003)	(2003)	(1998)	(2002)	(1993)	(1993)	(1997)	(1999)	(1998)	(1998)	(2004)	(1997)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1992 - 2004	
ANNUAL TOTAL	479.44		597.43			
ANNUAL MEAN	1.31		1.63		0.90	
HIGHEST ANNUAL MEAN					1.63	2004
LOWEST ANNUAL MEAN					0.31	1997
HIGHEST DAILY MEAN	45	Dec 6	46	Sep 15	141	Sep 10, 1996
LOWEST DAILY MEAN	0.12	Jun 26	0.16	Aug 1	0.02	Jul 3, 1997
ANNUAL SEVEN-DAY MINIMUM	0.15	Jun 24	0.19	Jul 29	0.03	Jun 28, 1997
MAXIMUM PEAK FLOW			452	Sep 15	1,150	Sep 21, 1998
MAXIMUM PEAK STAGE			6.23	Sep 15	7.89	Sep 21, 1998
INSTANTANEOUS LOW FLOW			0.15	Jul 31	0.02	Jul 15, 1997
ANNUAL RUNOFF (AC-FT)	951		1,190		649	
ANNUAL RUNOFF (CFSM)	2.92		3.63		1.99	
ANNUAL RUNOFF (INCHES)	39.63		49.39		27.03	
10 PERCENT EXCEEDS	2.2		2.5		1.2	
50 PERCENT EXCEEDS	0.31		0.39		0.23	
90 PERCENT EXCEEDS	0.16		0.25		0.08	

50047535 RIO DE BAYAMON AT ARENAS, PR—Continued



50047550 LAGO CIDRA AT DAMSITE NEAR CIDRA, PR

LOCATION.--Lat 18°11'57", long 66°08'29", Hydrologic Unit 21010005, at Lago de Cidra Dam on Río de Bayamón, 1.9 mi (3.0 km) northeast of Plaza de Cidra and 1.8 mi (2.9 km) northwest of Escuela Segunda Unidad de Bayamón.

DRAINAGE AREA.--8.26 mi^2 (21.39 km^2).

PERIOD OF RECORD.--January 1988 to current year.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago de Cidra was completed in 1946. The maximum storage is 5,300 acre-feet (6.53 hm^3) and provides supplemental water to metropolitan San Juan. The dam is a concrete gravity and earthfill structure, approximately 541 ft (165 m) long between abutments with a maximum structural height of about 78.7 ft (24.0 m). The spillway portion of the dam, length 131 ft (40 m) and crest elevation 1,322 ft (403 m), is an ungated ogee crest located 131 ft (40 m) from the right abutment. This dam is owned by the Puerto Rico Aqueduct and Sewer Authority. Gage-height and precipitation satellite telemetry at station. New capacity table based on U.S. Geological Survey Water-Resources Investigations Report 99-4144, November 1997.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation 1,328.09 ft (404.80 m), September 10, 1996; minimum elevation 1,295.86 ft (394.98 m), April 22,1995.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 1,324.82 ft (403.80 m), September 15; minimum elevation, 1,313.99 ft (400.50 m), October 9.

Capacity Table
(based on data from U.S. Geological Survey Water-Resources Investigations Report 99-4144, 1997)
(Elevation in ft, capacity in acre-ft)

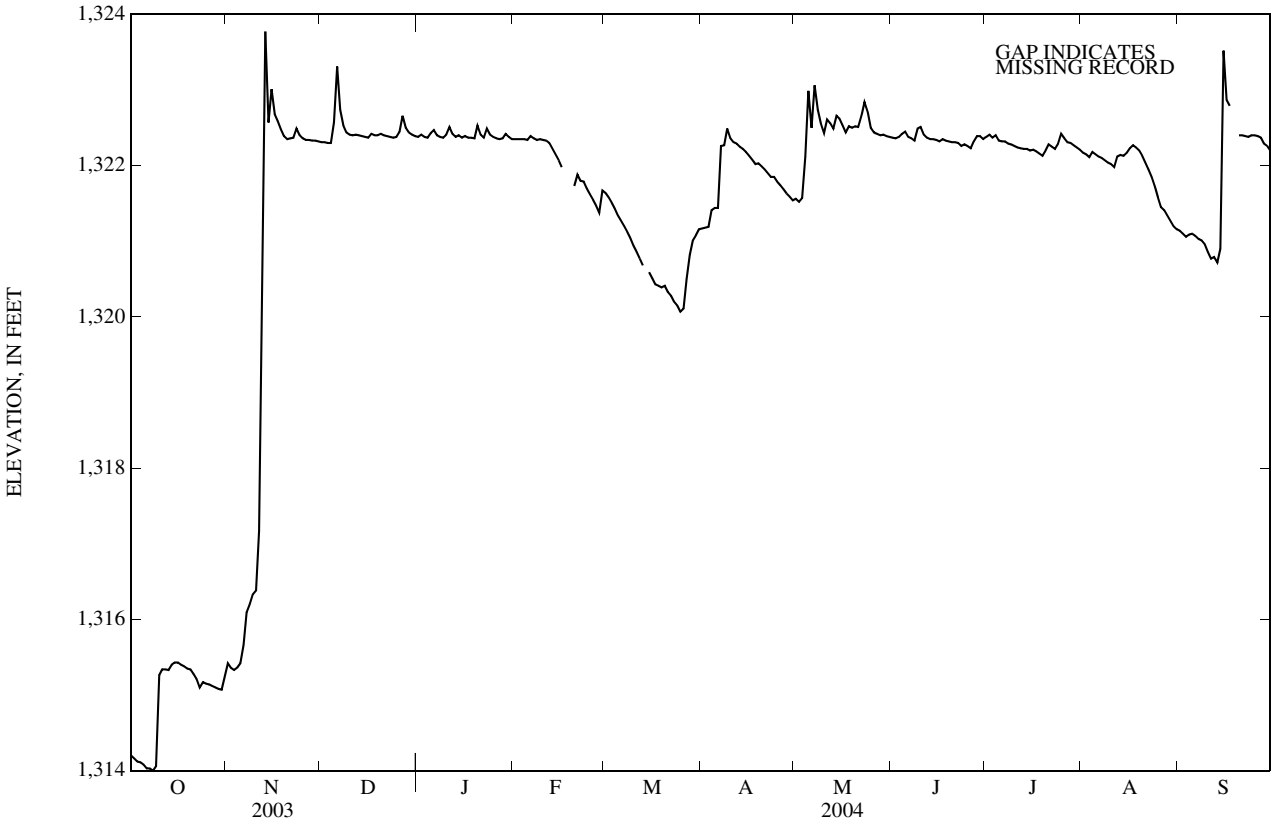
Elevation	Contents	Elevation	Contents
1,260	0	1,309	2,059
1,276	97	1,315	3,170
1,296	762	1,322	4,670

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,314.20	1,315.42	1,322.31	1,322.38	1,322.35	1,321.64	1,321.17	1,321.56	1,322.37	1,322.38	1,322.17	1,321.14
2	1,314.16	1,315.36	1,322.31	1,322.41	1,322.35	1,321.58	1,321.18	1,321.52	1,322.36	1,322.41	1,322.15	1,321.10
3	1,314.12	1,315.33	1,322.30	1,322.38	1,322.35	1,321.51	1,321.19	1,321.57	1,322.38	1,322.37	1,322.11	1,321.06
4	1,314.11	1,315.36	1,322.30	1,322.37	1,322.35	1,321.43	1,321.41	1,322.12	1,322.42	1,322.40	1,322.18	1,321.09
5	1,314.08	1,315.42	1,322.57	1,322.43	1,322.34	1,321.34	1,321.44	1,322.99	1,322.45	1,322.33	1,322.15	1,321.10
6	1,314.03	1,315.66	1,323.31	1,322.47	1,322.39	1,321.27	1,321.44	1,322.50	1,322.38	1,322.32	1,322.12	1,321.07
7	1,314.03	1,316.09	1,322.74	1,322.40	1,322.36	1,321.20	1,322.26	1,323.06	1,322.36	1,322.32	1,322.10	1,321.03
8	1,314.00	1,316.20	1,322.53	1,322.38	1,322.34	1,321.12	1,322.27	1,322.74	1,322.33	1,322.29	1,322.07	1,321.01
9	1,314.06	1,316.33	1,322.44	1,322.37	1,322.35	1,321.04	1,322.49	1,322.56	1,322.49	1,322.28	1,322.04	1,320.96
10	1,315.26	1,316.38	1,322.41	1,322.41	1,322.34	1,320.94	1,322.36	1,322.43	1,322.51	1,322.26	1,322.02	1,320.86
11	1,315.34	1,317.17	1,322.40	1,322.51	1,322.33	1,320.86	1,322.31	1,322.61	1,322.41	1,322.24	1,321.98	1,320.77
12	1,315.34	1,320.33	1,322.41	1,322.42	1,322.30	1,320.77	1,322.29	1,322.56	1,322.37	1,322.23	1,322.12	1,320.79
13	1,315.33	1,323.77	1,322.40	1,322.38	1,322.22	1,320.68	1,322.25	1,322.49	1,322.35	1,322.22	1,322.14	1,320.72
14	1,315.40	1,322.57	1,322.39	1,322.40	1,322.15	A	1,322.22	1,322.66	1,322.35	1,322.22	1,322.13	1,320.90
15	1,315.43	1,323.01	1,322.38	1,322.37	1,322.07	1,320.59	1,322.18	1,322.62	1,322.34	1,322.20	1,322.17	1,323.52
16	1,315.43	1,322.68	1,322.37	1,322.39	1,321.98	1,320.51	1,322.13	1,322.53	1,322.32	1,322.21	1,322.23	1,322.87
17	1,315.40	1,322.59	1,322.42	1,322.37	A	1,320.43	1,322.08	1,322.44	1,322.35	1,322.19	1,322.27	1,322.79
18	1,315.38	1,322.48	1,322.40	1,322.37	A	1,320.41	1,322.02	1,322.52	1,322.33	1,322.16	1,322.24	A
19	1,315.35	1,322.39	1,322.40	1,322.36	A	1,320.39	1,322.03	1,322.50	1,322.32	1,322.13	1,322.20	A
20	1,315.34	1,322.35	1,322.42	1,322.53	1,321.73	1,320.41	1,321.99	1,322.52	1,322.31	1,322.20	1,322.13	1,322.40
21	1,315.28	1,322.36	1,322.40	1,322.41	1,321.88	1,320.33	1,321.95	1,322.51	1,322.31	1,322.28	1,322.04	1,322.40
22	1,315.21	1,322.37	1,322.39	1,322.37	1,321.80	1,320.28	1,321.90	1,322.66	1,322.30	1,322.25	1,321.95	1,322.39
23	1,315.10	1,322.49	1,322.38	1,322.49	1,321.79	1,320.20	1,321.85	1,322.84	1,322.26	1,322.22	1,321.85	1,322.38
24	1,315.17	1,322.40	1,322.37	1,322.41	1,321.70	1,320.15	1,321.85	1,322.71	1,322.28	1,322.29	1,321.73	1,322.40
25	1,315.15	1,322.36	1,322.38	1,322.38	1,321.62	1,320.07	1,321.79	1,322.50	1,322.26	1,322.42	1,321.58	1,322.40
26	1,315.14	1,322.34	1,322.45	1,322.36	1,321.55	1,320.11	1,321.74	1,322.44	1,322.23	1,322.36	1,321.45	1,322.39
27	1,315.12	1,322.34	1,322.66	1,322.35	1,321.47	1,320.50	1,321.69	1,322.42	1,322.32	1,322.31	1,321.41	1,322.37
28	1,315.10	1,322.33	1,322.50	1,322.36	1,321.38	1,320.82	1,321.63	1,322.40	1,322.39	1,322.30	1,321.34	1,322.29
29	1,315.08	1,322.33	1,322.44	1,322.42	1,321.67	1,321.01	1,321.59	1,322.41	1,322.39	1,322.27	1,321.27	1,322.26
30	1,315.07	1,322.32	1,322.41	1,322.38	---	1,321.08	1,321.54	1,322.39	1,322.35	1,322.24	1,321.20	1,322.20
31	1,315.24	---	1,322.39	1,322.35	---	1,321.16	---	1,322.38	---	1,322.21	1,321.16	---
MAX	1,315.43	1,323.77	1,323.31	1,322.53	---	---	1,322.49	1,323.06	1,322.51	1,322.42	1,322.27	---
MIN	1,314.00	1,315.33	1,322.30	1,322.35	---	---	1,321.17	1,321.52	1,322.23	1,322.13	1,321.16	---

A No gage-height record

50047550 LAGO CIDRA AT DAMSITE NEAR CIDRA, PR—Continued



50047560 RIO DE BAYAMON BELOW LAGO CIDRA, PR

LOCATION.--Lat 18°12'04", long 66°08'26", Hydrologic Unit 21010005, 0.2 mi (0.3 km) downstream of Lago Cidra Dam on right bank, 2.1 mi (3.4 km) northwest of Plaza de Cidra.

DRAINAGE AREA.--8.32 mi^2 (21.5 km^2).

PERIOD OF RECORD.--November 1990 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,279 ft (390 m), from topographic map.

REMARKS.--Records poor. Regulation at all stages by the Puerto Rico Aqueduct and Sewer Authority reservoir upstream from gage. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3.6	e8.0	e8.4	e12	e5.6	e16	e15	e9.0	e21	e15	8.1	5.9
2	e4.0	e6.0	e8.3	e13	e5.6	e8.5	e13	e21	e20	e32	8.0	5.8
3	e3.8	e5.4	e8.3	e13	e5.6	e6.9	e12	e16	e19	e19	8.1	5.8
4	e3.3	e6.5	e8.3	e12	e5.6	e6.0	e60	e34	e22	e15	7.9	6.0
5	e3.1	e12	e8.5	e12	e5.4	e6.0	e25	e56	e22	e18	7.9	5.9
6	e3.1	e18	e380	e17	e5.6	e5.6	e17	e42	e22	e13	7.8	5.9
7	e3.7	e13	e75	e20	e5.6	e5.6	e70	e114	e19	e12	7.8	5.8
8	e4.4	e35	e50	e12	e5.4	e5.6	e24	e58	e18	e9.0	7.5	5.8
9	e3.8	e26	e24	e8.6	e5.6	e5.4	e32	e115	e23	e8.5	7.6	5.6
10	e23	e20	e21	e8.5	e5.6	e5.4	e22	e91	e24	e8.5	7.6	5.8
11	e13	e13	e17	e8.6	e5.4	e5.6	e14	e72	e23	e14	7.5	6.0
12	e5.0	e86	e14	e14	e5.4	e5.4	e13	e116	e18	e12	7.9	5.9
13	e4.3	e260	e13	e9.2	e5.4	e5.4	e12	e75	e15	e13	7.8	5.7
14	e4.0	e166	e12	e8.4	e5.4	e6.4	e9.3	e164	e14	e12	7.6	6.3
15	e27	e71	e12	e8.4	e5.6	e8.2	e9.3	e132	e14	e8.4	7.6	796
16	e8.5	e250	e9.3	e8.2	e5.4	e21	e9.3	e76	e12	e8.3	7.6	698
17	e9.2	e66	e9.2	e8.5	e6.9	e5.6	e8.8	e46	e12	e8.2	7.6	139
18	e5.4	e46	e12	e6.9	e5.4	e6.9	e8.8	e52	e14	e8.2	7.3	68
19	e3.7	e26	e9.2	e6.4	e5.4	e8.3	e9.3	e33	e13	e10	7.3	26
20	e3.6	e18	e8.6	e12	e6.0	e16	e9.4	e41	e13	9.5	9.2	17
21	e4.9	e13	e12	e15	e17	e8.8	e9.3	e70	e13	9.8	10	14
22	e4.3	e36	e8.6	e8.5	e12	e6.0	e15	e64	e13	9.1	11	14
23	e4.7	e17	e8.4	e14	e6.9	e5.4	e9.4	e196	e13	8.9	11	14
24	e5.7	e21	e8.5	e12	e8.5	e17	e12	e74	e13	8.6	11	14
25	e5.4	e12	e8.6	e8.4	e6.4	e14	e13	e46	e13	16	11	13
26	e3.4	e9.2	e12	e6.4	e5.6	e25	e8.7	e37	e9.4	13	11	13
27	e3.0	e8.5	e13	e6.0	e6.4	e59	e8.3	e22	e13	10	10	13
28	e9.0	e8.4	e37	e6.0	e5.6	e126	e8.2	e20	e19	8.6	7.1	16
29	e5.0	e8.4	e30	e5.6	e23	e78	e8.2	e19	e22	8.5	6.3	17
30	e4.6	e8.5	e17	e6.9	---	e34	e8.3	e18	e19	8.4	7.6	17
31	e12	---	e13	e6.0	---	e35	---	e17	---	8.3	6.6	---
TOTAL	201.5	1,293.9	876.2	313.5	203.3	568.0	493.6	1,946.0	505.4	362.8	258.3	1,971.2
MEAN	6.50	43.1	28.3	10.1	7.01	18.3	16.5	62.8	16.8	11.7	8.33	65.7
MAX	27	260	380	20	23	126	70	196	24	32	11	796
MIN	3.0	5.4	8.3	5.6	5.4	5.4	8.2	9.0	9.4	8.2	6.3	5.6
AC-FT	400	2,570	1,740	622	403	1,130	979	3,860	1,000	720	512	3,910
CFSM	0.78	5.18	3.40	1.22	0.84	2.20	1.98	7.54	2.02	1.41	1.00	7.90
IN.	0.90	5.79	3.92	1.40	0.91	2.54	2.21	8.70	2.26	1.62	1.15	8.81

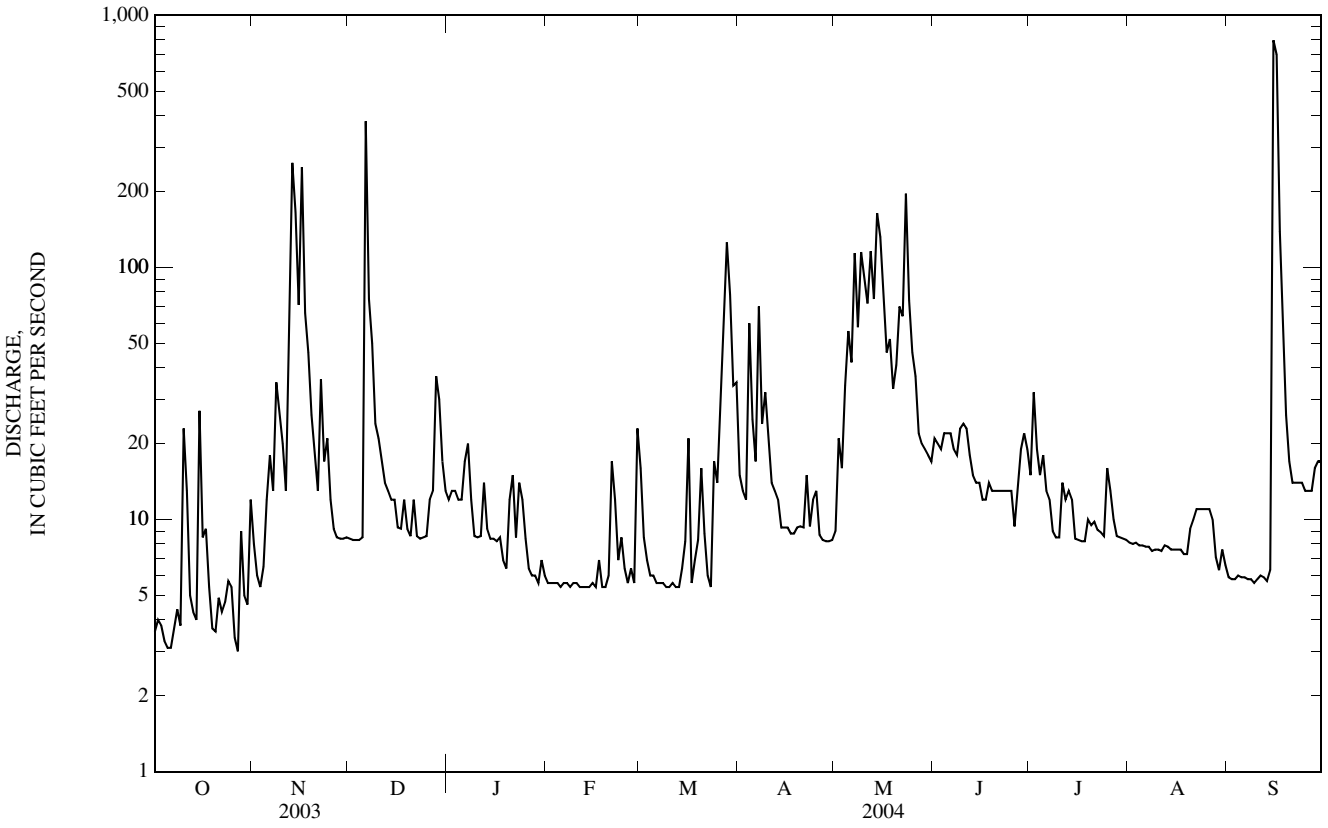
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2004, BY WATER YEAR (WY)

MEAN	14.9	21.5	26.2	17.7	16.5	16.5	14.4	16.9	13.8	15.7	13.7	36.8
MAX	31.2	43.1	117	59.6	36.5	26.3	24.5	62.8	22.2	39.6	29.2	233
(WY)	(1999)	(2004)	(2000)	(1992)	(1991)	(1998)	(1996)	(2004)	(2003)	(1993)	(1996)	(1996)
MIN	3.74	3.73	3.63	5.45	7.01	9.93	5.72	4.13	3.47	1.56	1.18	1.64
(WY)	(1995)	(2002)	(2002)	(1995)	(2004)	(2002)	(1997)	(1993)	(1994)	(1994)	(1995)	(1994)

50047560 RIO DE BAYAMON BELOW LAGO CIDRA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1991 - 2004	
ANNUAL TOTAL	6,909.1		8,993.7			
ANNUAL MEAN	18.9		24.6		18.7	
HIGHEST ANNUAL MEAN					36.1	1996
LOWEST ANNUAL MEAN					5.93	1994
HIGHEST DAILY MEAN	380	Dec 6	796	Sep 15	5,420	Sep 10, 1996
LOWEST DAILY MEAN	3.0	Oct 27	3.0	Oct 27	0.60	Aug 6, 1992
ANNUAL SEVEN-DAY MINIMUM	3.5	Oct 1	3.5	Oct 1	0.80	May 1, 1995
MAXIMUM PEAK FLOW			2,960	Sep 15	15,000	Sep 10, 1996
MAXIMUM PEAK STAGE			18.37	Sep 15	27.34	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	13,700		17,840		13,550	
ANNUAL RUNOFF (CFSM)	2.28		2.95		2.25	
ANNUAL RUNOFF (INCHES)	30.89		40.21		30.54	
10 PERCENT EXCEEDS	29		46		27	
50 PERCENT EXCEEDS	13		9.9		13	
90 PERCENT EXCEEDS	8.4		5.4		3.5	

e Estimated



50047600 RIO DE BAYAMON NEAR AGUAS BUENAS, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--18.5 mi^2 (47.9 km^2).

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
MAR													
18...	1200	32	3.5	8.6	8.0	254	22.9	92	21.5	9.35	2.61	.6	14.1
JUN													
07...	1300	38	5.4	9.7	8.2	267	26.0	--	--	--	--	--	--
SEP													
09...	1245	20	14	8.1	8.1	287	26.1	120	26.5	12.0	2.06	.6	14.5

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
MAR													
18...	92	16.7	<.2	21.3	6.8	<.1	148	--	<10	<.20	<.01	.440	<.01
JUN													
07...	99	--	--	--	--	--	--	--	<10	.20	.01	.540	<.01
SEP													
09...	112	18.6	<.2	27.9	5.3	--	178	9.57	<10	--	.02	--	--

Date	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)
MAR													
18...	--	--	--	.02	<10	280	4,500	<2	19.5	25	<.2	<.8	M
JUN													
07...	.19	.74	3.3	<.02	<10	E10	818	--	--	--	--	--	--
SEP													
09...	--	--	--	.04	<10	260	3,400	<2	17.2	30	<.2	1.0	<4

Date	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
MAR										
18...	<.01	160	<1.0	47.7	<.02	<3	<.3	<4	<.10	<16
JUN										
07...	--	--	--	--	--	--	--	--	--	--
SEP										
09...	<.01	870	<1.0	63.1	<.02	<3	<.3	5	E.06	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50047850 RIO DE BAYAMON NR BAYAMON, PR

LOCATION.--Lat 18°20'08", long 66°08'13", Hydrologic Unit 21010005, on left bank, at rock quarry near Highway 174, 1.3 mi (2.1 km) south of colonia Santa Rosa and 4.7 mi (7.6 km) south of Bayamón.

DRAINAGE AREA.--41.8 mi^2 (108.3 km^2).

PERIOD OF RECORD.--September 1964 to October 1970, June 1988 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 98 ft (30 m), from topographic map.

REMARKS.--Records fair. Diversion to the Guaynabo water treatment plant, for municipal supply, made upstream from station (at Represa de San Juan). Flow is regulated by storage and release of water at Lago de Cidra (capacity 5,220 acre-feet), 10.5 mi (16.9 km) upstream. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

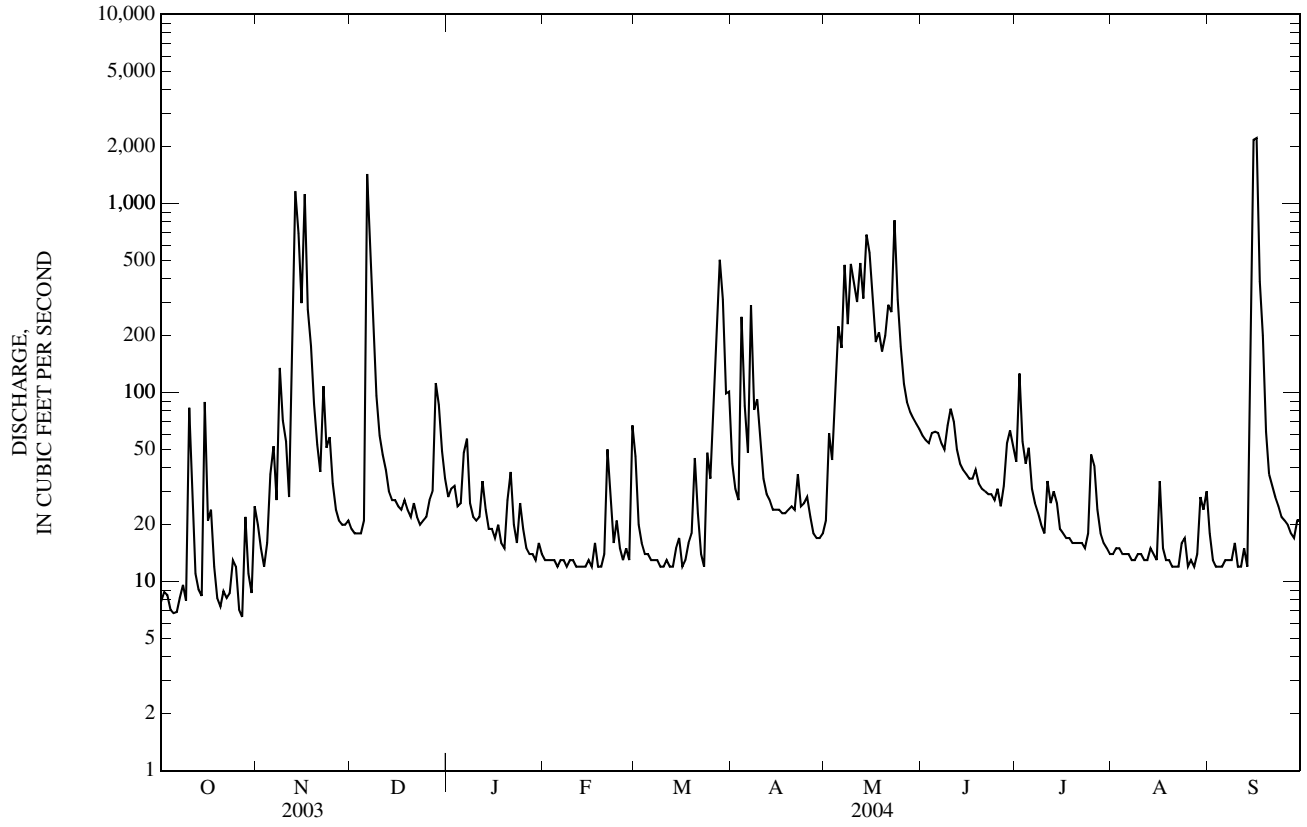
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.8	20	19	28	13	46	42	21	59	43	14	18
2	8.8	15	18	31	13	20	31	61	56	126	15	13
3	8.5	12	18	32	13	16	27	44	54	55	15	12
4	7.1	16	18	25	13	14	251	102	61	42	14	12
5	6.8	37	21	26	12	14	85	224	62	51	14	12
6	6.9	52	1,430	48	13	13	48	172	61	31	14	13
7	8.2	27	557	57	13	13	290	473	54	26	13	13
8	9.6	135	201	26	12	13	81	230	50	23	13	13
9	7.9	71	96	22	13	12	92	479	67	20	14	16
10	83	55	59	21	13	12	59	377	82	18	14	12
11	38	28	47	22	12	13	35	301	70	34	13	12
12	11	360	39	34	12	12	29	484	50	26	13	15
13	9.1	1,160	30	24	12	12	27	314	42	30	15	12
14	8.4	694	27	19	12	15	24	684	39	26	14	110
15	89	297	27	19	13	17	24	548	37	19	13	2,170
16	21	1,120	25	17	12	12	24	318	35	18	34	2,220
17	24	275	24	20	16	13	23	185	35	17	15	386
18	12	176	27	16	12	16	23	208	39	17	13	201
19	8.2	87	24	15	12	18	24	165	33	16	13	62
20	7.4	53	22	27	14	45	25	200	31	16	12	37
21	8.9	38	26	38	50	23	24	291	30	16	12	32
22	8.2	108	22	20	28	14	37	266	29	16	12	28
23	8.7	51	20	16	16	12	25	815	29	15	16	25
24	13	58	21	26	21	48	26	310	27	18	17	22
25	12	33	22	19	15	35	28	175	31	47	12	21
26	7.1	24	27	15	13	97	22	111	25	41	13	20
27	6.5	21	30	14	15	236	18	89	32	24	12	18
28	22	20	112	14	13	503	17	79	54	18	14	17
29	11	20	86	13	67	312	17	73	63	16	28	21
30	8.7	21	49	16	---	99	18	68	52	15	24	21
31	25	---	35	14	---	101	---	64	---	14	30	---
TOTAL	513.8	5,084	3,179	734	493	1,826	1,496	7,931	1,389	894	485	5,584
MEAN	16.6	169	103	23.7	17.0	58.9	49.9	256	46.3	28.8	15.6	186
MAX	89	1,160	1,430	57	67	503	290	815	82	126	34	2,220
MIN	6.5	12	18	13	12	12	17	21	25	14	12	12
AC-FT	1,020	10,080	6,310	1,460	978	3,620	2,970	15,730	2,760	1,770	962	11,080
CFSM	0.40	4.05	2.45	0.57	0.41	1.41	1.19	6.12	1.11	0.69	0.37	4.45
IN.	0.46	4.52	2.83	0.65	0.44	1.63	1.33	7.06	1.24	0.80	0.43	4.97

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2004, BY WATER YEAR (WY)

MEAN	37.0	64.7	55.8	35.4	22.4	18.8	27.1	43.9	20.3	22.3	41.0	64.5
MAX	129	232	263	159	75.3	58.9	93.3	256	60.8	79.2	137	360
(WY)	(1991)	(2000)	(1966)	(1969)	(1989)	(2004)	(2003)	(2004)	(1970)	(1999)	(1970)	(1996)
MIN	4.30	6.83	3.45	5.30	4.75	3.58	5.36	4.85	3.68	4.01	7.47	6.02
(WY)	(1969)	(2003)	(1998)	(1968)	(1965)	(1965)	(1965)	(1994)	(1994)	(1994)	(1994)	(1967)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1964 - 2004	
ANNUAL TOTAL	15,200.9		29,608.8			
ANNUAL MEAN	41.6		80.9		37.8	
HIGHEST ANNUAL MEAN					80.9	2004
LOWEST ANNUAL MEAN					10.9	1994
HIGHEST DAILY MEAN	1,430	Dec 6	2,220	Sep 16	8,640	Sep 10, 1996
LOWEST DAILY MEAN	4.7	Sep 18	6.5	Oct 27	2.2	Apr 19, 1965
ANNUAL SEVEN-DAY MINIMUM	4.9	Jan 15	7.7	Oct 1	2.4	Apr 14, 1965
MAXIMUM PEAK FLOW			11,500	Sep 15	65,000	Sep 10, 1996
MAXIMUM PEAK STAGE			16.45	Sep 15	29.07	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	30,150		58,730		27,410	
ANNUAL RUNOFF (CFSM)	0.996		1.94		0.905	
ANNUAL RUNOFF (INCHES)	13.53		26.35		12.30	
10 PERCENT EXCEEDS	76		179		63	
50 PERCENT EXCEEDS	9.1		24		13	
90 PERCENT EXCEEDS	5.3		12		5.5	

50047850 RIO DE BAYAMON NR BAYAMON, PR—Continued



50047990 RIO GUAYNABO NEAR BAYAMON, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--73.2 mi^2 (189.6 km^2).

PERIOD OF RECORD.--Water years 1958, 1964, 1971-73, 1976, 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)
DEC													
05...	1205	5.2	8.1	7.4	479	26.0	200	56.5	15.4	2.78	.8	25.9	179
MAR													
25...	1030	42	6.9	7.4	326	24.8	120	34.5	8.48	2.68	.7	16.8	116
JUN													
04...	1103	2.6	8.3	7.7	464	26.9	--	--	--	--	--	--	165
AUG													
04...	1030	3.8	5.5	7.6	488	26.9	130	36.1	9.21	2.31	.7	18.9	174

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)
DEC													
05...	32.6	<.2	29.3	16.9	--	287	<10	<.20	.02	.95	.970	.02	--
MAR													
25...	19.1	<.2	19.5	13.4	<.1	184	24	.50	.12	.70	.730	.03	.38
JUN													
04...	--	--	--	--	--	--	<10	.20	.04	.88	.920	.04	.16
AUG													
04...	32.5	<.2	30.8	14.5	--	249	<10	--	--	--	--	--	--

Date	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)
DEC													
05...	--	--	.12	10	E6,100	350,000	--	--	--	--	--	--	--
MAR													
25...	1.2	5.4	.18	10	--	--	E1	81.1	33	<.2	.9	M	<.01
JUN													
04...	1.1	5.0	.10	<10	3,000	E140,000	--	--	--	--	--	--	--
AUG													
04...	--	--	--	<10	E8,000	E80,000	<2	96.6	44	<.2	E.4	M	<.02

50047990 RIO GUAYNABO NEAR BAYAMON, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC									
05...	--	--	--	--	--	--	--	--	--
MAR									
25...	1,140	1.7	159	E.01	<3	<.3	9	<.40	<32
JUN									
04...	--	--	--	--	--	--	--	--	--
AUG									
04...	290	<1.0	191	<.02	<3	<.3	9	.16	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50048510 RIO DE BAYAMON AT FLOOD CHANNEL AT BAYAMON, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°24'29", long 66°09'04", at bridge on Highway 890, 1.0 mi (1.6 km) downstream from bridge on Highway 2, and 3.2 mi (5.1 km) above mouth.

DRAINAGE AREA.--71.9 mi^2 (186.2 km^2).

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

REMARKS.--Prior to 1979, sampling site was 0.8 mi (1.3 km) downstream but was changed because of flood channel construction.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC 05...	1040	60	11	6.8	7.4	466	25.0	200	52.8	16.7	2.44	.7	23.0
FEB 18...	1220	51	16	8.0	7.9	412	26.4	160	43.3	13.7	2.51	.8	22.7
JUN 01...	1505	134	3.4	5.7	8.0	385	25.4	--	--	--	--	--	--
AUG 06...	1145	58	8.7	8.6	7.8	416	29.4	170	43.5	13.8	2.27	.8	22.7

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC 05...	175	29.8	<.2	27.3	16.3	--	274	--	<10	.20	.04	.76	.780
FEB 18...	156	28.5	<.2	26.8	14.2	<.1	245	33.5	12	.30	.08	.54	.560
JUN 01...	151	--	--	--	--	--	--	--	<10	<.20	.02	.64	.650
AUG 06...	156	28.3	<.2	27.1	14.4	--	246	38.4	<10	--	--	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC 05...	.02	.16	.98	4.3	.07	<10	E130,000	E80,000	--	--	--	--	--
FEB 18...	.02	.22	.86	3.8	.11	<10	E820	E8,000	E1	74.0	32	<.2	E.6
JUN 01...	.01	--	--	--	.06	<10	E16,000	56,000	--	--	--	--	--
AUG 06...	--	--	--	--	--	60	E1,300	45,000	M	68.7	34	<.2	E.5

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC 05...	--	--	--	--	--	--	--	--	--	--	--
FEB 18...	M	<.01	860	E.5	187	<.02	<3	<.3	E4	E.05	<16
JUN 01...	--	--	--	--	--	--	--	--	--	--	--
AUG 06...	M	<.01	390	<1.0	147	<.02	<3	<.3	E3	E.06	<16

PESTICIDE ANALYSES

Date	Time	2,4,5-T water unfltrd ug/L (39740)	2,4-D water unfltrd ug/L (39730)	Aldrin, water, unfltrd ug/L (39330)	alpha- Endo- sulfan, water, unfltrd ug/L (39388)	Carbo- pheno- thion, water, unfltrd ug/L (39786)	Chlor- dane, tech- nical, water, unfltrd ug/L (39350)	Chlor- pyrifos water unfltrd ug/L (38932)	Diazi- non, water, unfltrd ug/L (39570)	Di- chlor- prop, water, unfltrd ug/L (82183)	Diel- drin, water, unfltrd ug/L (39380)	Disul- foton, water, unfltrd ug/L (39011)	Endrin, water, unfltrd ug/L (39390)
AUG 06...	1145	<.01	.14	<.01	<.03	<.02	<.1	<.01	<.02	<.02	<.016	<.10	<.01

Date	Ethion, water, unfltrd ug/L (39398)	Fonofos water unfltrd ug/L (82614)	Hepta- chlor epoxide water unfltrd ug/L (39420)	Hepta- chlor, water, unfltrd ug/L (39410)	Lindane water, unfltrd ug/L (39340)	Mala- thion, water, unfltrd ug/L (39530)	Methyl para- thion, water, unfltrd ug/L (39600)	Mirex, water, unfltrd ug/L (39755)	p,p'- DDD, water, unfltrd ug/L (39360)	p,p'- DDE, water, unfltrd ug/L (39365)	p,p'- DDT, water, unfltrd ug/L (39370)	p,p'- Meth- oxy- chlor, water, unfltrd ug/L (39480)	Para- thion, water, unfltrd ug/L (39540)
AUG 06...	<.01	<.01	<.009	<.01	<.014	<.10	<.01	<.006	<.016	<.014	<.010	<.006	<.01

Date	PCBs, water, unfltrd ug/L (39516)	Phorate water unfltrd ug/L (39023)	Silvex, water, unfltrd ug/L (39760)	Toxa- phene, water, unfltrd ug/L (39400)	Tribu- phos, water, unfltrd ug/L (39040)
AUG 06...	<.1	<.02	<.02	<1	<.02

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50048680 LAGO LAS CURIAS AT DAMSITE NEAR RIO PIEDRAS, PR

LOCATION.--Lat 18°20'40", long 66°03'03", Hydrologic Unit 21010005, at Lago Las Curias Dam on Río Piedras, 4.15 mi (6.67 km) south of University of Puerto Rico Tower, 1.6 mi (2.57 km) northwest from Escuela José F. Díaz and 0.8 mi (1.28 km) north of Escuela Cupey Alto.

DRAINAGE AREA.--0.97 mi^2 (2.51 km^2).

PERIOD OF RECORD.--April 1997 to current year.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago Las Curias was completed in 1946. The reservoir has a capacity of 1,135 acre-feet (1.40 hm^3) at spillway crest elevation 315.78 ft (96.25 m) for water supply. The dam is earthfill and has a crest elevation of 327.3 ft (99.75 m). Masonry parapet walls continous from abutment on each side of the 25 ft (7.62 m) wide crest. The dam is about 82.0 ft (25.0 m) high and 984.2 ft (300.0 m) long. The morning-glory inlet conduit spillway in located along the left abutment of the dam and has an uncontrolled capacity of about 5,000 ft^3/s (141.6 m^3/s) at reservoir elevation 321.5 ft (98.0 m). This dam is operated by the Puerto Rico Aqueduct and Sewer Authority. Gage-height and precipitation satellite telemetry at station.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation, 317.32 ft (96.72 m), May 23, 2004; minimum elevation, 313.04 ft (95.41 m), October 5, 1998.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 317.32 ft (96.72 m), May 23; minimum elevation, 315.78 ft (96.25 m), March 6-11.

Capacity Table
(based on data from Puerto Rico Electric Power Authority)
(Elevation in ft, capacity in acre-ft)

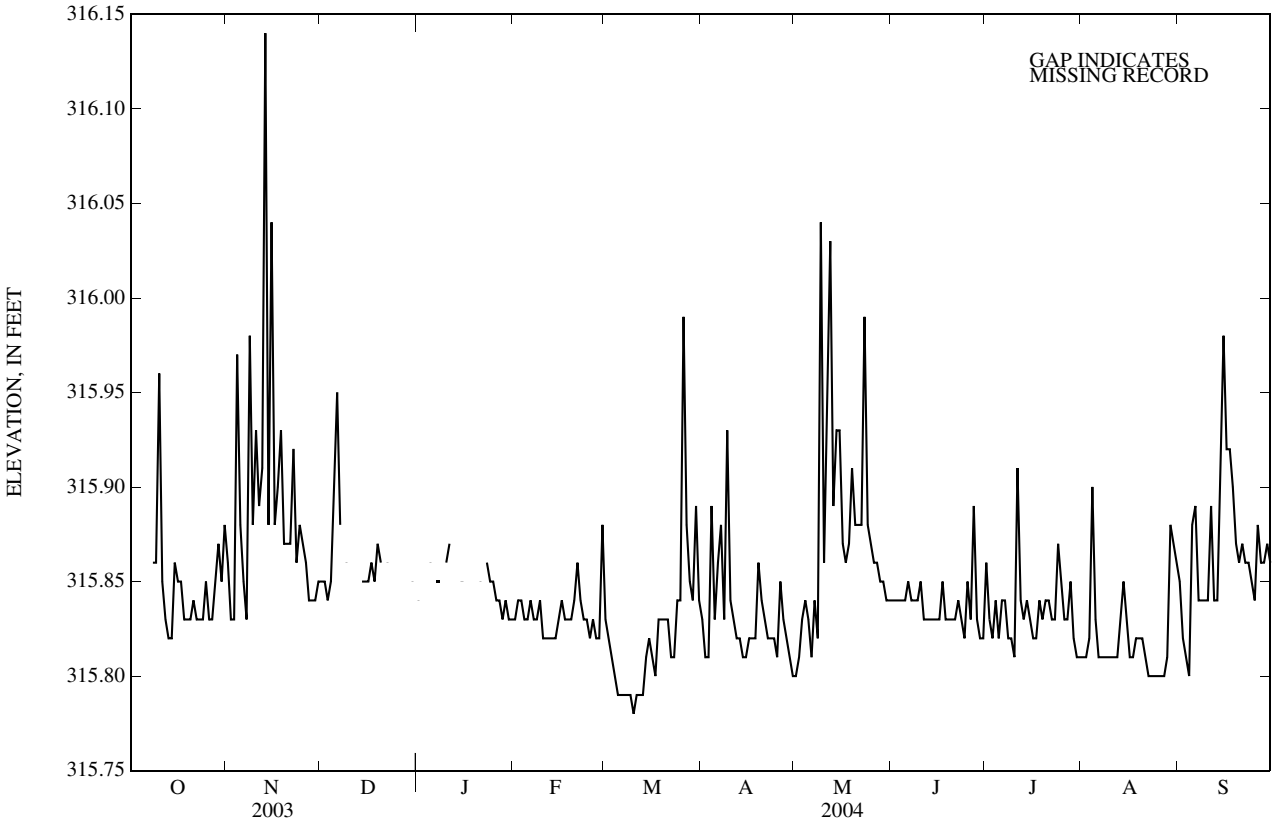
Elevation	Contents	Elevation	Contents
284.7	154	313.0	677
298.2	462	314.3	1,078
307.1	770	317.5	1,232

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	A	315.86	315.85	315.84	315.83	315.83	315.83	315.80	315.84	315.86	315.81	315.85
2	A	315.83	315.85	A	315.84	315.82	315.81	315.81	315.84	315.83	315.81	315.82
3	A	315.83	315.84	A	315.84	315.81	315.81	315.83	315.84	315.82	315.82	315.81
4	A	315.97	315.85	A	315.83	315.80	315.89	315.84	315.84	315.84	315.90	315.80
5	A	315.88	315.89	315.86	315.83	315.79	315.83	315.83	315.84	315.82	315.83	315.88
6	A	315.85	315.95	A	315.84	315.79	315.86	315.81	315.85	315.84	315.81	315.89
7	A	315.83	315.88	315.85	315.83	315.79	315.88	315.84	315.84	315.84	315.81	315.84
8	315.86	315.98	A	315.85	315.83	315.79	315.83	315.82	315.84	315.82	315.81	315.84
9	315.86	315.88	315.86	A	315.84	315.79	315.93	316.04	315.84	315.82	315.81	315.84
10	315.96	315.93	A	315.86	315.82	315.78	315.84	315.86	315.85	315.81	315.81	315.84
11	315.85	315.89	A	315.87	315.82	315.79	315.83	315.95	315.83	315.91	315.81	315.89
12	315.83	315.91	A	A	315.82	315.79	315.82	316.03	315.83	315.84	315.81	315.84
13	315.82	316.14	A	A	315.82	315.79	315.82	315.89	315.83	315.83	315.83	315.84
14	315.82	315.88	315.85	A	315.82	315.81	315.81	315.93	315.83	315.84	315.85	315.89
15	315.86	316.04	315.85	315.85	315.83	315.82	315.81	315.93	315.83	315.83	315.83	315.98
16	315.85	315.88	315.85	A	315.84	315.81	315.82	315.87	315.83	315.82	315.81	315.92
17	315.85	315.90	315.86	A	315.83	315.80	315.82	315.86	315.85	315.82	315.81	315.92
18	315.83	315.93	315.85	A	315.83	315.83	315.82	315.87	315.83	315.84	315.82	315.90
19	315.83	315.87	315.87	A	315.83	315.83	315.86	315.91	315.83	315.83	315.82	315.87
20	315.83	315.87	315.86	A	315.84	315.83	315.84	315.88	315.83	315.84	315.82	315.86
21	315.84	315.87	A	315.85	315.86	315.83	315.83	315.88	315.83	315.84	315.81	315.87
22	315.83	315.92	315.86	A	315.84	315.81	315.82	315.88	315.84	315.83	315.80	315.86
23	315.83	315.86	A	315.86	315.83	315.81	315.82	315.99	315.83	315.83	315.80	315.86
24	315.83	315.88	A	315.85	315.83	315.84	315.82	315.88	315.82	315.87	315.80	315.85
25	315.85	315.87	A	315.85	315.82	315.84	315.81	315.87	315.85	315.85	315.80	315.84
26	315.83	315.86	A	315.84	315.83	315.99	315.85	315.86	315.83	315.83	315.80	315.88
27	315.83	315.84	A	315.84	315.82	315.88	315.83	315.86	315.89	315.83	315.80	315.86
28	315.85	315.84	A	315.83	315.82	315.85	315.82	315.85	315.83	315.85	315.81	315.86
29	315.87	315.84	A	315.84	315.88	315.84	315.81	315.85	315.82	315.82	315.88	315.87
30	315.85	315.85	315.85	315.83	---	315.89	315.80	315.84	315.82	315.81	315.87	315.86
31	315.88	---	A	315.83	---	315.84	---	315.84	---	315.81	315.86	---
MAX	---	316.14	---	---	315.88	315.99	315.93	316.04	315.89	315.91	315.90	315.98
MIN	---	315.83	---	---	315.82	315.78	315.80	315.80	315.82	315.81	315.80	315.80

A No gage-height record

50048680 LAGO LAS CURIAS AT DAMSITE NEAR RIO PIEDRAS, PR—Continued



50048690 QUEBRADA LAS CURIAS BELOW LAS CURIAS DAM, PR

LOCATION.--Lat 18°20'44", long 66°03'15", Hydrologic Unit 21010005, at 0.2 mi (0.3 km) from Lago Las Curias Dam on Río Piedras, 4.1 mi (6.6 km) south of University of Puerto Rico Tower, 2.6 mi (4.1 km) northwest from Lago Loíza spillway crest and 0.8 mi (1.4 km) north of Escuela Cupey Alto.

DRAINAGE AREA.--1.08 mi^2 (2.79 km^2).

PERIOD OF RECORD.--August 1997 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 262.47 ft (80.0 km), from topographic map.

REMARKS.--Records poor. Flow completly regulated by Lago Las Curias Dam, 0.20 mi (0.32 km) from gage. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	5.3	1.8	1.4	1.1	3.7	1.2	0.51	1.4	4.7	0.41	3.8
2	6.0	2.3	1.8	2.3	1.4	1.3	0.89	0.36	1.5	2.5	0.50	1.6
3	2.1	1.0	e1.7	2.2	1.7	0.92	0.30	0.57	1.5	1.4	0.36	0.49
4	1.2	2.5	e2.5	1.6	1.6	0.92	8.7	1.9	1.8	1.7	5.6	0.50
5	0.79	10	2.4	3.6	1.3	0.65	3.5	1.1	1.6	1.6	4.7	7.0
6	3.1	4.2	25	9.8	1.7	0.57	1.5	0.88	2.0	1.2	1.1	11
7	2.5	2.1	20	3.5	2.3	0.40	4.9	0.85	2.0	3.0	0.44	3.2
8	7.2	6.0	7.4	1.5	1.2	0.37	2.7	1.4	1.2	1.7	0.47	0.96
9	4.8	11	3.7	5.5	2.5	0.35	12	31	1.4	0.91	0.41	1.3
10	36	43	2.3	3.0	2.3	0.55	4.9	16	2.9	0.89	0.61	0.30
11	7.4	9.2	1.9	2.5	1.6	0.32	0.90	17	1.8	5.2	0.44	9.7
12	1.7	15	1.6	2.2	1.0	0.45	0.78	70	e1.4	5.4	0.49	2.7
13	0.99	21	2.6	1.5	0.84	0.63	0.53	27	1.0	1.7	1.2	0.71
14	0.54	18	2.4	1.1	1.0	0.75	0.40	53	0.69	1.2	2.6	4.1
15	4.9	6.1	1.8	1.1	1.3	1.2	0.33	43	0.74	1.3	2.0	56
16	3.4	21	2.3	0.98	1.5	1.0	0.35	9.5	1.0	0.97	1.4	45
17	1.6	20	3.6	1.1	3.9	0.85	0.40	3.7	1.7	0.91	0.64	15
18	1.2	20	3.0	1.5	1.4	1.0	0.37	2.6	1.6	0.69	0.51	18
19	0.74	8.5	2.3	1.1	1.2	1.5	3.5	6.2	0.87	1.0	0.74	6.9
20	0.59	3.4	3.2	2.0	0.86	2.3	2.1	7.7	0.60	2.1	0.78	2.6
21	0.42	2.8	4.4	1.6	6.2	0.99	0.90	9.7	1.3	2.6	0.72	2.0
22	0.77	5.4	e3.5	0.94	2.6	1.0	0.73	4.4	0.91	1.6	0.60	1.9
23	0.52	5.8	e3.5	0.89	1.3	0.46	0.60	95	0.95	e0.70	0.32	1.4
24	0.62	2.5	e3.5	1.8	1.0	3.5	0.73	11	0.85	e7.0	0.38	1.1
25	0.75	2.5	e3.5	1.5	0.97	2.5	0.57	8.4	1.4	3.6	0.38	1.1
26	1.7	2.3	e5.9	1.4	1.1	8.8	3.1	4.3	2.0	2.2	0.40	1.7
27	0.59	2.4	e6.5	1.4	1.2	11	2.5	2.4	5.7	1.3	0.29	1.8
28	1.3	2.1	8.7	1.6	0.73	5.1	0.71	2.0	3.8	1.5	0.30	1.3
29	3.2	1.8	4.6	1.3	6.0	4.7	0.69	1.8	1.2	1.9	8.9	2.2
30	1.6	2.1	e3.0	1.2	---	4.4	0.44	1.8	1.4	1.1	5.6	1.8
31	16	---	e3.0	1.3	---	3.6	---	1.6	---	0.63	3.9	---
TOTAL	130.22	259.3	143.4	64.41	52.80	65.78	61.22	436.67	48.21	64.20	47.19	207.16
MEAN	4.20	8.64	4.63	2.08	1.82	2.12	2.04	14.1	1.61	2.07	1.52	6.91
MAX	36	43	25	9.8	6.2	11	12	95	5.7	7.0	8.9	56
MIN	0.42	1.0	1.6	0.89	0.73	0.32	0.30	0.36	0.60	0.63	0.29	0.30
AC-FT	258	514	284	128	105	130	121	866	96	127	94	411
CFSM	3.89	8.00	4.28	1.92	1.69	1.96	1.89	13.0	1.49	1.92	1.41	6.39
IN.	4.49	8.93	4.94	2.22	1.82	2.27	2.11	15.04	1.66	2.21	1.63	7.14

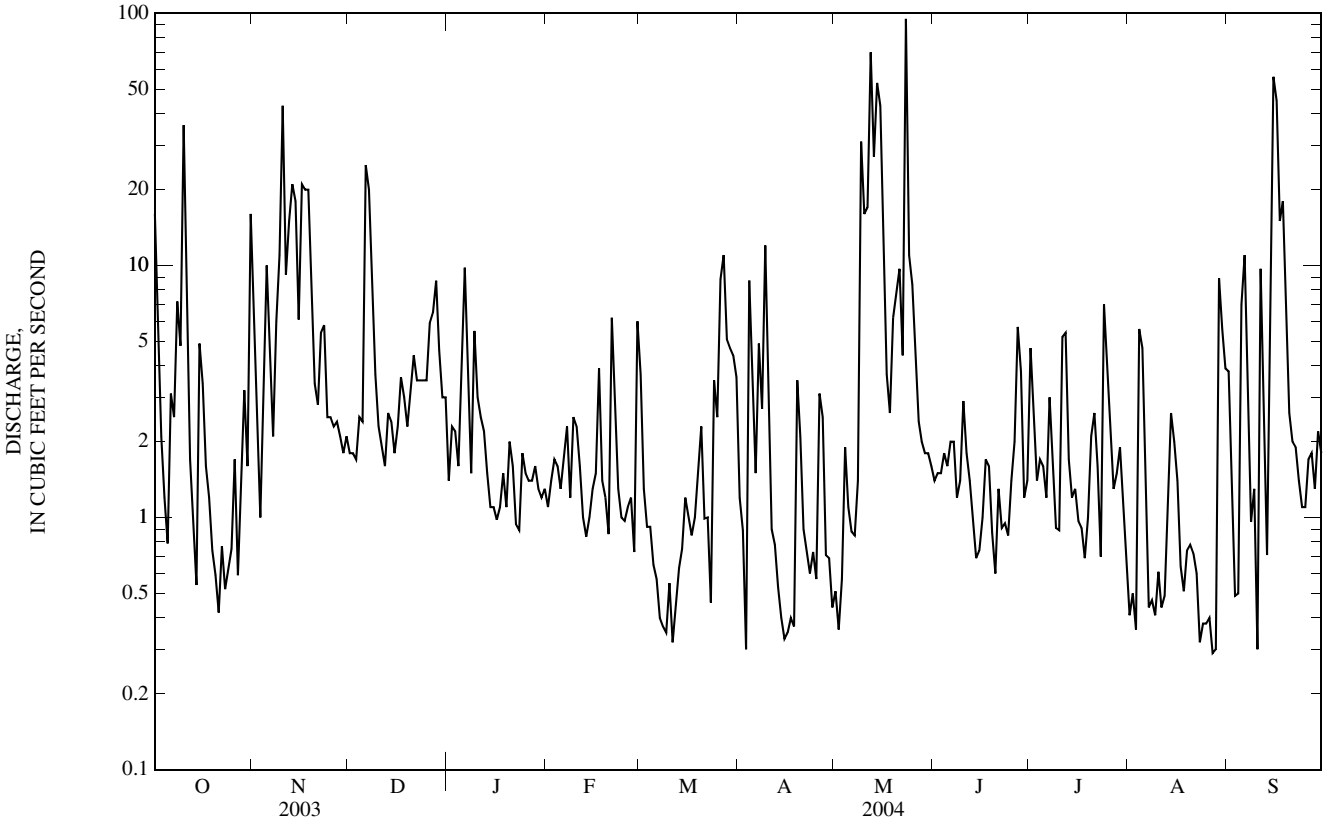
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2004, BY WATER YEAR (WY)

MEAN	3.78	5.82	4.19	2.19	1.64	1.01	1.80	3.32	1.37	1.48	3.03	3.74
MAX	5.90	11.4	10.2	4.63	2.51	2.52	4.11	14.1	3.64	3.51	7.06	12.2
(WY)	(1999)	(2000)	(1999)	(1999)	(1999)	(1999)	(2002)	(2004)	(1999)	(1999)	(1998)	(1998)
MIN	0.63	0.46	0.51	0.83	1.15	0.22	0.63	0.29	0.50	0.33	0.73	0.70
(WY)	(2003)	(2003)	(1998)	(1998)	(2003)	(2003)	(2000)	(1998)	(2002)	(2000)	(2002)	(2001)

50048690 QUEBRADA LAS CURIAS BELOW LAS CURIAS DAM, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1997 - 2004	
ANNUAL TOTAL	980.24		1,580.56			
ANNUAL MEAN	2.69		4.32		2.82	
HIGHEST ANNUAL MEAN					4.32	2004
LOWEST ANNUAL MEAN					1.36	2003
HIGHEST DAILY MEAN	43	Nov 10	95	May 23	139	Nov 8, 2001
LOWEST DAILY MEAN	0.11	Apr 7	0.29	Aug 27	0.11	Apr 7, 2003
ANNUAL SEVEN-DAY MINIMUM	0.12	Apr 4	0.38	Aug 22	0.12	Apr 4, 2003
MAXIMUM PEAK FLOW			598	May 23	598	May 23, 2004
MAXIMUM PEAK STAGE			12.55	May 23	12.55	May 23, 2004
ANNUAL RUNOFF (AC-FT)	1,940		3,140		2,040	
ANNUAL RUNOFF (CFSM)	2.49		4.00		2.61	
ANNUAL RUNOFF (INCHES)	33.76		54.44		35.45	
10 PERCENT EXCEEDS	6.4		8.8		6.2	
50 PERCENT EXCEEDS	0.75		1.7		0.80	
90 PERCENT EXCEEDS	0.24		0.54		0.28	

e Estimated



50048770 RIO PIEDRAS AT EL SEÑORIAL, PR

LOCATION.--Lat 18°21'51", long 66°03'56", Hydrologic Unit 21010005, on right bank, in the Riveras of Señorial Housing area, 0.6 mi (1.0 km) west of Highway 176 and 2.7 mi (4.3 km) southwest of Río Piedras Plaza.

DRAINAGE AREA.--7.49 mi^2 (19.4 km^2).

PERIOD OF RECORDS.--March 1988 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 98.4 ft (30.0 m), from topographic map.

REMARKS.--Records poor. Low flow is affected by discharges from water treatment plant of the Puerto Rico Aqueduct and Sewer Authority and others dispersed pollution points directly to the river. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	55	12	16	11	24	e15	14	23	54	10	21
2	15	16	12	24	16	16	e11	e17	22	28	10	11
3	8.4	11	11	19	11	11	e10	e28	18	13	12	7.7
4	7.3	33	14	16	11	10	55	31	24	22	50	7.8
5	6.6	70	17	32	12	9.3	e16	e17	22	12	27	54
6	28	31	208	71	18	8.9	e12	e14	28	13	13	115
7	7.7	18	139	24	16	9.7	e55	e35	22	26	11	16
8	46	70	84	17	e11	8.6	e28	e15	18	11	9.6	14
9	24	81	33	30	14	e8.5	e44	e205	24	10	9.4	12
10	307	268	21	17	12	e10	e30	134	32	11	10	7.1
11	48	69	17	25	13	e8.0	e15	142	17	52	11	33
12	15	127	15	20	13	e9.2	e12	468	13	25	9.7	11
13	12	183	17	16	11	e9.0	e11	189	16	14	20	7.4
14	9.6	128	17	12	11	e19	e10	339	14	33	27	46
15	40	71	14	12	11	13	e10	386	14	19	16	413
16	19	150	13	12	11	12	e10	67	11	13	14	378
17	12	142	27	11	25	e11	e11	34	33	11	8.9	69
18	11	117	16	11	11	e23	e10	29	16	21	11	112
19	9.2	55	23	11	13	14	e60	69	13	13	16	36
20	9.0	24	14	35	14	18	20	58	12	21	13	22
21	9.0	18	30	12	55	10	12	85	13	17	13	26
22	9.1	79	16	11	13	e8.5	e10	43	11	11	12	16
23	9.2	35	12	11	11	e8.8	e23	545	10	9.9	12	13
24	8.9	18	13	15	11	34	e12	74	9.6	41	14	12
25	9.0	15	12	11	9.8	e20	e9.0	50	15	39	12	16
26	15	14	15	12	12	e83	e34	39	11	18	11	32
27	7.8	13	36	11	10	87	e21	32	67	19	9.7	15
28	10	13	54	11	9.5	46	e30	28	16	25	18	14
29	43	13	26	10	61	e90	e10	24	10	16	115	24
30	11	14	24	10	---	e16	e11	23	12	12	40	15
31	123	---	15	11	---	e15	---	22	---	10	43	---
TOTAL	941.8	1,951	977	556	457.3	670.5	617.0	3,256	566.6	639.9	608.3	1,576.0
MEAN	30.4	65.0	31.5	17.9	15.8	21.6	20.6	105	18.9	20.6	19.6	52.5
MAX	307	268	208	71	61	90	60	545	67	54	115	413
MIN	6.6	11	11	10	9.5	8.0	9.0	14	9.6	9.9	8.9	7.1
AC-FT	1,870	3,870	1,940	1,100	907	1,330	1,220	6,460	1,120	1,270	1,210	3,130
CFSM	4.06	8.68	4.21	2.39	2.11	2.89	2.75	14.0	2.52	2.76	2.62	7.01
IN.	4.68	9.69	4.85	2.76	2.27	3.33	3.06	16.17	2.81	3.18	3.02	7.83

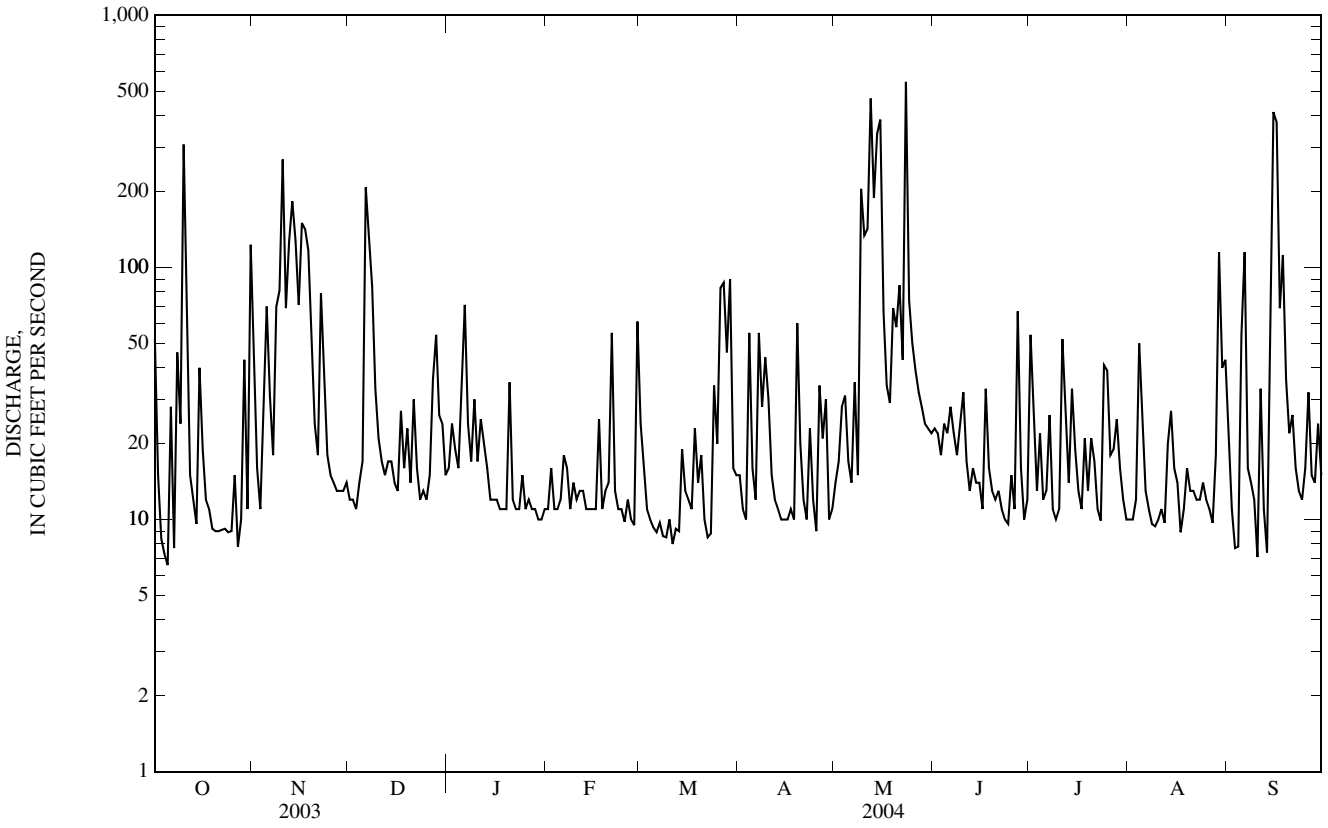
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2004, BY WATER YEAR (WY)

MEAN	26.9	31.3	22.1	16.6	13.2	11.7	14.5	20.7	13.2	15.1	24.0	30.4
MAX	57.3	79.5	66.3	29.1	23.6	21.6	34.4	105	25.5	38.0	66.9	80.8
(WY)	(1991)	(2000)	(1999)	(2000)	(1991)	(2004)	(2002)	(2004)	(1999)	(1993)	(1992)	(1998)
MIN	8.48	5.93	4.32	6.95	2.70	1.85	2.83	3.38	2.66	4.22	6.60	6.90
(WY)	(1992)	(1996)	(1996)	(1995)	(1996)	(1996)	(1995)	(1994)	(1994)	(1994)	(1990)	(1991)

50048770 RIO PIEDRAS AT EL SEÑORIAL, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1988 - 2004	
ANNUAL TOTAL	9,056.2		12,817.4			
ANNUAL MEAN	24.8		35.0		19.9	
HIGHEST ANNUAL MEAN					35.0	2004
LOWEST ANNUAL MEAN					7.76	1994
HIGHEST DAILY MEAN	563	Aug 21	545	May 23	1,650	Sep 10, 1996
LOWEST DAILY MEAN	3.9	Mar 21	6.6	Oct 5	0.84	Aug 13, 1995
ANNUAL SEVEN-DAY MINIMUM	4.4	Mar 8	9.0	Mar 6	0.97	Jun 30, 1996
MAXIMUM PEAK FLOW			3,860	May 12	5,390	Sep 10, 1996
MAXIMUM PEAK STAGE			13.83	May 12	15.46	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	17,960		25,420		14,450	
ANNUAL RUNOFF (CFSM)	3.31		4.68		2.66	
ANNUAL RUNOFF (INCHES)	44.98		63.66		36.18	
10 PERCENT EXCEEDS	69		69		41	
50 PERCENT EXCEEDS	8.0		16		8.8	
90 PERCENT EXCEEDS	4.5		9.9		3.4	

e Estimated



50048800 RIO PIEDRAS NEAR RIO PIEDRAS, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--8.17 mi^2 (20.9 km^2).

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
APR													
13...	1400	8.8	3.1	7.9	7.7	456	28.0	160	43.5	13.1	2.88	.9	26.7
MAY													
24...	1050	59	53	7.8	7.7	328	25.5	120	32.3	10.5	2.57	.8	19.9
AUG													
16...	1135	12	3.5	8.9	8.0	369	28.5	130	35.3	11.3	2.22	.8	20.4

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
APR													
13...	161	33.8	<.2	32.3	18.6	<.1	267	--	<10	.70	.09	.89	.920
MAY													
24...	112	23.3	<.2	24.5	18.0	--	198	31.6	36	--	--	--	--
AUG													
16...	166	28.9	<.2	29.3	14.4	--	244	7.58	<10	--	.06	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
APR													
13...	.03	.61	1.6	7.2	.10	<10	--	--	E2	110	33	<.2	<.8
MAY													
24...	--	--	--	--	--	<10	E12,000	E120,000	--	--	--	--	--
AUG													
16...	--	--	--	--	.10	<10	E8,000	28,000	<2	86.4	33	<.2	<.8

Date	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
APR											
13...	M	<.01	140	<1.0	68.6	<.02	E2	<.3	<4	<.10	<16
MAY											
24...	--	--	--	--	--	--	--	--	--	--	--
AUG											
16...	M	<.01	410	<1.0	50.7	<.02	<3	<.3	E3	<.10	<16

50048800 RIO PIEDRAS NEAR RIO PIEDRAS, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Time
APR	
13...	1400
MAY	
24...	1050
AUG	
16...	1135

< Actual value is known to be less than the value shown
E Estimated value
M Presence verified, not quantified

50049100 RIO PIEDRAS AT HATO REY, PR

LOCATION.--Lat 18°24'34", long 66°04'10", Hydrologic Unit 21010005, at bridge on Avenida Piñeiro near Expreso Las Américas (Luis A. Ferré) and 0.8 mi (1.3 km) southwest of Hato Rey.

DRAINAGE AREA.--15.2 mi^2 (39.4 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1970 to December 1987 (discharge measurements only), 1972 to December 1982 (maximum discharge only), January 1988 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 16 ft (5 m), from topographic map.

REMARKS.--Records poor. Mean daily discharge affected by sewage discharges (approximately 2.0 ft^3/s (0.06 m^3/s)), 20 ft (6 m) upstream from gaging station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	e120	26	19	23	39	28	19	39	77	26	35
2	27	e17	26	27	33	31	26	21	44	39	30	26
3	21	e15	25	23	23	23	26	50	47	30	34	24
4	20	e70	26	21	22	25	57	46	43	49	65	25
5	19	e240	32	36	36	22	33	21	42	24	37	147
6	41	e68	348	87	40	21	43	17	43	26	22	214
7	20	e40	203	25	35	22	172	75	42	51	24	34
8	64	e240	149	58	22	20	45	18	33	24	23	44
9	37	e245	32	70	27	17	132	257	56	25	32	33
10	510	e475	25	48	24	20	41	96	104	25	26	22
11	e46	84	24	e68	23	19	28	109	31	89	32	53
12	e15	e197	22	e50	23	20	28	1,090	28	41	27	26
13	e14	e300	27	e40	21	20	28	389	34	43	60	41
14	e13	e270	23	e30	22	30	28	502	34	39	60	91
15	e80	e240	22	e22	22	24	29	891	35	27	27	1,150
16	e52	e285	20	22	21	22	30	80	e30	24	27	898
17	e16	e280	49	21	37	20	28	44	e99	22	22	124
18	e14	251	21	21	21	32	29	39	30	75	35	167
19	e11	97	22	21	21	23	211	146	26	27	102	68
20	12	41	19	90	26	31	51	145	25	46	25	54
21	9.9	36	25	24	174	20	31	117	40	37	25	131
22	9.8	256	20	22	34	18	29	49	23	24	24	55
23	11	55	18	23	25	18	42	1,830	23	29	24	38
24	9.8	49	18	30	24	66	31	113	23	49	47	37
25	9.4	35	19	23	24	39	26	109	33	81	26	40
26	17	30	19	23	26	139	83	52	31	46	26	111
27	9.5	27	30	24	23	121	33	46	395	38	28	40
28	e15	28	54	24	23	55	56	44	38	33	56	39
29	e52	27	28	24	96	155	35	42	39	40	144	51
30	e15	28	26	23	---	38	18	40	29	29	44	185
31	e250	---	20	23	---	34	---	42	---	26	66	---
TOTAL	1,496.4	4,146	1,418	1,062	971	1,184	1,477	6,539	1,539	1,235	1,246	4,003
MEAN	48.3	138	45.7	34.3	33.5	38.2	49.2	211	51.3	39.8	40.2	133
MAX	510	475	348	90	174	155	211	1,830	395	89	144	1,150
MIN	9.4	15	18	19	21	17	18	17	23	22	22	22
AC-FT	2,970	8,220	2,810	2,110	1,930	2,350	2,930	12,970	3,050	2,450	2,470	7,940
CFSM	3.18	9.09	3.01	2.25	2.20	2.51	3.24	13.9	3.38	2.62	2.64	8.78
IN.	3.66	10.15	3.47	2.60	2.38	2.90	3.61	16.00	3.77	3.02	3.05	9.80

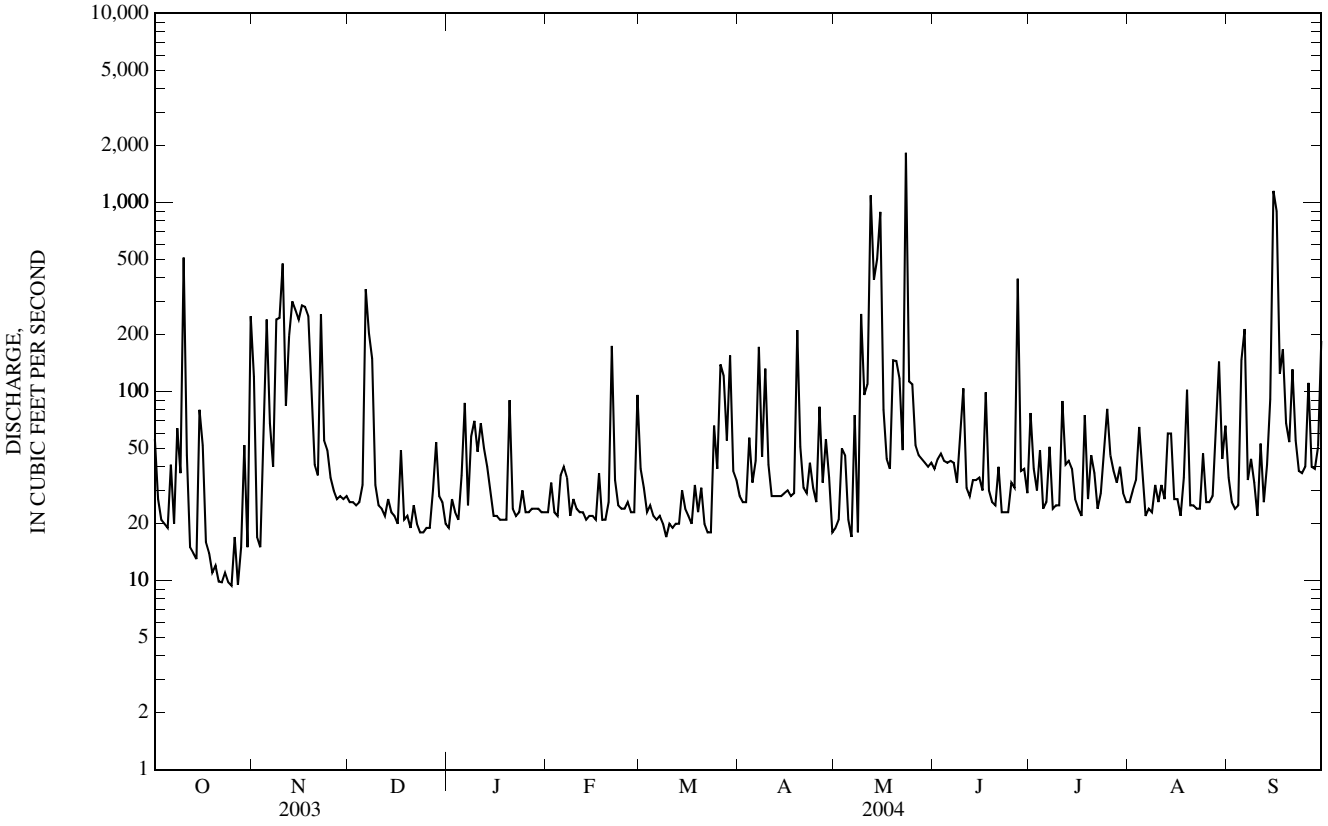
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2004, BY WATER YEAR (WY)

MEAN	66.9	80.3	52.2	43.0	38.6	34.6	51.0	53.1	39.1	44.6	59.3	89.3
MAX	138	235	168	97.4	86.9	78.5	150	211	81.9	97.4	115	261
(WY)	(1999)	(1993)	(1993)	(1993)	(1995)	(1972)	(1972)	(2004)	(1995)	(1993)	(2003)	(1996)
MIN	16.6	19.2	18.8	12.9	10.8	11.5	13.6	4.12	19.6	12.8	20.2	26.3
(WY)	(1992)	(2003)	(1992)	(1973)	(1992)	(1994)	(1995)	(1972)	(2000)	(1994)	(1993)	(1972)

50049100 RIO PIEDRAS AT HATO REY, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1972 - 2004	
ANNUAL TOTAL	20,107.7		26,316.4			
ANNUAL MEAN	55.1		71.9		53.8	
HIGHEST ANNUAL MEAN					84.0	1993
LOWEST ANNUAL MEAN					28.7	1994
HIGHEST DAILY MEAN	961	Aug 21	1,830	May 23	4,550	Sep 10, 1996
LOWEST DAILY MEAN	9.2	Mar 21	9.4	Oct 25	1.2	Jun 28, 1972
ANNUAL SEVEN-DAY MINIMUM	10	Mar 12	10	Oct 19	1.2	Jul 5, 1972
MAXIMUM PEAK FLOW			9,370	May 23	10,500	Sep 10, 1996
MAXIMUM PEAK STAGE			21.17	May 23	22.11	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	39,880		52,200		38,970	
ANNUAL RUNOFF (CFSM)	3.62		4.73		3.54	
ANNUAL RUNOFF (INCHES)	49.21		64.41		48.08	
10 PERCENT EXCEEDS	133		144		110	
50 PERCENT EXCEEDS	23		31		24	
90 PERCENT EXCEEDS	13		20		12	

e Estimated



50049100 RIO PIEDRAS AT HATO REY, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--15.4 mi^2 (39.9 km^2).

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC 05...	0915	25	3.0	5.9	7.3	402	24.7	160	44.6	10.9	2.71	.8	22.5
MAR 25...	1345	22.7	E24	4.9	7.4	378	28.0	130	38.8	9.00	3.34	.9	24.4
MAY 24...	1340	96	52	6.5	7.4	371	27.1	140	39.9	9.25	2.96	.8	20.9
AUG 19...	1114	24	5.6	4.2	7.5	423	28.4	120	35.8	8.23	2.89	.9	22.0

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC 05...	139	31.2	<.2	26.4	13.2	--	235	15.7	<10	.90	.59	.89	1.00
MAR 25...	130	29.2	<.2	24.5	12.7	<.1	220	--	<10	2.1	1.40	.66	.750
MAY 24...	132	24.2	<.2	20.4	19.8	--	217	55.9	53	--	--	--	--
AUG 19...	151	32.4	<.2	29.3	13.1	--	237	15.0	<10	--	1.99	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC 05...	.11	.31	1.9	8.4	.18	10	22,000	E86,000	--	--	--	--	--
MAR 25...	.09	.70	2.9	12.6	.33	20	--	--	M	86.7	49	<.2	<.8
MAY 24...	--	--	--	--	--	<10	230,000	E950,000	--	--	--	--	--
AUG 19...	--	--	--	--	.39	20	E130,000	390,000	<2	106	46	<.2	E.5

Date	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
DEC 05...	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	M	<.04	400	<1.0	129	E.01	<3	<.3	6	.49	<32
MAY 24...	--	--	--	--	--	--	--	--	--	--	--
AUG 19...	M	<.01	390	E.5	101	.05	<3	E.2	11	.41	<16

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

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--Indeterminate.

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Trans-parency Secchi disc, inches (00077)	Dis-solved oxygen, mg/L (00300)	Dis-solved oxygen, percent of sat-uration (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc-tance, wat unf uS/cm 25 degC (00095)	Temper-ature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Residue total at 105 deg. C, sus-pended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
OCT													
30...	0845	40.0	3.2	45	6.6	20,100	29.0	97	<10	2.0	.92	<.020	<.01
MAR													
29...	1010	36.0	7.6	102	7.3	21,600	26.7	74	<10	1.3	.74	.100	.02
29...	1010	--	7.6	--	7.3	21,600	26.7	--	--	--	--	--	--
MAY													
28...	0830	36.0	5.2	70	7.3	4,620	29.5	92	<10	1.5	1.30	.040	.03
28...	0835	--	5.9	--	7.2	6,780	29.6	--	--	--	--	--	--
JUL													
15...	0950	--	3.4	45	7.3	4,720	28.5	--	<10	--	--	--	--
AUG													
30...	1000	24.0	4.6	66	8.2	19,000	30.5	37	<10	--	.12	--	--

Date	Total nitro-gen, water, unfltrd mg/L as NO3 (71887)	Phos-phorus, water, unfltrd mg/L (00665)	Organic carbon, water, unfltrd mg/L (00680)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)
OCT				
30...	--	.41	7.6	E87,000
MAR				
29...	6.2	.32	5.9	60,000
MAY				
28...	6.8	.41	8.3	E17,000
28...	--	--	--	--
JUL				
15...	--	--	6.4	57,000
AUG				
30...	--	.20	8.3	100

< Actual value is known to be less than the value shown
E Estimated value

50049920 BAHIA DE SAN JUAN NO. 5 AT SAN JUAN, PR

WATER-QUALITY RECORDS

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

DRAINAGE.--Indeterminate.

PERIOD OF RECORD.--Water years 1974 to present.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
OCT													
27...	1000	24.0	5.9	96	7.6	53,800	30.1	120	<10	.70	.08	<.020	<.01
MAR													
26...	0910	18.0	3.0	43	7.5	44,300	25.7	94	23	1.1	.69	.280	.04
MAY													
27...	0900	18.0	4.6	59	7.2	5,650	27.8	146	15	3.7	3.30	.320	.15
JUL													
14...	0930	--	3.4	52	7.7	46,500	29.3	130	--	1.7	1.30	.050	.05
AUG													
26...	0925	36.0	1.8	29	7.8	52,300	29.8	129	12	--	.90	--	--

Date	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	Organic carbon, water, unfltrd mg/L (00680)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)
OCT				
27...	--	.08	3.8	66,000
MAR				
26...	6.1	.21	5.4	26,000
MAY				
27...	17.8	.46	8.5	540,000
JUL				
14...	7.7	.27	8.8	65,000
AUG				
26...	--	.23	4.5	45,000

< Actual value is known to be less than the value shown

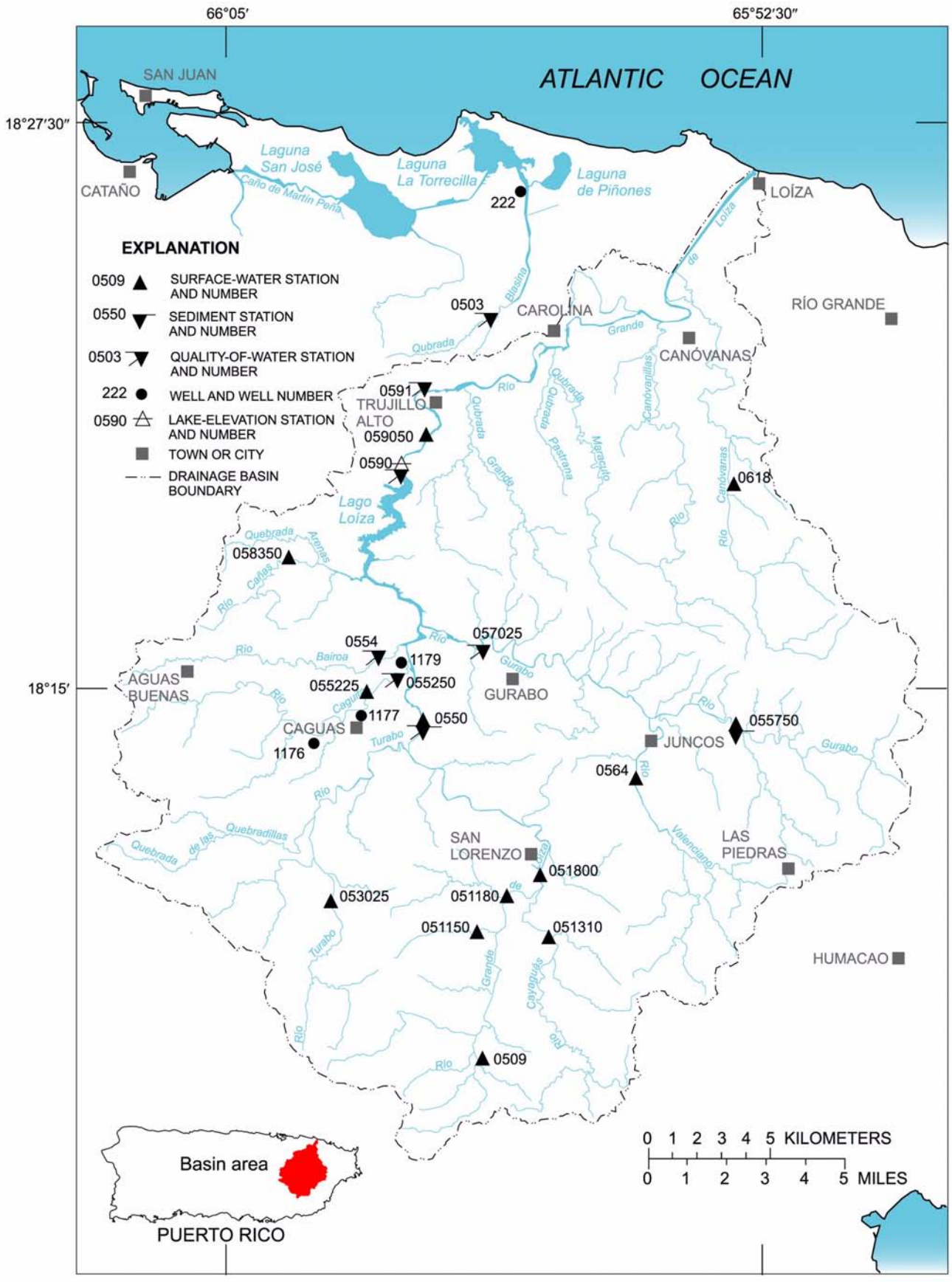


Figure 17. Río Grande de Loíza basin.

50050300 QUEBRADA BLASINA NEAR CAROLINA, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--2.96 mi^2 (7.67 km^2).

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
APR													
05...	1509	5.6	3.1	6.2	7.5	447	28.6	180	56.6	8.52	2.88	.9	27.0
JUN													
04...	1100	6.7	6.0	6.1	7.9	524	27.4	--	--	--	--	--	--
AUG													
06...	1207	7.0	7.0	7.0	7.5	519	27.6	200	62.7	10.3	2.85	.9	29.5

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
APR													
05...	162	33.8	<.2	24.7	10.4	261	--	<10	--	--	--	--	--
JUN													
04...	198	--	--	--	--	--	--	<10	.60	.31	1.24	1.40	.16
AUG													
06...	191	27.7	<.2	21.6	8.1	277	5.25	10	--	--	--	--	--

Date	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)
APR													
05...	--	--	--	--	<10	--	--	<2	64.4	50	<.2	<.8	M
JUN													
04...	.29	2.0	8.9	.21	<10	7,300	130,000	--	--	--	--	--	--
AUG													
06...	--	--	--	--	10	E6,100	E18,000	E1	71.0	51	<.2	<.8	<4

Date	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
APR										
05...	<.01	320	E.6	93.8	.02	<3	<.3	<4	E.10	<16
JUN										
04...	--	--	--	--	--	--	--	--	--	--
AUG										
06...	<.01	510	E.5	264	.02	<3	<.3	6	.11	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50050900 RIO GRANDE DE LOIZA AT QUEBRADA ARENAS, PR

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

DRAINAGE AREA.--6.00 mi^2 (15.54 km^2).

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

GAGE.--Water-stage recorder. Elevation of gage is 640 ft (195 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.8	14	37	18	12	18	12	8.1	32	50	15	23
2	8.6	12	34	18	45	13	11	8.1	30	32	14	14
3	8.4	19	32	17	14	12	11	8.6	35	54	14	12
4	8.2	15	30	17	12	11	13	79	41	27	14	102
5	8.0	12	71	33	11	10	11	458	33	25	17	60
6	7.8	61	1,020	89	12	10	10	97	29	19	13	15
7	8.3	183	250	25	14	9.9	10	35	41	21	17	12
8	10	151	143	19	12	9.6	9.8	20	29	19	27	34
9	45	187	68	18	12	9.3	12	16	91	17	13	21
10	811	85	50	18	12	10	10	15	59	16	13	12
11	71	520	133	38	11	11	9.3	24	55	16	12	11
12	27	1,270	47	21	e10	9.3	8.9	172	30	34	11	11
13	21	524	40	17	e11	9.0	8.6	249	26	17	190	11
14	18	363	39	28	e12	11	8.3	429	24	17	32	81
15	16	240	34	18	e12	12	8.2	119	23	16	36	1,190
16	15	224	31	16	e13	25	8.1	147	21	31	75	647
17	14	194	59	15	e26	37	8.0	47	21	17	18	632
18	16	312	40	15	12	98	7.8	35	20	17	15	322
19	14	149	29	14	30	28	62	104	19	15	20	92
20	13	102	28	15	13	84	34	183	19	18	13	54
21	14	83	27	14	42	25	13	393	21	169	13	41
22	13	73	24	13	14	16	11	268	19	17	12	37
23	13	295	23	22	12	14	9.7	478	18	13	12	30
24	21	441	22	17	11	15	9.6	391	17	14	12	26
25	13	105	22	13	12	13	9.3	228	19	46	14	23
26	12	67	24	13	44	49	8.8	95	17	19	12	21
27	15	55	57	13	17	21	10	64	17	17	11	22
28	13	48	32	12	12	32	8.7	49	23	14	11	20
29	12	44	26	12	100	18	10	51	17	34	11	18
30	65	41	21	12	---	14	8.7	54	22	45	12	18
31	44	---	20	12	---	12	---	37	---	23	11	---
TOTAL	1,384.1	5,889	2,513	622	570	666.1	371.8	4,361.8	868	889	710	3,612
MEAN	44.6	196	81.1	20.1	19.7	21.5	12.4	141	28.9	28.7	22.9	120
MAX	811	1,270	1,020	89	100	98	62	478	91	169	190	1,190
MIN	7.8	12	20	12	10	9.0	7.8	8.1	17	13	11	11
AC-FT	2,750	11,680	4,980	1,230	1,130	1,320	737	8,650	1,720	1,760	1,410	7,160
CFSM	7.44	32.7	13.5	3.34	3.28	3.58	2.07	23.5	4.82	4.78	3.82	20.1
IN.	8.58	36.51	15.58	3.86	3.53	4.13	2.31	27.04	5.38	5.51	4.40	22.39

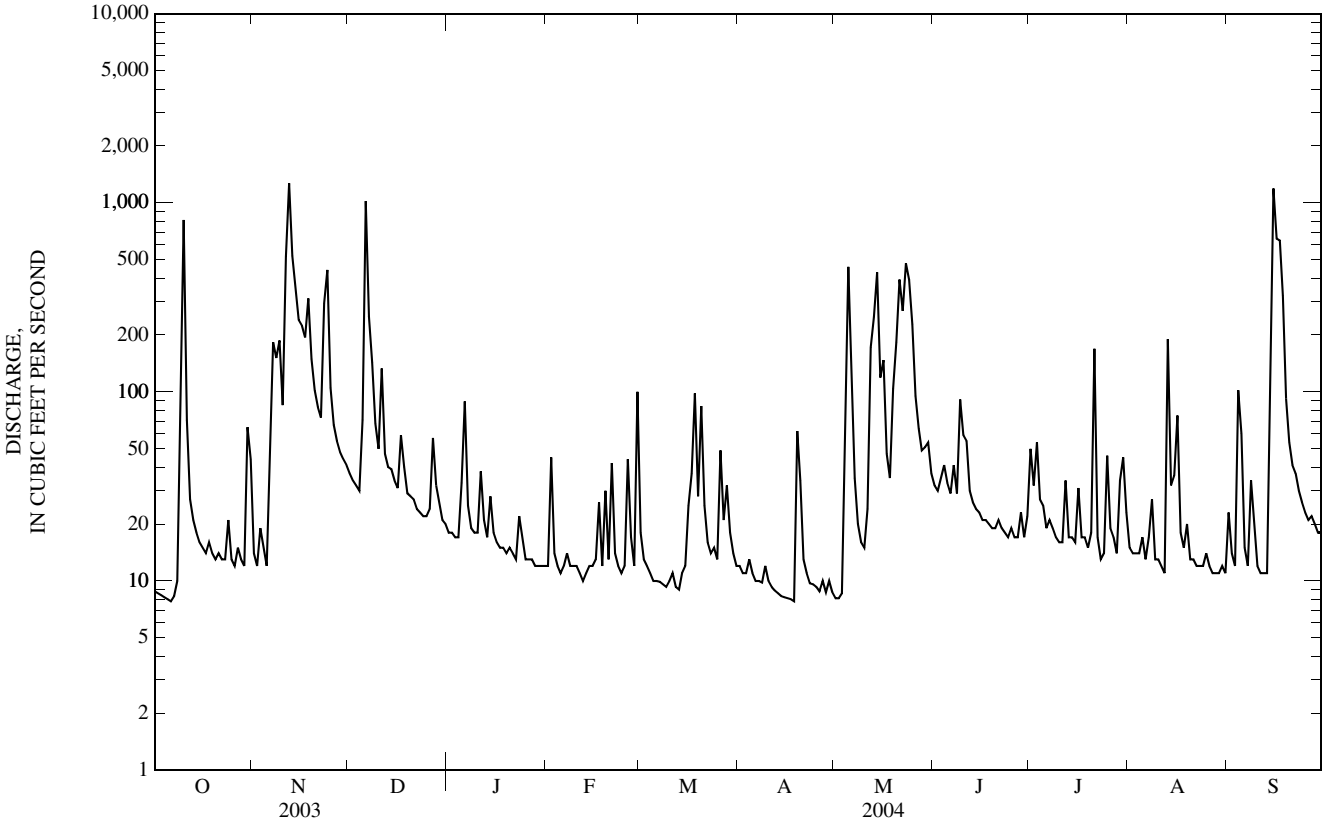
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2004, BY WATER YEAR (WY)

MEAN	40.4	50.4	28.4	20.5	18.3	15.0	17.6	34.3	35.6	33.5	36.0	59.5
MAX	123	196	81.1	56.1	38.0	53.6	86.6	141	122	92.3	90.0	351
(WY)	(1986)	(2004)	(2004)	(1992)	(1982)	(1998)	(2003)	(2004)	(1979)	(1993)	(1979)	(1998)
MIN	12.6	8.34	6.65	8.16	6.36	5.07	4.64	7.20	6.79	12.2	9.30	11.8
(WY)	(2003)	(1990)	(1990)	(1990)	(1979)	(1979)	(1979)	(1999)	(2001)	(2000)	(1991)	(1981)

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

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1978 - 2004	
ANNUAL TOTAL	18,197.4		22,456.8			
ANNUAL MEAN	49.9		61.4		32.5	
HIGHEST ANNUAL MEAN					62.7	1998
LOWEST ANNUAL MEAN					14.5	1990
HIGHEST DAILY MEAN	1,270	Nov 12	1,270	Nov 12	4,690	Sep 22, 1998
LOWEST DAILY MEAN	6.5	Mar 26	7.8	Oct 6	3.1	May 7, 1979
ANNUAL SEVEN-DAY MINIMUM	6.8	Mar 22	8.3	Apr 12	3.6	May 1, 1979
MAXIMUM PEAK FLOW			7,000	Sep 15	45,000	Sep 21, 1998
MAXIMUM PEAK STAGE			12.24	Sep 15	26.37	Sep 21, 1998
INSTANTANEOUS LOW FLOW			7.3	Oct 6	2.1	Mar 31, 2003
ANNUAL RUNOFF (AC-FT)	36,090		44,540		23,520	
ANNUAL RUNOFF (CFSM)	8.31		10.2		5.41	
ANNUAL RUNOFF (INCHES)	112.82		139.23		73.53	
10 PERCENT EXCEEDS	99		123		51	
50 PERCENT EXCEEDS	16		18		15	
90 PERCENT EXCEEDS	9.0		10		7.3	

e Estimated



50051180 QUEBRADA SALVATIERRA NEAR SAN LORENZO, PR

LOCATION.--Lat 18°10'24", long 65°58'38", Hydrologic Unit 21010005, on right bank 50 ft upstream from bridge on Highway 181, 0.2 mi (0.3 km) upstream from Río Grande de Loíza, and 1.5 mi (2.4 km) southwest of San Lorenzo.

DRAINAGE AREA.--3.74 mi^2 (9.69 km^2).

PERIOD OF RECORD.--January 1984 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 330 ft (100 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	2.6	3.3	e4.0	1.9	3.3	4.7	2.9	3.8	3.8	2.2	2.7
2	3.9	1.9	3.1	e4.1	3.8	2.1	4.2	2.8	4.0	16	2.2	1.9
3	4.4	1.8	3.0	e3.6	3.0	1.8	3.9	6.3	3.7	e5.1	2.2	1.9
4	5.3	1.8	2.9	e3.4	2.1	1.7	3.7	15	16	e6.5	2.3	1.9
5	6.2	2.6	5.9	e4.8	2.0	1.6	3.6	38	5.2	e4.5	4.0	1.9
6	6.5	13	100	5.9	1.9	1.5	3.4	13	3.4	e2.8	2.9	1.8
7	7.3	16	38	4.4	2.1	1.5	3.6	16	3.6	e3.7	2.5	2.3
8	8.3	e15	17	e4.0	1.8	1.4	3.7	8.9	3.1	e2.7	2.4	2.6
9	14	e15	9.9	e3.6	1.8	1.4	3.3	5.7	3.0	e2.3	2.1	3.0
10	141	e4.9	7.4	e3.9	1.9	1.5	3.3	5.0	5.4	e2.3	2.2	1.9
11	11	e42	7.3	e4.4	1.8	1.4	3.2	4.6	4.5	e2.6	2.1	1.8
12	4.4	e105	6.1	4.8	1.7	1.4	3.1	19	2.9	e3.6	1.9	9.0
13	3.1	e120	5.5	e4.5	1.7	1.3	3.1	15	2.3	e2.5	6.0	6.1
14	2.6	e55	5.4	e3.5	1.9	2.0	3.0	51	2.0	e2.3	4.5	14
15	2.3	e16	5.0	e3.0	2.3	2.0	3.0	18	1.8	e2.4	3.0	336
16	2.2	e55	4.6	e2.8	2.0	1.7	3.0	10	1.6	e5.2	7.9	96
17	2.1	e51	7.7	e2.8	2.4	3.3	2.9	7.4	1.8	2.7	3.2	90
18	2.1	27	6.3	e2.7	2.0	3.3	3.2	7.4	1.7	2.6	2.7	51
19	2.2	11	4.9	e2.5	2.1	3.1	3.9	10	1.5	2.3	2.4	14
20	1.9	6.2	4.6	e2.6	1.9	3.4	5.1	18	1.4	3.6	2.2	7.3
21	2.6	4.6	4.2	e2.5	5.3	3.4	3.6	14	1.5	4.2	2.1	5.4
22	1.9	4.0	3.7	e2.4	2.6	2.5	3.2	24	1.5	2.8	2.0	4.5
23	1.9	3.8	3.7	e5.0	1.9	1.9	3.0	93	1.3	2.5	1.9	4.1
24	2.2	98	3.4	e3.2	1.8	7.3	3.0	34	1.2	2.4	1.9	3.7
25	1.9	11	4.0	e2.4	1.7	4.1	3.0	22	1.2	3.7	1.8	3.5
26	2.2	5.6	3.7	e2.2	2.5	9.7	3.0	9.5	1.1	2.8	1.8	3.3
27	1.9	4.5	11	e2.2	2.7	6.4	3.6	6.3	2.0	2.5	2.2	3.4
28	1.8	3.9	11	2.1	1.7	29	3.1	4.9	12	2.3	2.0	3.4
29	1.8	3.7	6.9	2.0	12	11	3.1	4.4	2.4	4.8	1.7	3.3
30	1.9	3.5	4.8	1.9	---	6.2	3.0	4.2	1.7	2.8	2.3	3.1
31	4.2	---	4.1	1.9	---	5.5	---	4.1	---	2.5	1.9	---
TOTAL	258.8	705.4	308.4	103.1	74.3	127.7	102.5	494.4	98.6	112.8	82.5	684.8
MEAN	8.35	23.5	9.95	3.33	2.56	4.12	3.42	15.9	3.29	3.64	2.66	22.8
MAX	141	120	100	5.9	12	29	5.1	93	16	16	7.9	336
MIN	1.8	1.8	2.9	1.9	1.7	1.3	2.9	2.8	1.1	2.3	1.7	1.8
AC-FT	513	1,400	612	204	147	253	203	981	196	224	164	1,360
CFSM	2.23	6.29	2.66	0.89	0.69	1.10	0.91	4.26	0.88	0.97	0.71	6.10
IN.	2.57	7.02	3.07	1.03	0.74	1.27	1.02	4.92	0.98	1.12	0.82	6.81

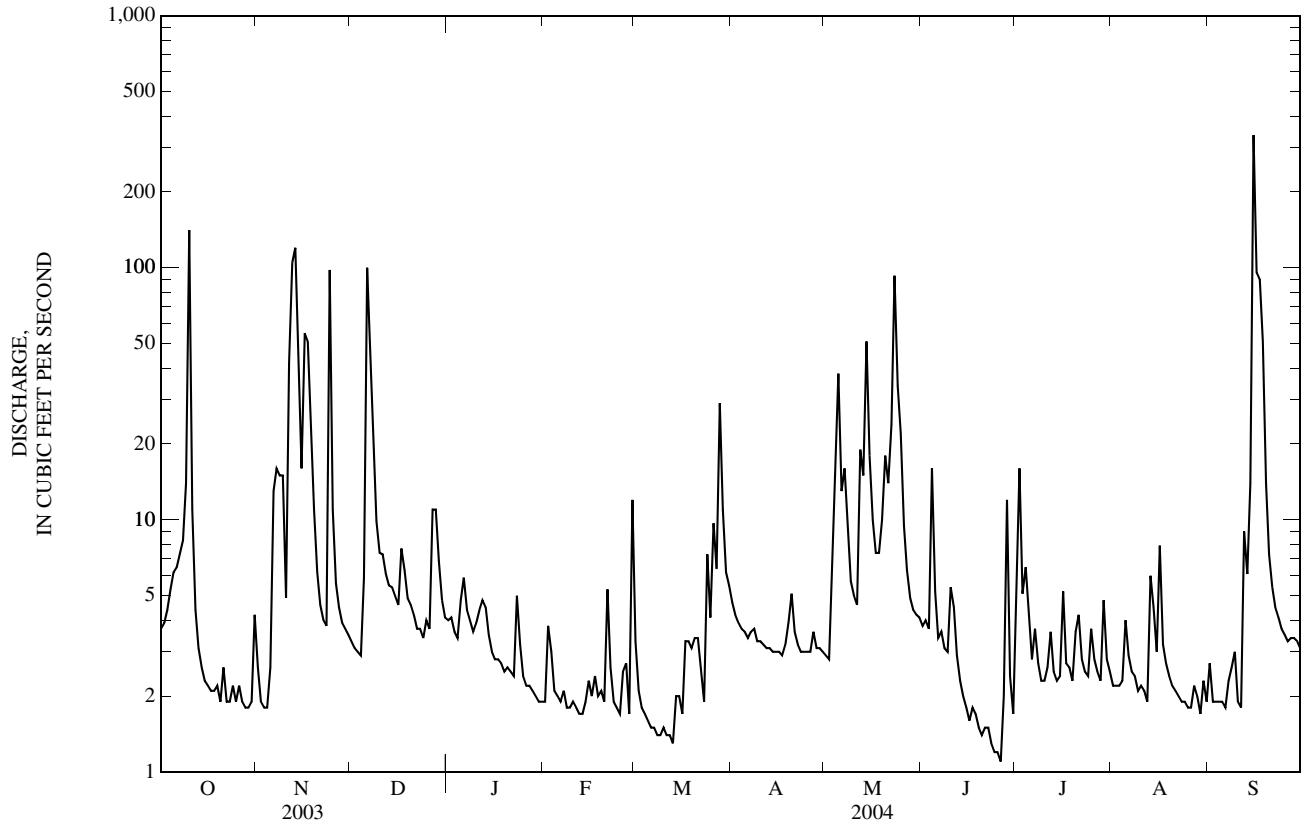
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2004, BY WATER YEAR (WY)

MEAN	8.89	12.4	5.90	4.79	3.24	3.13	4.97	5.84	5.44	5.01	7.14	15.6
MAX	36.2	33.4	22.8	23.4	10.3	17.4	51.4	35.8	17.5	20.5	14.5	76.5
(WY)	(1986)	(1988)	(1988)	(1992)	(1984)	(1989)	(2003)	(1985)	(1996)	(1993)	(1996)	(1996)
MIN	1.72	2.30	1.17	1.16	1.23	0.72	0.66	0.86	0.75	0.99	1.51	1.39
(WY)	(2003)	(2003)	(1990)	(1990)	(1990)	(2003)	(1995)	(1995)	(2001)	(2001)	(1994)	(2001)

50051180 QUEBRADA SALVATIERRA NEAR SAN LORENZO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1984 - 2004	
ANNUAL TOTAL	4,137.29		3,153.3			
ANNUAL MEAN	11.3		8.62		6.86	
HIGHEST ANNUAL MEAN					12.4	1996
LOWEST ANNUAL MEAN					2.67	2001
HIGHEST DAILY MEAN	335	Apr 17	336	Sep 15	1,750	Sep 10, 1996
LOWEST DAILY MEAN	0.46	Mar 26	1.1	Jun 26	0.25	Jul 22, 2001
ANNUAL SEVEN-DAY MINIMUM	0.56	Mar 8	1.3	Jun 20	0.28	Jul 17, 2001
MAXIMUM PEAK FLOW			3,800	Sep 15	15,000	Sep 10, 1996
MAXIMUM PEAK STAGE			15.77	Sep 15	20.87	Sep 10, 1996
INSTANTANEOUS LOW FLOW			1.0	Mar 12	0.23	Jul 21, 2001
ANNUAL RUNOFF (AC-FT)	8,210		6,250		4,970	
ANNUAL RUNOFF (CFSM)	3.03		2.30		1.84	
ANNUAL RUNOFF (INCHES)	41.15		31.36		24.94	
10 PERCENT EXCEEDS	17		14		9.7	
50 PERCENT EXCEEDS	2.8		3.3		2.0	
90 PERCENT EXCEEDS	0.97		1.8		0.91	

e Estimated



50051310 RIO CAYAGUAS AT CERRO GORDO, PR

LOCATION.--Lat 18°09'13", long 65°57'24", Hydrologic Unit 21010005, at downstream side of bridge on Highway 912, at Barrio Cerro Gordo, 2.8 mi (4.5 km) south of San Lorenzo.

DRAINAGE AREA.--10.2 mi^2 (26.4 km^2).

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 490 ft (150 m), from topographic map. Prior to October 1, 1983, at site 2,000 ft (610 m) downstream at different datum.

REMARKS.--Records poor. Sand removal at a commercial level is practiced at times during the year. This takes place about 100 ft (30.5 m) downstream from gage. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	35	43	37	27	28	19	17	43	53	31	30
2	25	24	40	e39	29	22	18	16	42	129	29	25
3	25	25	39	e40	27	22	17	20	52	49	30	24
4	25	28	37	38	24	21	18	44	64	36	30	41
5	26	27	46	50	24	19	18	247	e49	40	39	34
6	25	79	1,180	85	27	18	18	77	44	33	27	22
7	25	212	e284	e51	30	18	18	30	e48	39	27	22
8	30	79	199	38	27	19	18	22	49	33	33	22
9	36	172	73	36	30	18	18	19	54	31	27	28
10	1,110	51	61	40	26	18	17	17	e88	31	28	21
11	165	549	89	56	26	19	17	21	e50	31	27	20
12	55	1,440	61	41	24	18	17	95	e43	46	27	22
13	41	628	52	38	24	19	16	e439	e42	34	251	20
14	33	309	53	39	25	21	16	e821	e40	32	56	52
15	29	179	50	38	24	24	16	98	38	36	33	1,480
16	28	104	46	35	26	35	15	120	37	42	100	581
17	27	119	51	34	29	41	15	44	e35	33	28	553
18	28	190	46	33	24	52	16	31	33	33	24	394
19	27	89	43	32	38	44	90	106	34	31	27	106
20	27	78	42	35	28	56	71	110	34	32	23	63
21	30	70	42	35	31	36	23	362	35	79	23	50
22	25	63	40	33	27	25	20	147	e33	33	22	47
23	24	216	40	33	24	22	19	458	e34	28	20	45
24	35	259	43	33	23	24	18	265	30	28	21	38
25	24	85	43	30	23	24	18	207	33	37	22	36
26	23	60	42	30	28	28	16	100	32	32	22	35
27	26	52	72	29	28	26	17	63	31	31	22	51
28	24	47	45	29	22	46	15	54	48	28	20	38
29	25	45	41	29	43	28	19	59	36	33	19	35
30	40	44	43	28	---	22	16	57	42	38	20	33
31	58	---	38	27	---	21	---	46	---	35	20	---
TOTAL	2,146	5,358	3,024	1,171	788	834	649	4,212	1,273	1,226	1,128	3,968
MEAN	69.2	179	97.5	37.8	27.2	26.9	21.6	136	42.4	39.5	36.4	132
MAX	1,110	1,440	1,180	85	43	56	90	821	88	129	251	1,480
MIN	23	24	37	27	22	18	15	16	30	28	19	20
AC-FT	4,260	10,630	6,000	2,320	1,560	1,650	1,290	8,350	2,520	2,430	2,240	7,870
CFSM	6.79	17.5	9.56	3.70	2.66	2.64	2.12	13.3	4.16	3.88	3.57	13.0
IN.	7.83	19.54	11.03	4.27	2.87	3.04	2.37	15.36	4.64	4.47	4.11	14.47

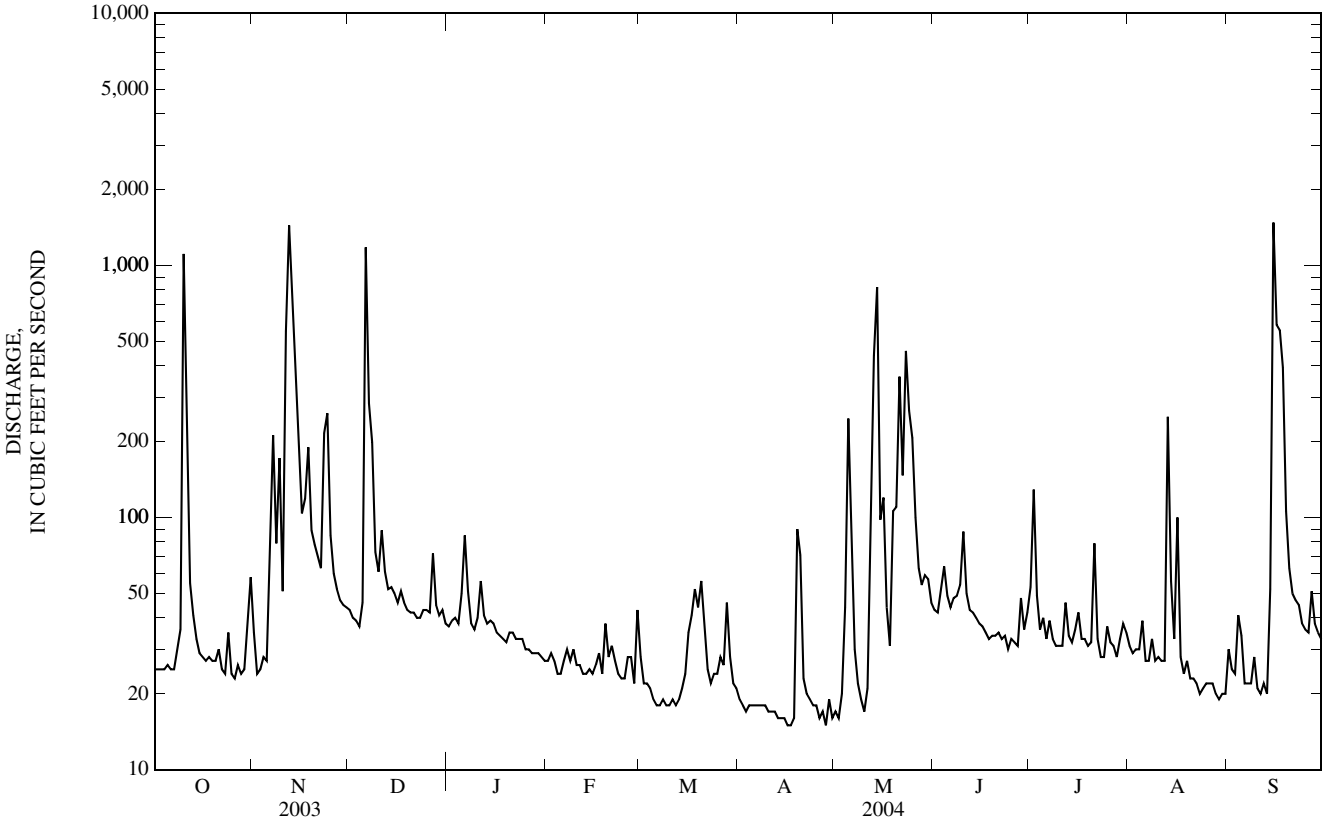
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2004, BY WATER YEAR (WY)

MEAN	61.2	73.0	47.7	33.9	29.0	23.2	24.1	46.9	42.8	41.3	51.5	77.3
MAX	176	196	163	99.5	74.1	64.1	89.7	155	140	118	202	330
(WY)	(1986)	(1988)	(1988)	(1998)	(1997)	(1998)	(2003)	(1985)	(1979)	(1979)	(1979)	(1998)
MIN	14.4	14.1	12.5	14.6	11.0	11.3	10.7	9.68	10.9	15.4	14.5	16.9
(WY)	(1992)	(2003)	(1992)	(1990)	(1992)	(1992)	(1980)	(1990)	(1994)	(1994)	(1991)	(1980)

50051310 RIO CAYAGUAS AT CERRO GORDO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1977 - 2004	
ANNUAL TOTAL	20,693		25,777			
ANNUAL MEAN	56.7		70.4		46.0	
HIGHEST ANNUAL MEAN					89.7	1979
LOWEST ANNUAL MEAN					18.6	1990
HIGHEST DAILY MEAN	1,440	Nov 12	1,480	Sep 15	5,120	Sep 10, 1996
LOWEST DAILY MEAN	11	Mar 25	15	Apr 16	7.1	Feb 4, 1981
ANNUAL SEVEN-DAY MINIMUM	11	Mar 22	16	Apr 12	8.5	Jun 19, 1994
MAXIMUM PEAK FLOW			9,830	Sep 15	14,200	Aug 22, 2001
MAXIMUM PEAK STAGE			21.20	Sep 15	24.21	Aug 22, 2001
ANNUAL RUNOFF (AC-FT)	41,040		51,130		33,350	
ANNUAL RUNOFF (CFSM)	5.56		6.90		4.51	
ANNUAL RUNOFF (INCHES)	75.47		94.01		61.32	
10 PERCENT EXCEEDS	82		100		70	
50 PERCENT EXCEEDS	25		33		25	
90 PERCENT EXCEEDS	14		19		13	

e Estimated



50051800 RIO GRANDE DE LOIZA AT HWY 183 NEAR SAN LORENZO, PR

LOCATION.--Lat 18°11'09", long 65°57'42", Hydrologic Unit 21010005, at downstream side of bridge on Highway 183 by-pass, 0.4 mi (0.6 km) south from Plaza de San Lorenzo, 1.4 mi (2.2 km), southwest from Escuela Rafael Colón García and 2.0 mi (3.2 km) northwest from Escuela Segunda Unidad de Carlos Zayas.

DRAINAGE AREA.--25.0 mi^2 (64.8 km^2).

PERIOD OF RECORD.--February 1990 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 262 ft (80 m), from topographic map.

REMARKS.--Records fair. Water purification plant located about 0.2 mi (0.3 km) upstream from gage. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

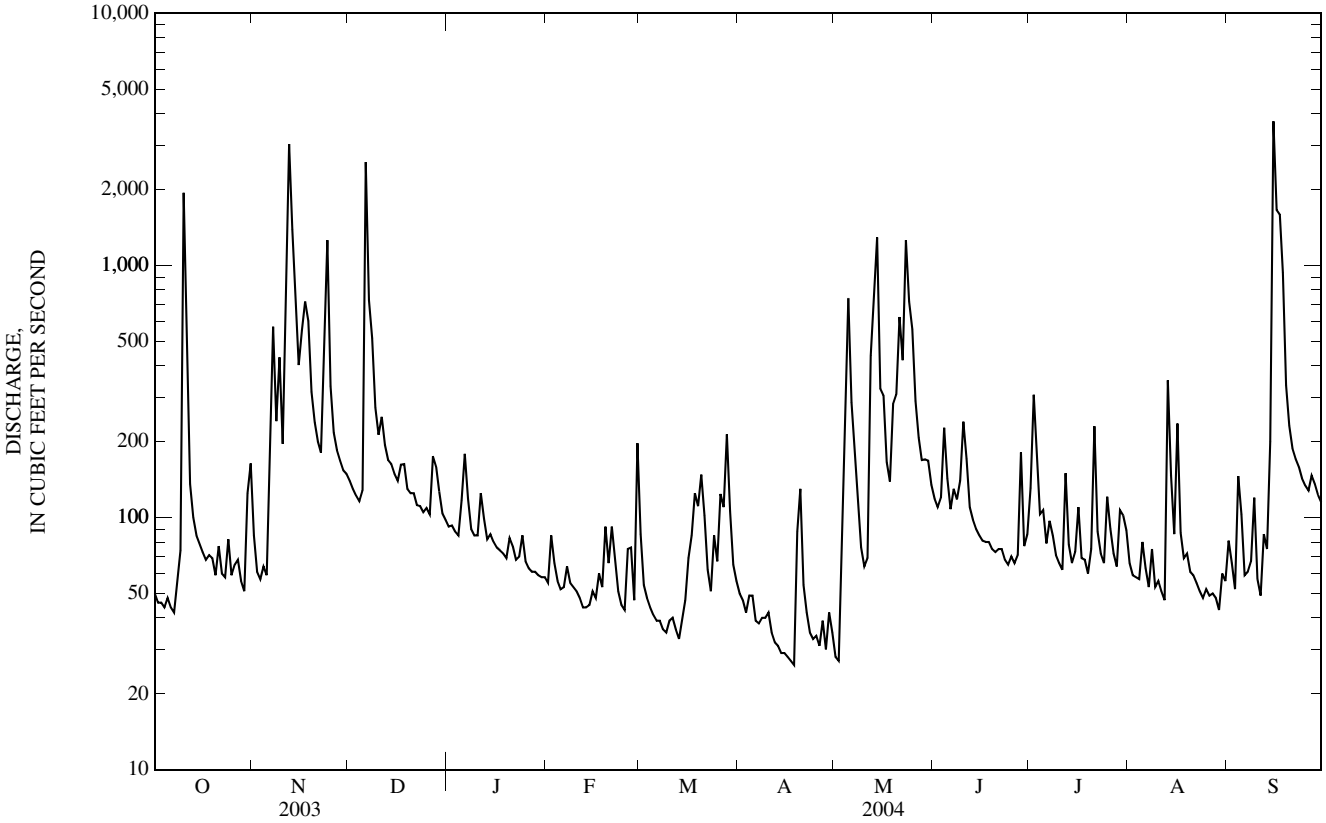
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	85	140	92	55	86	50	28	119	131	66	81
2	46	61	130	93	85	54	47	27	110	307	59	66
3	46	57	122	88	66	48	42	66	120	179	58	52
4	44	64	116	85	56	44	49	206	227	103	57	146
5	48	59	128	117	52	41	49	740	143	107	80	103
6	44	209	2,570	179	53	39	39	286	108	79	63	59
7	42	571	729	119	64	39	38	190	130	97	53	61
8	56	241	515	90	55	36	40	114	118	85	75	67
9	74	432	273	85	53	35	40	76	140	71	53	120
10	1,940	196	213	85	51	39	42	64	240	66	56	57
11	339	1,060	251	125	48	40	35	69	171	62	51	49
12	136	3,030	194	99	44	36	32	438	110	150	47	86
13	100	1,390	169	82	44	33	31	717	98	78	350	75
14	85	828	163	86	45	39	29	1,290	90	66	147	200
15	79	403	149	80	51	47	29	325	85	73	86	3,730
16	73	553	140	76	48	69	28	305	81	110	236	1,660
17	68	719	162	74	60	85	27	166	80	69	87	1,590
18	71	602	163	72	53	125	26	139	80	68	69	936
19	69	315	130	69	92	111	88	282	75	60	72	335
20	59	239	125	83	66	148	130	308	73	75	61	231
21	77	200	125	77	92	102	54	624	75	230	59	188
22	60	181	112	68	67	62	42	421	75	88	55	171
23	58	374	111	70	51	51	35	1,260	68	72	51	159
24	82	1,260	105	85	45	85	33	720	65	66	48	143
25	59	332	109	67	43	67	34	559	70	121	52	134
26	65	217	103	63	75	124	31	290	66	90	49	128
27	68	185	175	61	76	110	39	207	71	72	50	147
28	56	168	159	61	47	214	30	169	181	64	48	136
29	51	154	127	59	197	106	42	170	77	107	43	123
30	125	149	104	58	---	65	35	168	86	102	60	115
31	164	---	98	58	---	56	---	135	---	89	56	---
TOTAL	4,334	14,334	7,910	2,606	1,834	2,236	1,266	10,559	3,232	3,137	2,397	11,148
MEAN	140	478	255	84.1	63.2	72.1	42.2	341	108	101	77.3	372
MAX	1,940	3,030	2,570	179	197	214	130	1,290	240	307	350	3,730
MIN	42	57	98	58	43	33	26	27	65	60	43	49
AC-FT	8,600	28,430	15,690	5,170	3,640	4,440	2,510	20,940	6,410	6,220	4,750	22,110
CFSM	5.59	19.1	10.2	3.36	2.53	2.89	1.69	13.6	4.31	4.05	3.09	14.9
IN.	6.45	21.33	11.77	3.88	2.73	3.33	1.88	15.71	4.81	4.67	3.57	16.59

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 2004, BY WATER YEAR (WY)

MEAN	137	166	114	97.7	73.2	54.1	59.3	87.4	99.9	86.9	110	196
MAX	340	478	255	192	160	158	242	341	290	208	196	631
(WY)	(1999)	(2004)	(2004)	(1992)	(1998)	(1998)	(2003)	(2004)	(1992)	(1993)	(1996)	(1996)
MIN	47.9	40.6	47.5	43.6	21.0	17.4	16.8	25.2	22.5	40.2	39.3	59.7
(WY)	(2003)	(2003)	(2003)	(2001)	(1992)	(1992)	(1992)	(1995)	(2001)	(2001)	(1994)	(1990)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1990 - 2004	
ANNUAL TOTAL	54,365		64,993			
ANNUAL MEAN	149		178		109	
HIGHEST ANNUAL MEAN					178	2004
LOWEST ANNUAL MEAN					66.5	2001
HIGHEST DAILY MEAN	3,030	Nov 12	3,730	Sep 15	10,000	Sep 10, 1996
LOWEST DAILY MEAN	18	Mar 26	26	Apr 18	6.3	Apr 29, 1992
ANNUAL SEVEN-DAY MINIMUM	21	Mar 21	29	Apr 12	7.4	Apr 25, 1992
MAXIMUM PEAK FLOW			26,500	Sep 15	56,800	Sep 10, 1996
MAXIMUM PEAK STAGE			26.79	Sep 15	35.62	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	107,800		128,900		78,650	
ANNUAL RUNOFF (CFSM)	5.96		7.10		4.34	
ANNUAL RUNOFF (INCHES)	80.90		96.71		59.00	
10 PERCENT EXCEEDS	254		307		184	
50 PERCENT EXCEEDS	76		81		64	
90 PERCENT EXCEEDS	33		43		28	

50051800 RIO GRANDE DE LOIZA AT HWY 183 NEAR SAN LORENZO, PR—Continued



50053025 RIO TURABO ABOVE BORINQUEN, PR

LOCATION.--Lat 18°09'35", long 66°02'26", Hydrologic Unit 21010005, on left bank at Highway 765, 1.12 mi (1.8 km) south of Villa Borinquén, 1.35 mi (2.17 km), north from Escuela Mercedes Palma and 0.83 mi (1.34 km) east from Escuela Atravezadal on Road 763.

DRAINAGE AREA.--7.49 mi^2 (18.5 km^2).

PERIOD OF RECORD.--January 1990 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 492 ft (150 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	12	22	24	13	25	17	9.9	28	28	17	16
2	17	11	22	24	21	16	15	9.6	25	39	16	13
3	17	11	20	22	14	14	14	15	26	28	15	11
4	22	11	19	21	13	13	15	69	37	34	14	29
5	17	11	64	27	12	12	14	291	29	26	16	14
6	17	52	519	51	13	12	13	79	24	18	14	12
7	17	104	197	28	15	11	14	93	26	23	13	12
8	17	70	113	24	12	11	14	44	24	18	14	28
9	32	71	77	22	12	11	13	25	30	16	13	24
10	230	27	59	24	12	11	13	26	43	16	16	13
11	e35	171	69	44	11	11	12	30	65	17	13	12
12	e21	374	50	27	11	10	11	93	29	22	12	33
13	e18	420	44	e25	11	9.8	11	84	24	17	40	22
14	e16	217	42	22	11	11	11	141	22	16	21	82
15	e15	74	38	19	11	11	11	77	21	16	23	511
16	e15	215	36	18	11	14	11	62	19	29	49	393
17	e14	e140	42	18	14	13	11	41	20	17	18	317
18	e14	e78	38	18	11	30	10	33	19	17	16	179
19	e15	60	33	17	17	24	18	72	18	15	15	78
20	e13	45	31	17	13	42	18	67	17	22	14	53
21	e16	36	33	17	29	23	12	132	18	55	13	41
22	13	31	28	16	15	16	11	132	17	20	13	36
23	13	29	27	28	12	14	11	304	16	17	12	32
24	16	164	26	20	11	19	10	134	16	17	13	29
25	12	60	30	16	11	17	10	82	16	39	13	27
26	12	36	33	15	23	81	10	60	15	21	12	25
27	12	31	61	15	15	36	11	45	16	18	12	24
28	12	28	50	15	11	95	9.7	38	31	16	11	23
29	11	25	37	14	49	40	11	37	16	32	11	22
30	11	24	29	14	---	24	10	39	19	27	13	21
31	14	---	26	13	---	20	---	30	---	21	12	---
TOTAL	721	2,638	1,915	675	434	696.8	371.7	2,394.5	726	717	504	2,132
MEAN	23.3	87.9	61.8	21.8	15.0	22.5	12.4	77.2	24.2	23.1	16.3	71.1
MAX	230	420	519	51	49	95	18	304	65	55	49	511
MIN	11	11	19	13	11	9.8	9.7	9.6	15	15	11	11
MED	16	48	37	20	12	14	11	62	22	20	14	26
AC-FT	1,430	5,230	3,800	1,340	861	1,380	737	4,750	1,440	1,420	1,000	4,230
CFSM	3.26	12.3	8.65	3.05	2.10	3.15	1.74	10.8	3.39	3.24	2.28	9.95
IN.	3.76	13.74	9.98	3.52	2.26	3.63	1.94	12.48	3.78	3.74	2.63	11.11

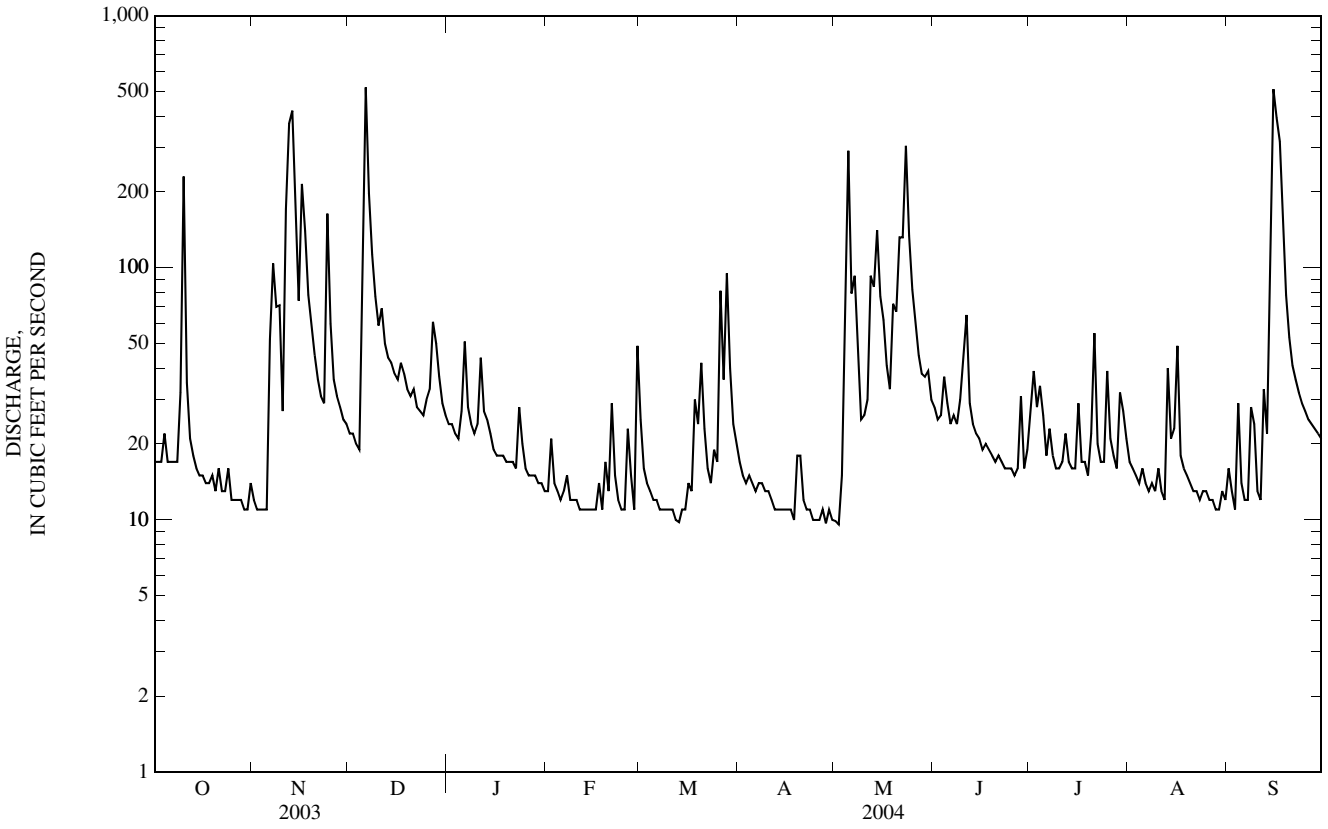
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 2004, BY WATER YEAR (WY)

MEAN	24.8	31.1	24.5	21.6	16.3	12.7	14.3	19.5	24.0	20.7	22.5	43.5
MAX	51.3	87.9	61.8	47.5	25.0	26.9	55.5	77.2	67.9	54.6	41.4	123
(WY)	(1998)	(2004)	(2004)	(1992)	(1997)	(1998)	(2003)	(2004)	(1996)	(1993)	(1996)	(1996)
MIN	10.3	9.29	10.6	7.85	8.93	7.06	6.18	6.11	6.07	8.25	6.98	12.1
(WY)	(1994)	(2003)	(1994)	(1990)	(1990)	(2003)	(1990)	(1994)	(2001)	(2001)	(1994)	(2001)

50053025 RIO TURABO ABOVE BORINQUEN, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1990 - 2004	
ANNUAL TOTAL	12,002.1		13,925.0			
ANNUAL MEAN	32.9		38.0		23.4	
HIGHEST ANNUAL MEAN					38.1	1996
LOWEST ANNUAL MEAN					12.1	1994
HIGHEST DAILY MEAN	519	Dec 6	519	Dec 6	1,940	Sep 10, 1996
LOWEST DAILY MEAN	5.8	Mar 22	9.6	May 2	3.3	Aug 17, 1994
ANNUAL SEVEN-DAY MINIMUM	6.2	Mar 12	10	Apr 26	3.8	Aug 11, 1994
MAXIMUM PEAK FLOW			3,730	Sep 15	15,200	Sep 10, 1996
MAXIMUM PEAK STAGE			11.47	Sep 15	22.60	Sep 10, 1996
INSTANTANEOUS LOW FLOW					2.6	Jul 17, 1997
ANNUAL RUNOFF (AC-FT)	23,810		27,620		16,960	
ANNUAL RUNOFF (CFSM)	4.61		5.33		3.28	
ANNUAL RUNOFF (INCHES)	62.53		72.55		44.55	
10 PERCENT EXCEEDS	61		71		38	
50 PERCENT EXCEEDS	18		19		13	
90 PERCENT EXCEEDS	8.9		11		6.6	

e Estimated



50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR

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

DRAINAGE AREA.--89.8 mi^2 (233 km^2).

WATER-DISCHARGE RECORDS

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

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

REMARKS.--Records good except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	225	e307	e248	e109	223	78	90	287	e323	e145	150
2	62	149	e283	e243	e148	117	70	87	272	e571	e165	123
3	62	142	179	e231	e137	94	74	104	265	e451	e155	92
4	70	150	158	e223	e114	82	107	509	437	e253	e116	246
5	87	195	184	e238	e110	73	88	1,900	363	e285	e127	184
6	69	358	6,790	e350	e120	67	65	e650	299	e195	e105	113
7	63	1,150	1,650	e279	e123	67	213	e423	280	e201	e104	111
8	78	421	1,020	e217	e94	63	109	e248	262	e194	e87	107
9	120	1,000	522	e201	e94	61	146	e160	e260	e198	e83	228
10	3,660	515	391	e172	e107	68	120	e134	e441	e187	94	102
11	e897	2,270	408	e395	e89	75	69	e146	e370	e165	103	86
12	e284	6,840	403	e275	e93	67	61	e1,020	e289	e275	e97	167
13	e215	3,890	311	e200	e96	62	53	e1,720	e249	e168	e420	284
14	e181	2,460	301	e175	e94	68	49	e4,330	e176	e159	e198	287
15	e167	997	283	e170	e100	82	48	828	e168	e160	e103	6,180
16	e154	2,210	257	e161	e96	94	46	627	e166	e185	e300	4,820
17	e144	3,120	298	e155	e103	120	45	395	e185	e158	e97	3,890
18	e151	e1,690	329	e152	e109	181	60	364	e173	e169	e104	2,400
19	e145	e804	258	e146	e122	212	71	551	e158	e156	e111	915
20	e124	e535	251	e175	e145	195	265	575	e183	e162	e104	704
21	e163	e448	252	e164	e232	196	91	1,100	e144	e413	e93	534
22	e125	e402	214	e142	e151	90	70	899	e158	e185	e89	364
23	e99	e865	202	e149	e107	67	64	4,060	e155	e170	e95	346
24	e167	2,840	197	e181	e102	139	70	1,610	e158	e170	e87	396
25	e112	945	207	e140	e99	129	70	1,300	e171	e219	118	298
26	e129	e521	283	e132	e114	249	65	597	e274	e182	83	237
27	e127	e465	663	e127	e150	357	79	430	e276	e157	110	304
28	e108	e417	e559	e121	e85	743	65	392	e529	e175	102	286
29	e102	e345	e403	e116	441	327	71	355	e195	e201	78	320
30	e197	e328	e285	e118	---	126	94	329	e190	e183	101	256
31	343	---	e261	e110	---	98	---	305	---	e157	134	---
TOTAL	8,480	36,697	18,109	5,906	3,684	4,592	2,576	26,238	7,533	6,827	3,908	24,530
MEAN	274	1,223	584	191	127	148	85.9	846	251	220	126	818
MAX	3,660	6,840	6,790	395	441	743	265	4,330	529	571	420	6,180
MIN	62	142	158	110	85	61	45	87	144	156	78	86
AC-FT	16,820	72,790	35,920	11,710	7,310	9,110	5,110	52,040	14,940	13,540	7,750	48,660
CFSM	3.05	13.6	6.51	2.12	1.41	1.65	0.96	9.43	2.80	2.45	1.40	9.11
IN.	3.51	15.20	7.50	2.45	1.53	1.90	1.07	10.87	3.12	2.83	1.62	10.16

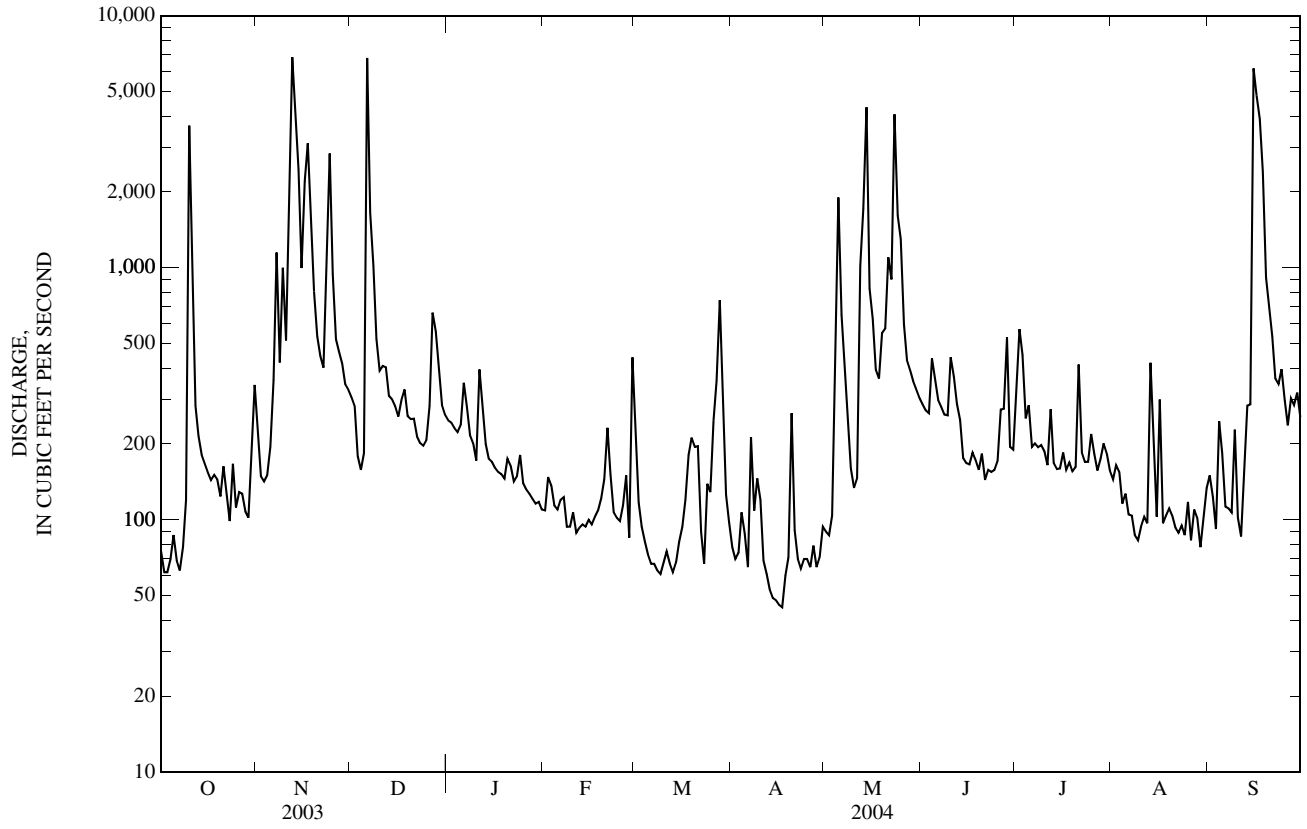
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2004, BY WATER YEAR (WY)

MEAN	340	336	230	150	111	93.0	102	228	232	214	260	326
MAX	1,910	1,223	714	559	291	306	521	863	1,283	660	949	1,438
(WY)	(1971)	(2004)	(1988)	(1992)	(1984)	(1989)	(2003)	(1985)	(1979)	(1961)	(1979)	(1960)
MIN	44.2	64.9	33.6	45.3	35.6	23.2	30.6	33.7	34.1	21.8	51.4	37.4
(WY)	(1968)	(1968)	(1968)	(1968)	(1968)	(1968)	(1995)	(1974)	(1975)	(1974)	(1994)	(1967)

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1960 - 2004	
ANNUAL TOTAL	111,092		149,080			
ANNUAL MEAN	304		407		217	
HIGHEST ANNUAL MEAN					526	1979
LOWEST ANNUAL MEAN					82.3	1967
HIGHEST DAILY MEAN	6,840	Nov 12	6,840	Nov 12	25,300	Sep 6, 1960
LOWEST DAILY MEAN	27	Mar 26	45	Apr 17	11	Apr 8, 1968
ANNUAL SEVEN-DAY MINIMUM	32	Mar 12	52	Apr 12	11	Apr 8, 1968
MAXIMUM PEAK FLOW			28,000	Dec 6	83,000	Sep 10, 1996
MAXIMUM PEAK STAGE			20.40	Dec 6	32.32	Sep 10, 1996
INSTANTANEOUS LOW FLOW					17	Aug 18, 1994
ANNUAL RUNOFF (AC-FT)	220,400		295,700		157,000	
ANNUAL RUNOFF (CFSM)	3.39		4.54		2.41	
ANNUAL RUNOFF (INCHES)	46.02		61.76		32.78	
10 PERCENT EXCEEDS	543		675		360	
50 PERCENT EXCEEDS	105		172		106	
90 PERCENT EXCEEDS	41		77		41	

e Estimated



50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
03...	1215	162	110	7.4	7.3	251	24.2	79	20.2	7.00	1.90	1	19.8
APR													
14...	1448	49	28	7.9	7.4	324	29.1	95	24.3	8.41	2.01	1	25.7
JUN													
09...	1300	210	130	7.6	7.6	252	28.9	--	--	--	--	--	--
AUG													
09...	1244	82	10	7.7	7.8	256	30.4	60	15.4	5.16	1.23	.9	16.0

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
03...	84	19.4	<.2	32.7	11.5	--	163	71.3	95	.50	.09	.60	.630
APR													
14...	104	25.7	<.2	33.1	14.4	<.1	196	--	24	.50	.20	.57	.630
JUN													
09...	85	--	--	--	--	--	--	--	114	.30	.09	.39	.420
AUG													
09...	83	19.3	<.2	32.5	11.0	--	152	33.4	13	--	.07	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC													
03...	.03	.41	1.1	5.0	.10	<10	E9,500	38,000	--	--	--	--	--
APR													
14...	.06	.30	1.1	5.0	.11	<10	--	--	<2	39.6	36	<.2	E.6
JUN													
09...	.03	.21	.72	3.2	.14	<10	77,000	37,000	--	--	--	--	--
AUG													
09...	--	--	--	--	.10	10	E1,700	E10,000	<2	37.4	30	<.2	<.8

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC 03...	--	--	--	--	--	--	--	--	--	--	--
APR 14...	M	<.01	960	E.5	271	<.02	<3	<.3	6	<.10	<16
JUN 09...	--	--	--	--	--	--	--	--	--	--	--
AUG 09...	M	<.01	830	E.6	166	<.02	<3	<.3	E3	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR—Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: October 1983 to current year.

INSTRUMENTATION.--USDH-48 sediment sampler since October 1983. Automatic sediment sampler since 1984.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 14,500 mg/L November 27, 1987; Minimum daily mean, 5 mg/L September 30, 2001.
SEDIMENT LOADS: Maximum daily mean, 396,000 tons (359,000 tonnes) September 10, 1996; Minimum daily mean, 0.65 ton (0.59 tonne) May 25, 1995.

EXTREMES FOR CURRENT YEAR 2004.--
SEDIMENT CONCENTRATION: Maximum daily mean, 4,980 mg/L September 15, 2004; Minimum daily mean, 19 mg/L several days.
SEDIMENT LOADS: Maximum daily mean, 201,000 tons (182,350 tonnes) September 15, 2004; Minimum daily mean, 3.3 ton (3.0 tonne) April 17, 2004.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		OCTOBER			NOVEMBER			DECEMBER	
1	75	113	23	225	86	61	e307	e78	e64
2	62	113	19	149	50	20	e283	e54	e41
3	62	113	19	142	50	19	179	196	95
4	70	113	21	150	50	20	158	195	83
5	87	112	27	195	50	26	184	204	109
6	69	112	21	358	101	185	6,790	1,330	34,100
7	63	112	19	1,150	331	1,170	1,650	395	2,040
8	78	112	24	421	148	177	1,020	260	790
9	120	113	37	1,000	282	844	522	180	257
10	3,660	940	17,500	515	166	240	391	137	145
11	e897	e245	e767	2,270	502	5,580	408	140	165
12	e284	e109	e82	6,840	930	24,000	403	137	157
13	e215	e87	e43	3,890	540	7,230	311	103	87
14	e181	e65	e23	2,460	522	4,270	301	78	64
15	e167	e45	e14	997	306	868	283	54	41
16	e154	e42	e11	2,210	562	4,160	257	31	21
17	e144	e42	e9.9	3,120	651	9,920	298	25	20
18	e151	e42	e9.2	e1,690	e457	e2,200	329	25	22
19	e145	e42	e9.0	e804	e260	e573	258	25	17
20	e124	e41	e9.2	e535	e178	e261	251	24	16
21	e163	e50	e26	e448	e135	e131	252	23	15
22	e125	e113	e37	e402	e109	e77	214	21	12
23	e99	e112	e27	e865	e153	e420	202	20	11
24	e167	e50	e26	2,840	556	11,200	197	20	10
25	e112	e113	e37	945	300	817	207	19	11
26	e129	e113	e37	e521	e201	e283	283	59	64
27	e127	e113	e37	e465	e137	e157	663	277	949
28	e108	e113	e37	e417	e137	e157	e559	e181	e284
29	e102	e113	e37	e345	e103	e87	e403	e137	e157
30	e197	e50	e26	e328	e103	e87	e285	e54	e41
31	343	151	162	---	---	---	e261	e31	e21
TOTAL	8,480	---	19,176.3	36,697	---	75,240	18,109	---	39,909

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	e248	e23	e15	e109	e36	e11	223	166	101
2	e243	e23	e15	e148	e36	e14	117	148	47
3	e231	e21	e12	e137	e36	e13	94	139	36
4	e223	e21	e12	e114	e36	e11	82	132	29
5	e238	e23	e15	e110	e36	e11	73	125	25
6	e350	e101	e185	e120	e36	e12	67	119	22
7	e279	e25	e20	e123	e36	e12	67	112	20
8	e217	e21	e12	e94	e35	e9.0	63	105	18
9	e201	e21	e12	e94	e35	e9.0	61	98	16
10	e172	e20	e10	e107	e35	e10	68	91	17
11	e395	e101	e185	e89	e35	e8.5	75	84	17
12	e275	e25	e20	e93	e35	e8.9	67	77	14
13	e200	e20	e10	e96	e35	e9.2	62	70	12
14	e175	e20	e10	e94	e35	e8.9	68	63	12
15	e170	e20	e10	e100	e35	e9.5	82	56	12
16	e161	e19	e11	e96	e35	e9.1	94	49	12
17	e155	e19	e11	e103	e35	e9.7	120	43	14
18	e152	e19	e11	e109	e35	e10	181	68	44
19	e146	e19	e11	e122	e35	e12	212	81	51
20	e175	e19	e11	e145	e35	e14	195	68	46
21	e164	e19	e11	e232	e166	e101	196	77	47
22	e142	e19	e11	e151	e55	e33	90	41	10
23	e149	e19	e11	e107	e35	e10	67	35	6.3
24	e181	e19	e11	e102	e35	e9.6	139	55	33
25	e140	e19	e11	e99	e35	e9.3	129	55	21
26	e132	e36	e13	e114	e34	e11	249	82	119
27	e127	e36	e12	e150	e55	e33	357	123	139
28	e121	e36	e12	e85	e34	e7.8	743	218	524
29	e116	e36	e11	441	134	268	327	116	117
30	e118	e36	e11	---	---	---	126	58	20
31	e110	e36	e11	---	---	---	98	44	12
TOTAL	5,906	---	723	3,684	---	694.5	4,592	---	1,613.3
		APRIL			MAY			JUNE	
1	78	39	8.2	90	31	7.5	287	33	26
2	70	35	6.7	87	31	7.3	272	32	23
3	74	31	6.2	104	40	14	265	31	22
4	107	70	28	509	169	247	437	101	167
5	88	120	29	1,900	273	1,740	363	77	76
6	65	81	14	e650	e150	e380	299	61	49
7	213	89	89	e423	e76	e88	280	61	46
8	109	47	15	e248	e31	e22	262	69	49
9	146	58	40	e160	e44	e14	e260	e78	e55
10	120	44	15	e134	e44	e14	e441	e131	e160
11	69	31	5.7	e146	e44	e14	e370	e104	e104
12	61	30	5.0	e1,020	e375	e1,280	e289	e69	e49
13	53	30	4.2	e1,720	e1,170	e4,310	e249	e69	e49
14	49	29	3.9	e4,330	e719	e10,600	e176	e50	e24
15	48	28	3.7	828	270	633	e168	e45	e20
16	46	28	3.4	627	199	350	e166	e40	e18
17	45	27	3.3	395	140	152	e185	e36	e18
18	60	27	4.3	364	108	105	e173	e32	e15
19	71	32	9.5	551	202	468	e158	e28	e12
20	265	101	79	575	176	291	e183	e23	e11
21	91	40	10	1,100	375	1,280	e144	e21	e8.2
22	70	32	6.0	899	278	780	e158	e24	e10
23	64	32	5.5	4,060	1,240	16,300	e155	e27	e11
24	70	32	6.0	1,610	478	2,240	e158	e26	e11
25	70	32	6.0	1,300	403	1,570	e171	e26	e12
26	65	32	5.6	597	120	200	e274	e33	e26
27	79	32	6.7	430	76	88	e276	e33	e26
28	65	31	5.5	392	67	71	e529	e160	e290
29	71	31	6.0	355	58	56	e195	e89	e89
30	94	31	8.0	329	49	43	e190	e89	e89
31	---	---	---	305	40	33	---	---	---
TOTAL	2,576	---	438.4	26,238	---	43,397.8	7,533	---	1,565.2

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	e323	e103	e95	e145	e51	e20	150	69	28
2	e571	e177	e412	e165	e52	e23	123	68	23
3	e451	e157	e199	e155	e43	e18	92	67	17
4	e253	e104	e164	e116	e35	e11	246	111	91
5	e285	e104	e164	e127	e43	e15	184	122	61
6	e195	e122	e61	e105	e57	e16	113	119	36
7	e201	e122	e61	e104	e60	e16	111	119	36
8	e194	e122	e61	e87	e35	e7.7	107	119	35
9	e198	e122	e61	e83	e35	e7.7	228	140	109
10	e187	e122	e61	94	54	13	102	54	15
11	e165	e69	e28	103	23	6.5	86	52	12
12	e275	e96	e91	e97	e21	e5.6	167	69	40
13	e168	e69	e28	e420	e191	e459	284	105	106
14	e159	e69	e28	e198	e88	e53	287	104	164
15	e160	e69	e28	e103	e59	e16	6,180	4,980	201,000
16	e185	e122	e61	e300	e106	e105	4,820	839	13,800
17	e158	e69	e28	e97	e35	e7.7	3,890	723	11,300
18	e169	e69	e28	e104	e22	e7.1	2,400	324	3,230
19	e156	e69	e28	e111	e22	e7.1	915	51	130
20	e162	e69	e28	e104	e27	e7.1	704	37	68
21	e413	e128	e199	e93	e31	e7.8	534	20	30
22	e185	e117	e59	e89	e25	e6.1	364	25	24
23	e170	e122	e61	e95	e21	e5.3	346	29	27
24	e170	e122	e61	e87	e20	e4.6	396	33	35
25	e219	e140	e109	118	22	7.1	298	36	29
26	e182	e122	e61	83	35	7.7	237	40	26
27	e157	e69	e28	110	47	14	304	42	34
28	e175	e69	e28	102	60	16	286	38	29
29	e201	e122	e61	78	72	15	320	34	29
30	e183	e122	e61	101	93	25	256	31	21
31	e157	e69	e28	134	82	30	---	---	---
TOTAL	6,827	---	2,471	3,908	---	960.1	24,530	---	230,585
YEAR	149,080	416,773.6							

e Estimated

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

SILT AND CLAY PERCENT OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
DEC 27...	1934	1,640	99	1,290	5,720
MAY 07...	2100	1,630	55	1,150	5,060
SEP 15...	1728	11,600	36	6,080	191,000

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, falldia nat wat percent <.002mm (70326)	Suspnd. sediment, falldia nat wat percent <.004mm (70327)	Suspnd. sediment, falldia nat wat percent <.008mm (70328)	Suspnd. sediment, falldia nat wat percent <.016mm (70329)	Suspnd. sediment, falldia nat wat percent <.031mm (70330)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspnd. sediment, sieve diametr percent <.125mm (70332)	Suspnd. sediment, sieve diametr percent <.25mm (70333)	Suspnd. sediment, sieve diametr percent <.5 mm (70334)	Suspnd. sediment, sieve diametr percent <1 mm (70335)	Suspended sediment concentration mg/L (80154)
SEP													
15...	1213	12,100	23	31	42	55	66	73	91	99	100	100	8,990

Date	Suspended sediment discharge, tons/d (80155)
SEP	
15...	294,000

50055225 RIO CAGÜITAS AT VILLA BLANCA AT CAGUAS, PR

LOCATION.--Lat 18°14'55", long 66°01'40", Hydrologic Unit 21010005, on left bank, at Calle 4 Villa Blanca housing area at Caguas, 1.8 mi (2.9 km) upstream from Río Grande de Loíza, and 0.95 mi (1.53 km) northeast from Caguas Plaza.

DRAINAGE AREA.--11.7 mi^2 (30.3 km^2).

PERIOD OF RECORD.--December 1990 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 164 ft (50 m), from topographic map.

REMARKS.--Records poor. Gage-height and precipitation satellite telemetry at station. Low flow affected by pluvial discharges above 50 ft (15.24 m), upstream from station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	18	23	35	21	30	e14	e14	32	48	16	20
2	23	14	21	46	23	22	e13	e13	31	30	21	11
3	22	26	21	35	28	19	e14	e15	31	36	16	10
4	21	26	20	32	30	19	e17	e43	100	42	17	13
5	21	42	40	32	27	19	e15	e110	56	26	20	14
6	24	49	508	46	25	24	e12	e60	37	22	16	13
7	21	43	153	34	30	22	e25	e71	34	21	16	13
8	20	47	68	25	27	25	e16	e46	30	21	16	33
9	37	60	51	28	21	26	e19	e44	48	21	15	18
10	340	48	39	30	22	17	e17	e62	47	24	16	9.4
11	68	107	35	64	19	15	e12	e81	32	24	15	8.8
12	31	229	34	37	19	13	e11	e230	27	45	29	9.4
13	25	226	35	27	20	14	e9.9	e224	25	23	52	9.0
14	24	167	28	31	19	17	e9.4	e133	25	19	23	66
15	45	130	27	25	22	16	e9.2	e61	25	19	33	698
16	34	281	27	41	20	16	e8.9	e50	26	18	50	914
17	29	209	30	33	27	20	e8.9	e36	28	15	18	326
18	22	202	27	26	23	36	e11	e35	32	16	16	136
19	21	75	22	24	18	36	e12	e48	26	16	16	68
20	19	50	22	31	18	32	e28	e49	26	21	15	46
21	20	40	22	35	64	27	e14	e79	28	23	15	39
22	19	36	22	31	31	e14	e12	e69	26	17	14	35
23	19	35	23	47	28	e12	e11	e193	25	15	45	31
24	21	41	25	36	28	e19	e12	e105	29	36	20	26
25	18	30	30	28	24	e18	e12	e91	26	56	16	27
26	17	27	47	24	27	e29	e11	e53	26	62	13	18
27	17	25	100	24	19	e36	e13	e43	49	25	59	30
28	19	26	79	26	17	e60	e11	43	107	18	22	26
29	21	28	61	42	54	e34	e12	39	32	19	14	44
30	16	25	51	32	---	e19	e14	36	28	17	13	26
31	27	---	37	23	---	e16	---	34	---	16	16	---
TOTAL	1,086	2,362	1,728	1,030	751	722	404.3	2,210	1,094	811	683	2,737.6
MEAN	35.0	78.7	55.7	33.2	25.9	23.3	13.5	71.3	36.5	26.2	22.0	91.3
MAX	340	281	508	64	64	60	28	230	107	62	59	914
MIN	16	14	20	23	17	12	8.9	13	25	15	13	8.8
MED	21	42	30	32	23	19	12	50	30	21	16	26
AC-FT	2,150	4,690	3,430	2,040	1,490	1,430	802	4,380	2,170	1,610	1,350	5,430
CFSM	2.99	6.72	4.76	2.84	2.21	1.99	1.15	6.09	3.11	2.23	1.88	7.79
IN.	3.45	7.50	5.49	3.27	2.39	2.29	1.28	7.02	3.48	2.58	2.17	8.70

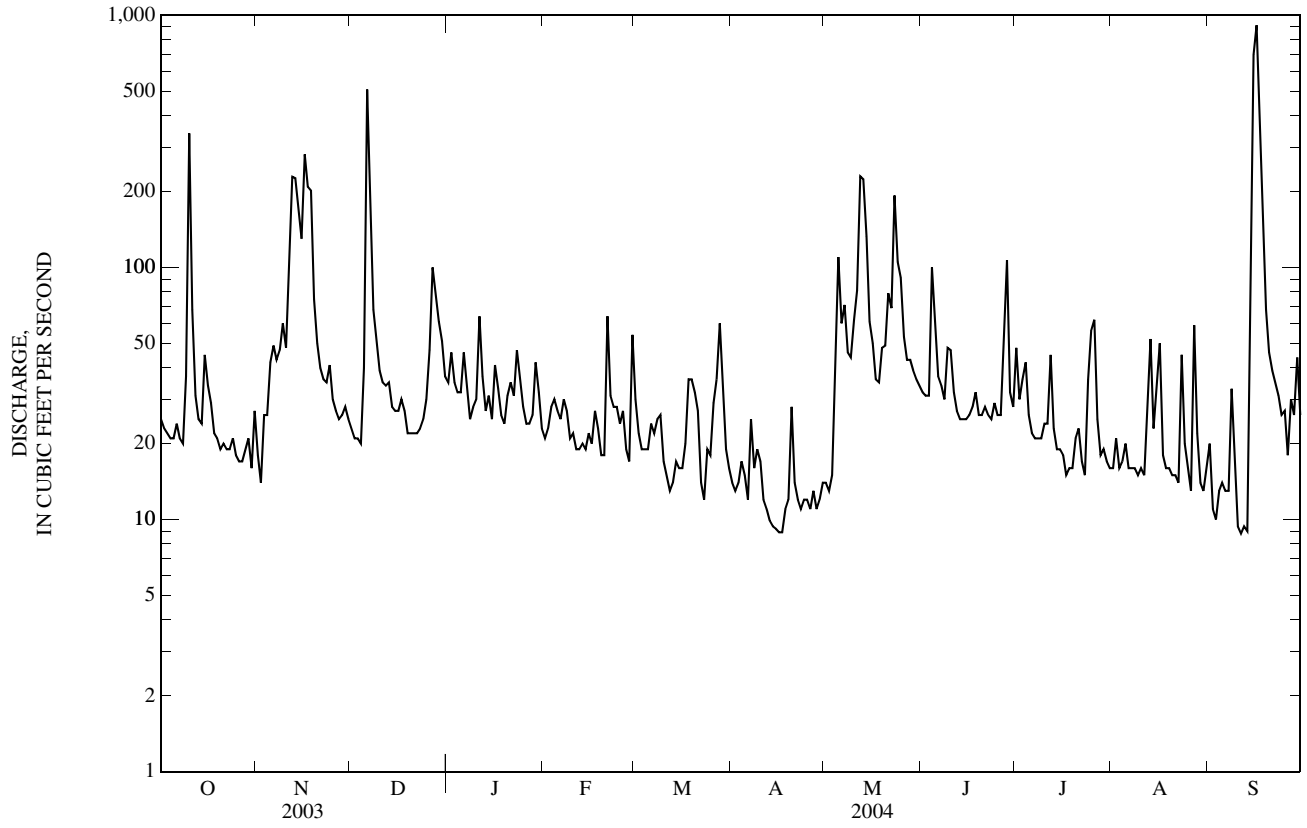
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2004, BY WATER YEAR (WY)

MEAN	36.7	49.1	35.8	33.9	24.1	17.2	25.3	26.0	24.6	28.6	39.4	82.7
MAX	130	114	123	120	67.9	42.6	108	71.3	55.9	74.6	109	364
(WY)	(1999)	(1999)	(1999)	(1992)	(1998)	(1998)	(2003)	(2004)	(1999)	(1993)	(1998)	(1996)
MIN	9.89	11.4	8.87	14.2	10.8	7.54	5.49	3.35	2.86	4.13	3.82	8.82
(WY)	(2003)	(2003)	(1995)	(1995)	(1992)	(1994)	(1994)	(1994)	(1994)	(1994)	(1994)	(1994)

50055225 RIO CAGÜITAS AT VILLA BLANCA AT CAGUAS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1991 - 2004	
ANNUAL TOTAL	13,661.3		15,618.9			
ANNUAL MEAN	37.4		42.7		36.2	
HIGHEST ANNUAL MEAN					64.0	1998
LOWEST ANNUAL MEAN					11.9	1994
HIGHEST DAILY MEAN	942	Apr 23	914	Sep 16	8,600	Sep 10, 1996
LOWEST DAILY MEAN	2.7	Jan 19	8.8	Sep 11	1.3	Jun 8, 1994
ANNUAL SEVEN-DAY MINIMUM	4.0	Jan 16	9.8	Apr 12	1.4	Jun 8, 1994
MAXIMUM PEAK FLOW			2,670	May 7	25,000	Sep 10, 1996
MAXIMUM PEAK STAGE			13.94	May 7	23.89	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	27,100		30,980		26,220	
ANNUAL RUNOFF (CFSM)	3.20		3.64		3.09	
ANNUAL RUNOFF (INCHES)	43.40		49.62		41.99	
10 PERCENT EXCEEDS	68		64		53	
50 PERCENT EXCEEDS	17		26		17	
90 PERCENT EXCEEDS	7.2		14		7.0	

e Estimated



50055250 RIO CAGÜITAS AT HIGHWAY 30 AT CAGUAS, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--14.1 mi^2 (36.5 km^2).

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
MAR 15...	1235	16	22	8.7	7.9	472	29.9	170	44.7	14.5	2.23	.9	28.3
JUN 03...	0815	38	20	6.6	7.7	454	25.0	--	--	--	--	--	--
AUG 05...	1010	16	16	6.2	7.7	480	27.7	160	42.0	13.3	2.03	.8	23.4

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
MAR 15...	145	34.6	<.2	29.8	36.3	<.1	277	--	28	.80	.22	.69	.780
JUN 03...	161	--	--	--	--	--	--	--	21	.50	.21	.91	.980
AUG 05...	155	32.4	<.2	31.2	37.9	--	275	12.1	26	--	--	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
MAR 15...	.09	.58	1.6	7.0	.22	10	--	--	E1	40.5	48	<.2	E.7
JUN 03...	.07	.29	1.5	6.6	.10	<10	22,000	87,000	--	--	--	--	--
AUG 05...	--	--	--	--	--	20	E15,000	E120,000	E1	39.8	47	<.2	1.4

Date	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
MAR 15...	M	E.01	900	1.5	247	<.02	<3	E.3	11	<.10	<16
JUN 03...	--	--	--	--	--	--	--	--	--	--	--
AUG 05...	M	<.01	980	E.8	269	<.02	<3	<.3	8	.12	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50055400 RIO BAIROA NEAR CAGUAS, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--5.4 mi^2 (14.0 km^2).

PERIOD OF RECORD.--Water years 1958, 1962-66, 1973-74, 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV													
25...	0950	10	6.5	6.1	7.3	408	24.3	160	37.5	15.0	3.58	.7	19.4
MAR													
10...	1015	9.5	54	3.4	7.3	390	25.5	140	36.5	11.9	4.16	.9	25.8
JUN													
03...	1250	14	2.1	7.7	7.9	414	27.0	--	--	--	--	--	--
AUG													
04...	1431	6.3	<2.0	7.0	7.7	432	30.5	150	37.7	14.4	3.09	.7	19.3

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
NOV													
25...	142	28.3	<.2	28.6	16.4	--	234	6.54	<10	.70	.58	1.66	1.80
MAR													
10...	116	36.6	<.2	21.1	17.3	.2	223	5.73	36	3.5	1.70	.99	1.10
JUN													
03...	150	--	--	--	--	--	--	--	<10	.40	.19	1.06	1.10
AUG													
04...	150	31.5	<.2	30.0	16.4	--	242	4.12	<10	--	--	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
NOV													
25...	.14	.12	2.5	11.1	.23	<10	E8,700	130,000	--	--	--	--	--
MAR													
10...	.11	1.8	4.6	20.4	.57	100	E11,000	E9,700	E2	81.8	47	<.2	4.2
JUN													
03...	.04	.21	1.5	6.6	.18	<10	30,000	460,000	--	--	--	--	--
AUG													
04...	--	--	--	--	--	<10	E8,800	70,000	E2	85.5	37	<.2	E.6

50055400 RIO BAIROA NEAR CAGUAS, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
NOV 25...	--	--	--	--	--	--	--	--	--	--	--
MAR 10...	20	E.01	2,100	5.9	205	.02	<3	<.3	50	1.05	<16
JUN 03...	--	--	--	--	--	--	--	--	--	--	--
AUG 04...	<4	<.01	150	<1.0	56.4	<.02	<3	<.3	E3	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

50055750 RIO GURABO BELOW EL MANGO, PR

LOCATION.--Lat 18°14'02", long 65°53'07", Hydrologic Unit 21010005, on left bank, 2.43 mi (3.91 km) northeast of Plaza de Juncos, 1.3 mi (2.1 km) southeast of Escuela La Placita and 0.35 mi (0.56 km) southwest of El Mango.

DRAINAGE AREA.--22.3 mi^2 (57.8 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1990 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 230 ft (70 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station. Low flow is affected by sewage discharges from a water treatment plant, 0.60 mi (0.96 m) upstream from gaging station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	10	17	e12	12	32	15	15	17	21	13	19
2	11	9.3	16	e14	14	17	13	16	15	19	10	13
3	10	10	15	e17	14	14	12	23	17	27	8.5	11
4	42	34	14	e19	12	12	12	143	20	16	7.2	44
5	19	75	20	e30	11	11	14	130	15	24	15	46
6	13	25	284	e136	11	9.7	11	38	13	10	9.1	22
7	12	67	e95	e42	14	9.6	9.6	20	26	9.6	6.7	9.8
8	36	26	e122	e24	13	9.2	9.5	15	25	8.6	6.0	8.0
9	88	59	e28	e22	12	8.9	8.8	12	16	6.9	5.7	117
10	920	100	e18	e28	14	9.0	8.3	14	176	6.3	5.4	14
11	79	396	e16	e51	13	9.3	8.0	22	27	6.3	5.4	9.1
12	26	1,820	e14	e29	11	8.6	7.5	66	18	68	5.5	18
13	18	e393	e12	e22	9.8	8.2	7.3	256	14	23	31	33
14	16	e304	e21	e20	9.3	8.4	7.0	117	12	12	16	59
15	13	e116	e13	e19	10	9.9	6.7	150	11	11	8.6	1,980
16	12	e239	e11	18	10	10	6.6	58	9.8	13	23	872
17	11	e478	e39	17	14	17	6.9	34	11	8.9	8.7	1,040
18	14	e231	e27	17	14	48	6.4	53	15	22	7.0	319
19	14	e123	e13	17	12	22	9.0	35	9.6	10	20	115
20	11	e80	e13	16	12	30	33	154	8.6	16	21	65
21	11	58	e11	16	40	26	15	175	9.5	29	7.3	46
22	11	46	e9.6	15	27	15	12	133	12	15	5.7	38
23	11	42	e9.5	16	15	11	8.8	269	8.2	8.7	5.1	31
24	11	56	e8.8	16	11	13	7.5	166	7.4	8.0	4.9	25
25	10	38	e8.5	14	9.5	24	7.2	208	7.0	36	6.1	28
26	11	27	e8.3	14	72	92	7.2	53	8.7	31	4.9	24
27	19	22	e10	14	25	75	18	35	8.5	14	4.5	22
28	12	18	e22	13	15	97	131	27	34	13	4.4	21
29	11	17	e21	14	63	59	47	24	11	55	5.2	21
30	12	17	e16	13	---	23	22	21	9.6	47	4.8	44
31	13	---	e12	13	---	18	---	19	---	29	13	---
TOTAL	1,508	4,936.3	944.7	728	519.6	756.8	487.3	2,501	591.9	624.3	298.7	5,113.9
MEAN	48.6	165	30.5	23.5	17.9	24.4	16.2	80.7	19.7	20.1	9.64	170
MAX	920	1,820	284	136	72	97	131	269	176	68	31	1,980
MIN	10	9.3	8.3	12	9.3	8.2	6.4	12	7.0	6.3	4.4	8.0
AC-FT	2,990	9,790	1,870	1,440	1,030	1,500	967	4,960	1,170	1,240	592	10,140
CFSM	2.18	7.38	1.37	1.05	0.80	1.09	0.73	3.62	0.88	0.90	0.43	7.64
IN.	2.52	8.23	1.58	1.21	0.87	1.26	0.81	4.17	0.99	1.04	0.50	8.53

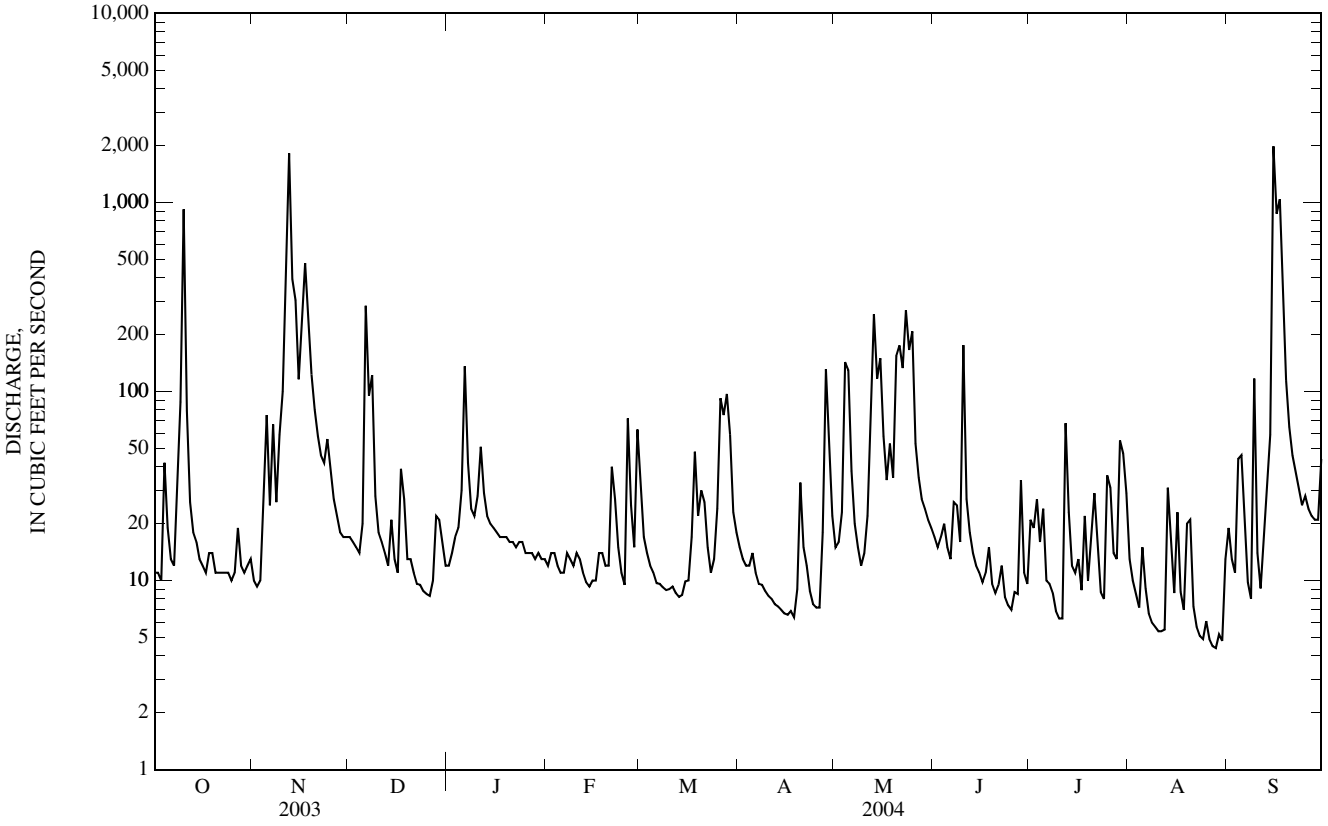
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 2004, BY WATER YEAR (WY)

MEAN	51.6	84.9	43.8	33.4	25.0	11.7	30.1	34.3	37.0	35.0	40.1	83.7
MAX	161	252	166	103	66.7	24.4	275	123	117	147	110	196
(WY)	(1991)	(2000)	(1999)	(1996)	(1995)	(2004)	(2003)	(1992)	(1992)	(1993)	(1998)	(1998)
MIN	4.01	12.1	10.7	6.34	8.90	4.51	5.29	4.83	9.65	6.64	9.64	21.4
(WY)	(1993)	(2003)	(1998)	(1995)	(2001)	(2003)	(1995)	(1990)	(2000)	(2000)	(2004)	(1997)

50055750 RIO GURABO BELOW EL MANGO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1990 - 2004	
ANNUAL TOTAL	22,102.3		19,010.5			
ANNUAL MEAN	60.6		51.9		43.2	
HIGHEST ANNUAL MEAN					54.4	2000
LOWEST ANNUAL MEAN					22.0	1994
HIGHEST DAILY MEAN	3,410	Apr 17	1,980	Sep 15	4,040	Sep 10, 1996
LOWEST DAILY MEAN	3.2	Mar 26	4.4	Aug 28	1.1	Oct 27, 1992
ANNUAL SEVEN-DAY MINIMUM	3.6	Mar 21	5.0	Aug 24	1.4	Oct 22, 1992
MAXIMUM PEAK FLOW			11,000	Sep 15	19,100	Sep 10, 1996
MAXIMUM PEAK STAGE			20.44	Sep 15	24.12	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	43,840		37,710		31,310	
ANNUAL RUNOFF (CFSM)	2.72		2.33		1.94	
ANNUAL RUNOFF (INCHES)	36.87		31.71		26.33	
10 PERCENT EXCEEDS	99		89		75	
50 PERCENT EXCEEDS	16		15		12	
90 PERCENT EXCEEDS	6.4		8.1		5.1	

e Estimated



50055750 RIO GURABO BELOW EL MANGO, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORDS.--Water year 1990 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: March 1990 to current year.

INSTRUMENTATION.--USDH-48 sediment sampler and automatic sediment sampler since 1990 .

REMARKS:--Sediment samples were collected by a local observer on a weekly basis. During high flow events sediment samples were collected with an automatic sediment sampler.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 2,400 mg/L September 22, 1998; Minimum daily mean, 2 mg/L several years.
SEDIMENT LOADS: Maximum daily mean, 51,000 tons (46,300 tonnes) September 10, 1998; Minimum daily mean, 0.04 ton (0.04 tonne) October 4-7, 2002.

EXTREMES FOR CURRENT YEAR 2003.--
SEDIMENT CONCENTRATION: Maximum daily mean, 2,310 mg/L April 17, 2003; Minimum daily mean, 2 mg/L October 1-7, 2002.
SEDIMENT LOADS: Maximum daily mean, 39,700 tons (36,000 tonnes) April 17, 2003; Minimum daily mean, 0.04 ton (0.04 tonne) October 4-7, 2002.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER			NOVEMBER			DECEMBER		
1	13	2	0.07	e8.5	---	e0.11	e8.8	---	e0.40
2	10	2	0.06	e7.9	---	e0.11	e8.4	---	e0.40
3	8.9	2	0.05	e8.5	---	e0.11	e11	---	e0.62
4	8.3	2	0.04	e9.0	e22	e0.52	e12	---	e0.62
5	7.8	2	0.04	7.8	20	0.42	e24	---	e2.4
6	7.4	2	0.04	7.6	20	0.40	e15	---	e1.5
7	7.3	2	0.04	7.5	20	0.40	e12	---	e0.62
8	8.5	3	0.11	7.3	19	0.38	e11	---	e0.62
9	20	59	3.9	7.4	19	0.38	e15	---	e1.5
10	10	27	0.75	13	26	1.2	e14	---	e1.5
11	11	26	0.76	17	39	1.8	e10	---	e0.62
12	16	24	1.0	15	32	1.5	e9.8	---	e0.62
13	13	22	0.77	11	20	0.62	e9.3	---	e0.62
14	9.3	20	0.51	8.4	16	0.36	e10	---	e0.62
15	17	43	4.4	7.6	15	0.32	e9.3	---	e0.62
16	54	108	28	10	15	0.41	e11	---	e0.62
17	22	43	2.7	23	33	2.4	e50	---	e28
18	13	33	1.1	27	40	3.1	e34	---	e3.1
19	e11	e31	e0.98	e21	e14	e0.63	e11	---	e0.62
20	e10	---	e0.06	e15	e13	e0.39	e9.6	---	e0.62
21	e13	---	e0.07	e13	e12	e0.45	e11	---	e0.62
22	e13	---	e0.07	23	37	2.9	e11	---	e0.62
23	e30	---	e3.9	11	14	0.42	e10	---	e0.62
24	e22	---	e3.9	e9.9	e12	e0.32	e12	---	e0.62
25	e22	---	e3.9	e9.5	---	e0.32	e9.8	---	e0.62
26	e54	---	e28	e13	---	e0.62	e15	---	e1.5
27	e24	---	e2.7	e14	---	e0.62	e14	---	e1.5
28	e12	---	e0.76	e10	---	e0.62	e9.6	---	e0.40
29	e8.9	---	e0.11	e9.7	---	e0.52	e8.2	---	e0.40
30	e8.4	---	e0.11	e9.3	---	e0.52	e7.0	---	e0.40
31	e8.5	---	e0.11	---	---	---	e7.0	---	e0.40
TOTAL	493.3	---	89.01	361.9	---	22.87	409.8	---	53.94

50055750 RIO GURABO BELOW EL MANGO, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	e7.2	---	e0.32	11	11	0.34	e4.6	e8	e0.10
2	e9.5	---	e0.43	103	134	105	e4.5	---	e0.14
3	e8.2	---	e0.32	26	39	4.4	e4.3	---	e0.14
4	e8.3	---	e0.32	137	131	80	e4.7	---	e0.14
5	e39	---	e7.4	102	99	45	e4.6	---	e0.14
6	e34	---	e3.8	41	47	7.4	e4.2	---	e0.14
7	e11	---	e0.34	35	31	3.8	e4.0	---	e0.14
8	e8.1	---	e0.32	16	19	0.82	e3.9	---	e0.14
9	e7.3	---	e0.32	11	18	0.51	e3.8	---	e0.13
10	e8.3	---	e0.32	24	26	1.9	e3.8	---	e0.13
11	e7.7	---	e0.32	21	22	1.3	e4.2	---	e0.14
12	e6.8	---	e0.28	15	18	0.74	e3.6	---	e0.13
13	e6.4	---	e0.28	9.5	17	0.43	e3.6	---	e0.13
14	e6.5	---	e0.28	7.3	16	0.32	e3.6	---	e0.13
15	e6.5	---	e0.28	6.4	16	0.28	4.0	13	0.14
16	e6.5	---	e0.28	6.5	17	0.29	3.5	14	0.13
17	e6.4	---	e0.28	11	17	0.48	3.6	16	0.15
18	e6.4	---	e0.28	8.9	15	0.37	3.7	17	0.17
19	e7.3	---	e0.28	7.4	14	0.28	6.3	17	0.29
20	e6.6	---	e0.28	6.1	14	0.24	7.3	14	0.29
21	e6.9	---	e0.28	6.7	15	0.27	3.9	11	0.12
22	e6.2	---	e0.24	7.7	15	0.31	3.7	8	0.08
23	e6.4	---	e0.24	6.8	15	0.27	3.7	8	0.08
24	e9.2	---	e0.43	5.8	15	0.23	3.9	8	0.08
25	e138	---	e80	8.1	14	0.31	3.6	8	0.08
26	e62	---	e14	7.4	14	0.28	3.2	10	0.09
27	e17	---	e0.82	5.3	14	0.20	3.2	13	0.11
28	e12	---	e0.38	4.8	11	0.14	6.3	16	0.27
29	e9.5	---	e0.43	---	---	---	7.8	19	0.39
30	e10	---	e0.21	---	---	---	9.7	19	0.50
31	12	12	0.38	---	---	---	5.1	19	0.24
TOTAL	497.2	---	114.14	657.7	---	255.91	139.9	---	5.08
		APRIL			MAY			JUNE	
1	3.9	19	0.19	22	9	0.54	18	93	4.4
2	4.3	18	0.21	22	12	0.88	21	93	5.2
3	4.0	18	0.20	17	10	0.45	42	108	14
4	21	18	1.0	16	9	0.41	35	106	10
5	310	186	441	17	15	0.71	21	72	4.1
6	42	69	8.0	15	23	0.94	26	65	4.9
7	21	63	3.6	15	31	1.3	91	138	45
8	24	57	3.6	16	39	1.7	39	117	12
9	74	67	16	15	40	1.6	25	96	6.6
10	64	71	14	14	40	1.4	21	82	4.6
11	1,430	818	4,150	12	39	1.3	22	71	4.2
12	361	224	244	12	38	1.2	20	59	3.3
13	177	126	60	40	53	12	19	49	2.5
14	151	118	48	79	31	6.7	17	45	2.1
15	151	111	45	99	39	13	269	617	1,490
16	188	104	53	91	35	10	51	250	36
17	3,410	2,310	39,700	26	26	1.9	26	204	15
18	545	437	1,000	95	87	56	20	120	6.6
19	202	98	63	84	80	25	20	69	3.8
20	94	10	2.7	27	37	2.7	19	51	2.6
21	200	122	149	688	630	5,040	21	38	2.1
22	261	146	254	75	73	16	18	25	1.2
23	144	45	44	40	63	6.7	16	14	0.61
24	150	51	46	121	101	73	15	14	0.58
25	e57	---	e14	34	67	6.1	14	15	0.59
26	e48	---	e8.0	26	96	6.7	14	18	0.65
27	e33	---	e8.0	22	80	4.8	13	26	0.94
28	e39	---	e8.0	20	50	2.7	16	36	1.5
29	30	27	2.2	20	28	1.5	14	46	1.8
30	25	17	1.2	18	47	2.3	13	55	2.0
31	---	---	---	18	72	3.5	---	---	---
TOTAL	8,264.2	---	46,387.90	1,816	---	5,303.03	976	---	1,688.87

50055750 RIO GURABO BELOW EL MANGO, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	13	55	1.9	26	213	15	46	96	14
2	17	53	2.5	41	183	22	18	55	2.7
3	17	50	2.3	18	65	3.1	81	151	91
4	14	42	1.6	14	55	2.0	34	76	7.6
5	14	34	1.3	12	53	1.8	18	66	3.1
6	18	25	1.2	53	114	31	15	70	2.7
7	15	17	0.68	43	139	17	14	69	2.7
8	13	19	0.67	20	65	3.7	16	69	2.9
9	13	24	0.84	16	37	1.6	17	68	3.1
10	13	29	1.0	15	25	0.98	15	68	2.7
11	12	29	0.98	44	67	14	13	67	2.3
12	12	28	0.93	26	70	5.1	13	67	2.3
13	58	117	30	16	56	2.4	49	110	25
14	21	54	3.2	14	48	1.9	32	86	8.8
15	15	44	1.8	15	44	1.8	14	65	2.5
16	33	161	17	14	41	1.6	113	187	85
17	19	120	6.2	13	38	1.3	28	72	5.5
18	14	97	3.8	34	67	7.7	19	50	2.6
19	13	87	3.0	20	51	2.8	15	36	1.4
20	12	76	2.5	18	44	2.2	19	23	1.2
21	13	67	2.3	15	40	1.6	33	60	5.8
22	16	64	2.7	285	534	705	21	27	1.6
23	15	62	2.5	33	107	10	13	16	0.60
24	13	60	2.0	19	77	3.9	12	16	0.51
25	12	58	1.9	18	64	3.1	11	17	0.49
26	11	57	1.7	60	100	18	10	18	0.50
27	13	56	1.9	26	74	5.2	10	18	0.47
28	51	277	40	25	68	4.6	9.6	17	0.44
29	19	221	11	32	63	5.5	9.4	17	0.42
30	14	212	7.8	56	96	29	9.3	16	0.40
31	13	213	7.7	48	84	13	---	---	---
TOTAL	546	---	164.90	1,089	---	937.88	727.3	---	280.33
YEAR	15,978.3	55,303.86							

e Estimated

50056400 RIO VALENCIANO NEAR JUNCOS, PR

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

DRAINAGE AREA.--16.4 mi^2 (42.5 km^2).

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

GAGE.--Water-stage recorder. Elevation of gage is 320 ft (98 m), from topographic map.

REMARKS.--Records poor. Minor diversion from public water-supply tank, 0.5 mi upstream, during low flow. Gage-height and precipitation satellite telemetry at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate discharges (no stages were recorded) of major floods are as follows: September 6, 1960, 37,100 ft^3/s (1,050 m^3/s), October 9, 1970, 18,200 ft^3/s (515 m^3/s).

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

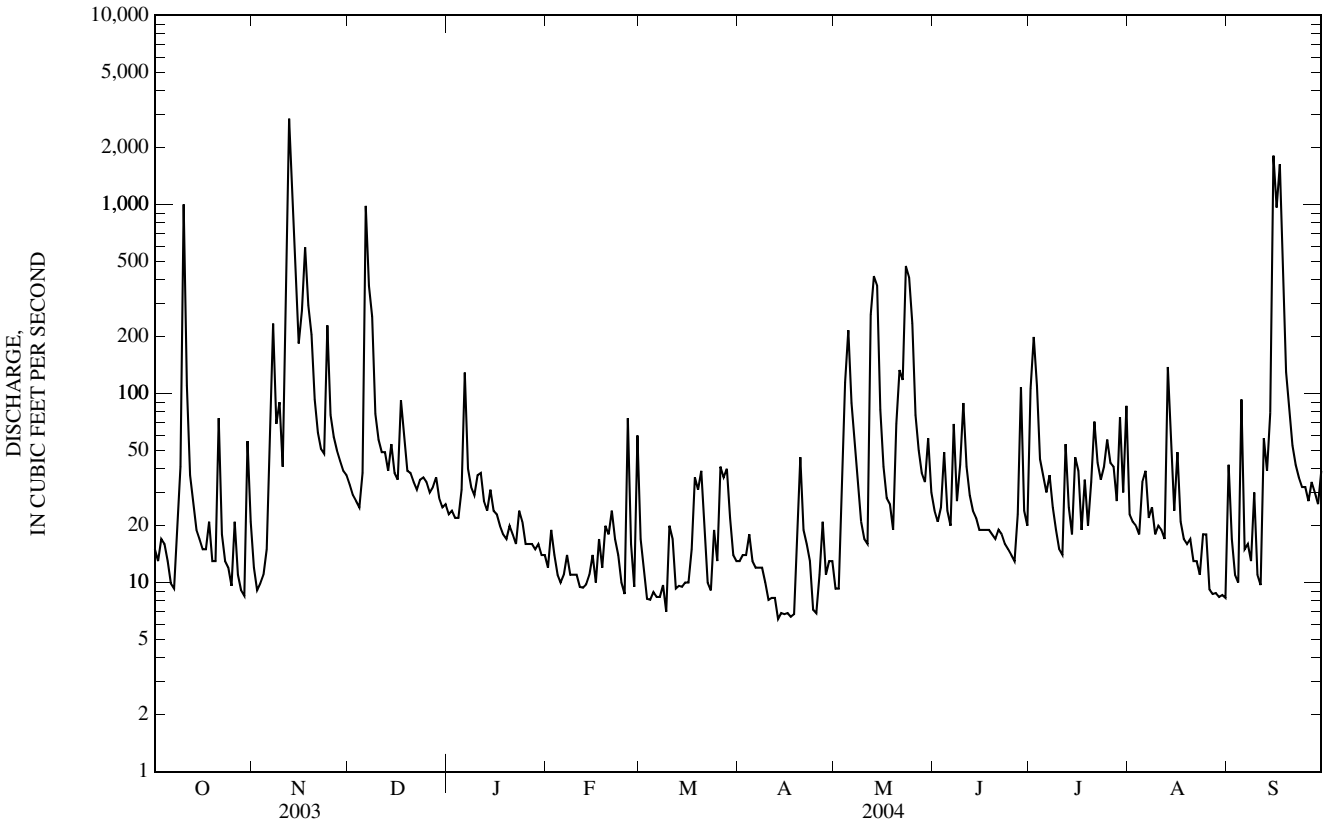
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	12	33	23	12	17	13	9.3	24	106	23	42
2	13	9.1	29	24	19	12	14	9.3	21	199	21	17
3	17	9.9	27	22	14	8.2	14	24	25	110	20	11
4	16	11	25	22	11	8.1	18	115	49	45	18	10
5	13	15	38	31	10	8.9	13	216	24	37	34	93
6	9.9	56	982	129	11	8.4	12	89	20	30	39	15
7	9.3	234	371	40	14	8.4	12	54	69	37	22	16
8	19	69	255	32	11	9.7	12	35	27	25	25	13
9	41	90	78	29	11	7.0	10	21	42	19	18	30
10	1,000	41	57	37	11	20	8.1	17	89	15	20	11
11	110	544	49	38	9.5	17	8.3	16	41	14	19	9.7
12	37	2,840	49	27	9.4	9.3	8.3	261	29	54	17	58
13	26	1,240	39	24	9.8	9.6	6.4	418	24	25	138	39
14	19	516	54	31	11	9.5	6.9	373	22	18	51	79
15	17	184	38	24	14	10	6.8	82	19	46	24	1,810
16	15	274	35	23	10	10	6.9	41	19	39	49	964
17	15	594	92	20	17	15	6.6	28	19	19	21	1,630
18	21	293	59	18	12	36	6.8	26	19	35	17	542
19	13	205	39	17	20	31	15	19	18	20	16	130
20	13	93	38	20	18	39	46	69	17	34	17	85
21	74	62	34	18	24	19	19	133	19	71	13	53
22	18	51	31	16	17	10	16	118	18	43	13	42
23	13	48	35	24	14	9.1	13	472	16	35	11	36
24	12	229	36	21	10	19	7.2	412	15	41	18	32
25	9.6	77	34	16	8.7	13	6.9	235	14	57	18	32
26	21	59	30	16	74	41	11	77	13	43	9.2	27
27	11	50	32	16	16	36	21	50	23	41	8.7	34
28	9.1	44	36	15	9.5	40	11	38	108	27	8.8	30
29	8.5	39	28	16	60	22	13	34	24	75	8.4	26
30	56	37	25	14	---	14	13	58	20	30	8.6	39
31	21	---	26	14	---	13	---	30	---	86	8.3	---
TOTAL	1,692.4	8,026.0	2,734	817	487.9	530.2	375.2	3,579.6	887	1,476	734.0	5,955.7
MEAN	54.6	268	88.2	26.4	16.8	17.1	12.5	115	29.6	47.6	23.7	199
MAX	1,000	2,840	982	129	74	41	46	472	108	199	138	1,810
MIN	8.5	9.1	25	14	8.7	7.0	6.4	9.3	13	14	8.3	9.7
AC-FT	3,360	15,920	5,420	1,620	968	1,050	744	7,100	1,760	2,930	1,460	11,810
CFSM	3.33	16.3	5.38	1.61	1.03	1.04	0.76	7.04	1.80	2.90	1.44	12.1
IN.	3.84	18.21	6.20	1.85	1.11	1.20	0.85	8.12	2.01	3.35	1.66	13.51

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 2004, BY WATER YEAR (WY)

MEAN	72.2	93.5	53.7	26.9	19.5	17.5	22.4	47.2	46.8	43.5	59.3	87.0
MAX	293	461	550	79.6	47.9	39.7	234	268	188	163	231	285
(WY)	(1986)	(1988)	(1988)	(1998)	(1984)	(1973)	(2003)	(1985)	(1979)	(1981)	(1979)	(1998)
MIN	18.9	10.5	11.0	11.4	7.21	6.04	5.17	5.02	3.86	4.61	4.71	10.8
(WY)	(2003)	(2003)	(1990)	(1976)	(1974)	(2000)	(1995)	(1990)	(2001)	(1994)	(1994)	(1987)

50056400 RIO VALENCIANO NEAR JUNCOS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1971 - 2004	
ANNUAL TOTAL	28,132.6		27,295.0			
ANNUAL MEAN	77.1		74.6		49.2	
HIGHEST ANNUAL MEAN					121	1988
LOWEST ANNUAL MEAN					17.1	1990
HIGHEST DAILY MEAN	3,050	Apr 17	2,840	Nov 12	9,100	Dec 8, 1987
LOWEST DAILY MEAN	2.7	Mar 26	6.4	Apr 13	1.2	Jun 22, 2001
ANNUAL SEVEN-DAY MINIMUM	3.7	Mar 21	7.0	Apr 12	1.6	Jun 17, 2001
MAXIMUM PEAK FLOW			12,700	Sep 15	40,000	Dec 8, 1987
MAXIMUM PEAK STAGE			16.87	Sep 15	25.63	Dec 8, 1987
ANNUAL RUNOFF (AC-FT)	55,800		54,140		35,680	
ANNUAL RUNOFF (CFSM)	4.70		4.55		3.00	
ANNUAL RUNOFF (INCHES)	63.81		61.91		40.80	
10 PERCENT EXCEEDS	114		107		73	
50 PERCENT EXCEEDS	24		22		18	
90 PERCENT EXCEEDS	7.6		9.6		6.5	



50057025 RIO GURABO NEAR GURABO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°15'56", long 65°59'04", at bridge on Highway 941, 1.2 mi (1.9 km) west-northwest from gaging station 50057000, and 1.0 mi (1.6 km) northwest of Gurabo Plaza.

DRAINAGE AREA.--62.8 mi^2 (162.7 km^2).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)
NOV													
25...	1232	110	6.8	7.1	239	25.2	75	18.0	7.34	3.86	.7	14.4	79
MAR													
09...	1430	13	4.0	7.4	431	25.9	160	36.7	15.6	4.29	1	33.2	151
JUN													
07...	1515	10	5.2	7.4	407	29.7	--	--	--	--	--	--	151
AUG													
03...	0832	510	4.3	7.0	229	27.4	68	16.9	6.24	3.32	.7	14.1	71

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)
NOV													
25...	16.0	<.2	20.2	10.5	--	137	54	1.2	.23	.87	.970	.10	.97
MAR													
09...	33.2	<.2	29.1	17.0	<.1	260	<10	1.4	.69	.66	.790	.13	.71
JUN													
07...	--	--	--	--	--	--	13	.70	.40	.81	.880	.07	.30
AUG													
03...	16.4	<.2	16.5	9.9	--	126	98	--	--	--	--	--	--

Date	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)
NOV													
25...	2.2	9.6	.32	30	25,000	E180,000	--	--	--	--	--	--	--
MAR													
09...	2.2	9.7	.24	<10	E9,000	E120,000	<2	93.1	45	<.2	<.8	M	<.01
JUN													
07...	1.6	7.0	.19	<10	7,000	25,000	--	--	--	--	--	--	--
AUG													
03...	--	--	--	20	50,000	420,000	E2	111	64	<.2	11.5	30	<.01

50057025 RIO GURABO NEAR GURABO, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
NOV 25...	--	--	--	--	--	--	--	--	--
MAR 09...	370	2.5	848	<.02	<3	<.3	5	<.10	<16
JUN 07...	--	--	--	--	--	--	--	--	--
AUG 03...	8,570	3.6	426	.02	<3	<.3	33	<.40	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50059000 LAGO LOIZA AT DAMSITE NEAR TRUJILLO ALTO, PR

LOCATION.--Lat 18°19'49", long 66°01'00", Hydrologic Unit 21010005, at pumpsite at damsite, and 1.9 mi (3.1 km) south of Trujillo Alto Plaza.

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

ELEVATION RECORDS

PERIOD OF RECORD.--December 1987 to current year. Prior to October 1994, published as Lago Loíza at Damsite.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lake is formed by the Loíza Dam, a concrete structure completed in 1954. Usable capacity of impoundment is 30,000 acre-feet (37.0 hm^3). Out flow from lake is controlled by five slide gates in power plant and pump intake structure, four sluicegates, and concrete spillway with eight radial gates. Lake is used for municipal water supply and intermittent power generation. Gage-height satellite telemetry at station. New capacity table based on U.S. Geological Survey Water-Resources Investigations Report 97-4108, November 1994.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation 147.42 ft (44.93 m), September 18, 1989; minimum elevation, 108.52 ft (33.08 m), July 18, 1994.

EXTREMES FOR CURRENT YEAR.--Maximum elevation 135.30 ft (41.24 m), May 7; minimum elevation, 130.30 ft (39.72 m), September 16.

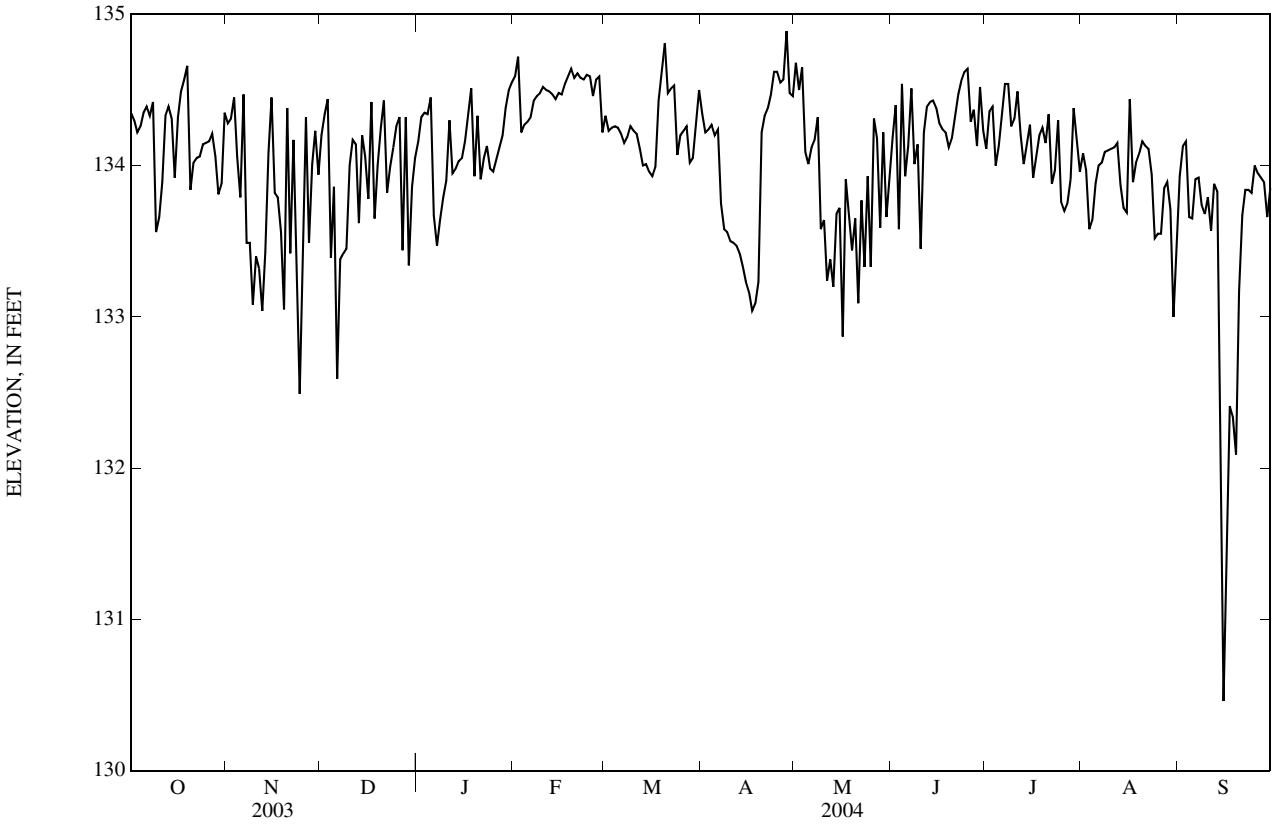
Capacity Table
(based on data from U.S. Geological Survey Water-Resources Investigations Report 97-4108, 1994)
(Elevation in ft, capacity in acre-ft)

Elevation	Contents	Elevation	Contents
75	0	125	5,861
95	73	131	9,218
115	2,205	135	11,504

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	134.35	134.28	134.20	134.16	134.59	134.33	134.34	134.68	134.19	134.11	134.08	133.93
2	134.30	134.31	134.34	134.32	134.72	134.23	134.22	134.50	134.40	134.36	133.97	134.13
3	134.22	134.45	134.44	134.35	134.22	134.25	134.24	134.65	133.58	134.39	133.58	134.16
4	134.26	134.06	133.39	134.34	134.27	134.26	134.27	134.09	134.54	134.00	133.64	133.66
5	134.35	133.79	133.86	134.45	134.29	134.25	134.20	134.01	133.93	134.13	133.88	133.65
6	134.39	134.47	132.59	133.67	134.32	134.21	134.24	134.12	134.13	134.34	134.00	133.91
7	134.33	133.49	133.38	133.47	134.43	134.15	133.75	134.17	134.51	134.54	134.02	133.92
8	134.42	133.49	133.42	133.64	134.46	134.19	133.58	134.32	134.01	134.54	134.09	133.74
9	133.56	133.08	133.45	133.79	134.48	134.26	133.56	133.58	134.14	134.26	134.10	133.68
10	133.66	133.40	134.00	133.90	134.52	134.23	133.50	133.64	133.45	134.31	134.11	133.79
11	133.89	133.32	134.17	134.30	134.50	134.21	133.49	133.24	134.22	134.49	134.12	133.57
12	134.33	133.04	134.14	133.95	134.49	134.11	133.47	133.38	134.39	134.20	134.15	133.88
13	134.39	133.43	133.62	133.98	134.47	134.00	133.42	133.20	134.42	134.01	133.87	133.83
14	134.31	134.09	134.20	134.03	134.44	134.01	133.33	133.68	134.43	134.15	133.72	132.59
15	133.92	134.45	134.06	134.05	134.48	133.96	133.23	133.72	134.38	134.27	133.69	130.46
16	134.32	133.82	133.78	134.16	134.47	133.93	133.16	132.87	134.28	133.92	134.44	131.38
17	134.49	133.79	134.42	134.35	134.54	133.99	133.04	133.91	134.24	134.05	133.89	132.41
18	134.57	133.56	133.65	134.51	134.59	134.43	133.09	133.69	134.22	134.20	134.02	132.34
19	134.66	133.05	134.00	133.93	134.64	134.62	133.23	133.44	134.12	134.25	134.08	132.09
20	133.84	134.38	134.25	134.33	134.58	134.81	134.22	133.65	134.18	134.15	134.16	133.17
21	134.02	133.42	134.43	133.91	134.61	134.48	134.33	133.09	134.32	134.34	134.13	133.67
22	134.05	134.17	133.82	134.05	134.58	134.51	134.38	133.77	134.47	133.88	134.11	133.84
23	134.06	133.47	133.99	134.13	134.57	134.53	134.47	133.33	134.56	133.97	133.94	133.84
24	134.14	132.49	134.12	133.98	134.60	134.07	134.62	133.93	134.62	134.30	133.52	133.82
25	134.15	133.61	134.26	133.96	134.59	134.20	134.62	133.33	134.64	133.76	133.55	134.00
26	134.16	134.32	134.32	134.04	134.46	134.23	134.55	134.31	134.29	133.70	133.55	133.95
27	134.21	133.49	133.44	134.12	134.57	134.26	134.57	134.18	134.37	133.75	133.85	133.92
28	134.06	134.01	134.32	134.20	134.59	134.02	134.89	133.59	134.13	133.91	133.89	133.89
29	133.81	134.23	133.34	134.38	134.22	134.05	134.48	134.22	134.52	134.38	133.71	133.66
30	133.88	133.94	133.86	134.50	---	134.29	134.46	133.66	134.23	134.16	133.00	133.85
31	134.35	---	134.05	134.55	---	134.50	---	133.91	---	133.96	133.48	---
MAX	134.66	134.47	134.44	134.55	134.72	134.81	134.89	134.68	134.64	134.54	134.44	134.16
MIN	133.56	132.49	132.59	133.47	134.22	133.93	133.04	132.87	133.45	133.70	133.00	130.46

50059000 LAGO LOIZA AT DAMSITE NEAR TRUJILLO ALTO, PR—Continued



50059000 LAGO LOIZA AT DAMSITE NEAR TRUJILLO ALTO, PR

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Sulfide water unfltrd mg/L (00745)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
NOV													
25...	1535	169	3.2	6.9	174	25.9	54	--	134	1.2	.18	.720	.08
FEB													
23...	1213	108	1.3	7.0	336	26.2	115	<.1	<10	.70	.26	.210	.02
JUN													
02...	0730	173	1.8	6.8	206	28.0	70	--	21	.70	.10	.510	.05
AUG													
03...	1310	148	.8	6.8	296	29.2	105	--	<10	--	.22	--	--

Date	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Boron, water, unfltrd recoverable, ug/L (01022)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Manganese, water, unfltrd recoverable, ug/L (01055)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
NOV													
25...	8.5	.31	10	5,100	E8,000	--	--	--	--	--	--	--	--
FEB													
23...	4.0	.06	<10	E3	27	35	M	<.01	190	333	E2	E.05	<16
JUN													
02...	5.4	.14	<10	86	240	--	--	--	--	--	--	--	--
AUG													
03...	--	.09	<10	27	58	37	<4	<.01	350	341	4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50059050 RIO GRANDE DE LOIZA BELOW DAMSITE, PR

LOCATION.--Lat 18°20'33", long 66°00'20", Hydrologic Unit 21010005, on left bank of Highway 175, 1.1 mi (1.8 km) downstream of Lago Loíza Dam.

DRAINAGE AREA.--209 mi^2 (541 km^2).

PERIOD OF RECORD.--December 1986 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 32 ft (10 m), from topographic map.

REMARKS.--Records poor. Flow regulated by Lago Loíza Dam. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

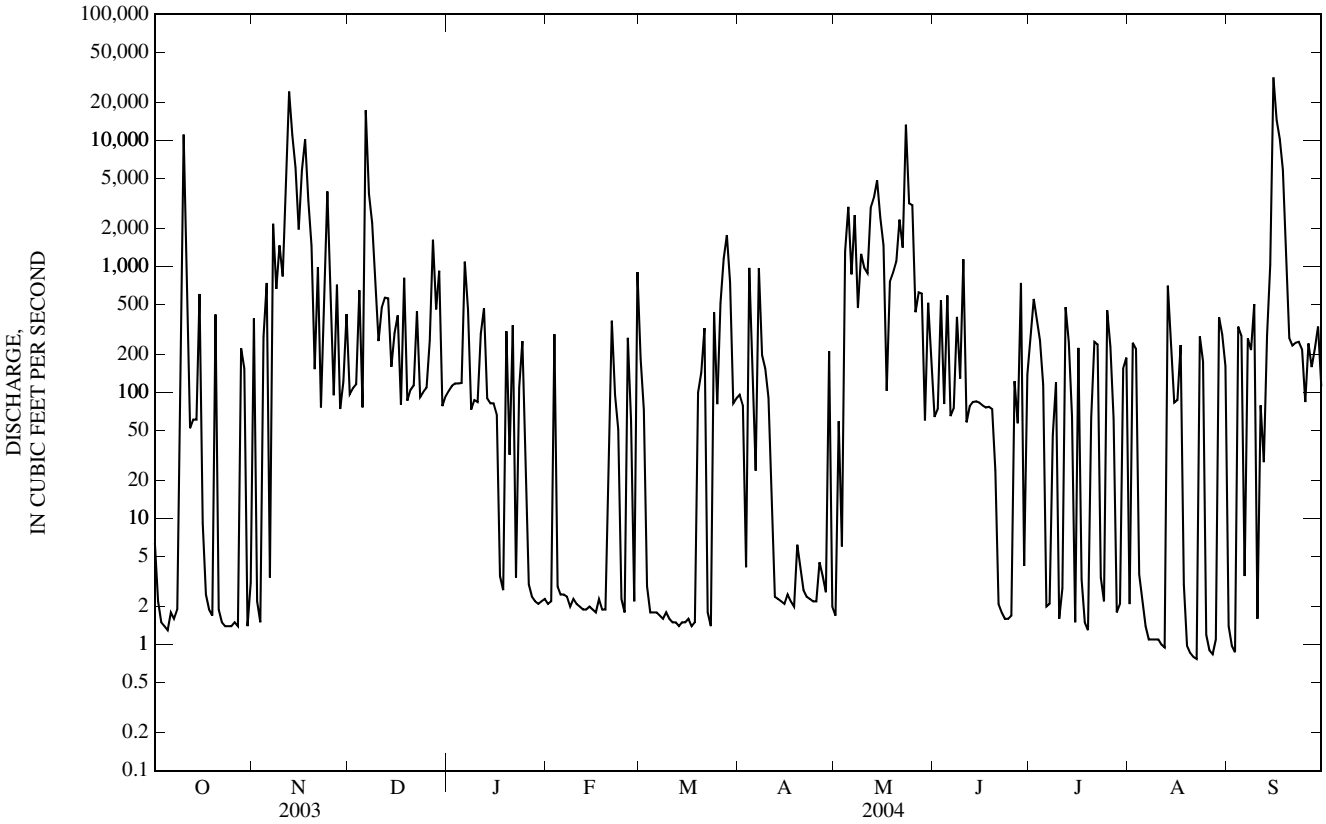
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	387	97	103	2.1	185	96	1.7	64	267	2.1	1.4
2	2.2	2.2	108	113	2.2	73	79	59	74	552	248	0.98
3	1.5	1.5	116	118	290	2.9	4.1	6.0	538	367	222	0.87
4	1.4	277	646	118	2.9	1.8	972	1,320	81	258	3.6	333
5	1.3	740	76	119	2.5	1.8	173	2,970	589	115	2.3	283
6	1.8	3.4	17,300	1,090	2.5	1.8	24	866	65	2.0	1.4	3.5
7	1.6	2,180	3,780	457	2.4	1.7	971	2,550	75	2.1	1.1	268
8	1.9	663	2,210	73	2.0	1.6	198	470	398	46	1.1	217
9	589	1,470	842	87	2.3	1.8	155	1,260	129	120	1.1	503
10	11,100	833	256	84	2.1	1.6	91	974	1,140	1.6	1.1	1.6
11	1,590	4,920	470	292	2.0	1.5	9.4	884	58	2.8	1.0	79
12	52	24,400	565	466	1.9	1.5	2.4	2,910	78	475	0.95	28
13	61	11,000	559	90	1.9	1.4	2.3	3,510	84	251	704	282
14	61	6,090	160	82	2.0	1.5	2.2	4,820	85	65	249	1,030
15	605	1,960	296	82	1.9	1.5	2.1	2,440	83	1.5	83	31,500
16	9.2	5,790	409	67	1.8	1.6	2.5	1,470	79	226	87	14,500
17	2.5	10,200	80	3.5	2.3	1.4	2.2	103	76	3.3	238	10,200
18	1.9	3,350	811	2.7	1.9	1.5	2.0	756	77	1.5	3.0	5,840
19	1.7	1,460	86	306	1.9	100	6.2	891	74	1.3	0.98	1,310
20	416	153	105	32	58	144	4.1	1,090	24	63	0.86	271
21	1.9	988	114	342	371	324	2.7	2,350	2.1	252	0.80	236
22	1.5	76	441	3.4	96	1.8	2.4	1,410	1.8	241	0.77	248
23	1.4	934	92	110	51	1.4	2.3	13,300	1.6	3.4	278	252
24	1.4	3,940	101	256	2.3	432	2.2	3,170	1.6	2.2	176	220
25	1.4	496	109	50	1.8	81	2.2	3,070	1.7	449	1.2	84
26	1.5	95	258	3.0	271	510	4.5	433	123	231	0.90	245
27	1.4	717	1,630	2.4	60	1,150	3.5	622	57	62	0.84	159
28	224	74	457	2.2	2.2	1,770	2.6	609	740	1.8	1.1	223
29	155	121	924	2.1	902	745	212	60	4.2	2.1	396	334
30	1.4	419	78	2.2	---	82	2.0	514	139	155	288	112
31	3.1	---	93	2.3	---	90	---	176	---	189	162	---
TOTAL	14,901.4	83,740.1	33,269	4,560.8	2,143.9	5,716.1	3,034.9	55,064.7	4,943.0	4,409.6	3,157.20	68,765.35
MEAN	481	2,791	1,073	147	73.9	184	101	1,776	165	142	102	2,292
MAX	11,100	24,400	17,300	1,090	902	1,770	972	13,300	1,140	552	704	31,500
MIN	1.3	1.5	76	2.1	1.8	1.4	2.0	1.7	1.6	1.3	0.77	0.87
AC-FT	29,560	166,100	65,990	9,050	4,250	11,340	6,020	109,200	9,800	8,750	6,260	136,400
CFSM	2.30	13.4	5.13	0.70	0.35	0.88	0.48	8.50	0.79	0.68	0.49	11.0
IN.	2.65	14.90	5.92	0.81	0.38	1.02	0.54	9.80	0.88	0.78	0.56	12.24

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 2004, BY WATER YEAR (WY)

MEAN	358	692	398	152	70.7	49.1	147	195	162	132	255	827
MAX	1,281	2,791	2,603	733	242	299	1,682	1,776	784	672	718	4,255
(WY)	(1999)	(2004)	(1988)	(1992)	(1989)	(1989)	(2003)	(2004)	(1987)	(1993)	(1988)	(1996)
MIN	38.8	2.38	3.04	2.49	4.52	0.87	1.20	1.03	1.96	1.62	2.21	29.7
(WY)	(2003)	(2003)	(2003)	(1995)	(1990)	(2003)	(1995)	(1995)	(1994)	(1994)	(1994)	(1990)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1987 - 2004	
ANNUAL TOTAL	218,988.60		283,706.05			
ANNUAL MEAN	600		775		288	
HIGHEST ANNUAL MEAN					775	2004
LOWEST ANNUAL MEAN					37.8	1994
HIGHEST DAILY MEAN	24,400	Nov 12	31,500	Sep 15	110,000	Sep 10, 1996
LOWEST DAILY MEAN	0.09	Apr 2	0.77	Aug 22	0.09	Apr 2, 2003
ANNUAL SEVEN-DAY MINIMUM	0.15	Mar 31	1.1	Aug 6	0.15	Mar 31, 2003
MAXIMUM PEAK FLOW			120,000	Sep 15	223,000	Sep 10, 1996
MAXIMUM PEAK STAGE			37.30	Sep 15	49.31	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	434,400		562,700		208,600	
ANNUAL RUNOFF (CFSM)	2.87		3.71		1.38	
ANNUAL RUNOFF (INCHES)	38.98		50.50		18.72	
10 PERCENT EXCEEDS	1,100		1,310		478	
50 PERCENT EXCEEDS	2.3		84		8.3	
90 PERCENT EXCEEDS	0.89		1.5		2.0	

50059050 RIO GRANDE DE LOIZA BELOW DAMSITE, PR—Continued



50059100 RIO GRANDE DE LOIZA BELOW TRUJILLO ALTO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°21'35", long 66°00'15", 100 ft (30 m) downstream of Highway 181 bridge, 0.4 mi (0.6 km) northwest of Trujillo Alto Plaza, and 2.2 mi (3.5 km) northeast of Lago Loíza Reservoir.

DRAINAGE AREA.--213 mi^2 (552 km^2).

PERIOD OF RECORD.--Water years 1981 to current year.
REMARKS: Flow controlled by Lago Loíza.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
05...	1430	89	83	6.8	7.4	256	25.4	93	23.6	8.17	2.39	.7	15.3
MAR													
15...	1445	7.3	<2.0	12.2	8.2	503	30.0	170	40.3	17.4	2.52	1	35.9
JUN													
02...	1230	123	26	7.9	7.9	274	26.9	--	--	--	--	--	--
AUG													
04...	1032	7.4	3.2	7.5	7.4	366	29.3	130	30.9	12.0	2.39	1	25.1

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
05...	85	16.2	<.2	21.3	10.9	--	149	--	11	.40	.02	.95	.960
MAR													
15...	181	38.6	<.2	32.5	18.7	.3	295	--	<10	.50	.06	.56	.590
JUN													
02...	95	--	--	--	--	--	--	--	<10	.40	.03	.57	.590
AUG													
04...	128	27.0	<.2	28.0	13.9	--	216	4.33	<10	--	--	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC													
05...	.01	.38	1.4	6.0	.12	10	360	4,200	--	--	--	--	--
MAR													
15...	.03	.44	1.1	4.8	.16	10	240	3,300	<2	39.2	66	<.2	<.8
JUN													
02...	.02	.37	.99	4.4	.09	<10	230	5,600	--	--	--	--	--
AUG													
04...	--	--	--	--	--	30	E910	6,600	<2	39.4	42	<.2	<.8

50059100 RIO GRANDE DE LOIZA BELOW TRUJILLO ALTO, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC 05...	--	--	--	--	--	--	--	--	--	--	--
MAR 15...	M	<.01	80	<1.0	86.4	<.02	<3	<.3	E3	<.10	E13
JUN 02...	--	--	--	--	--	--	--	--	--	--	--
AUG 04...	<4	<.01	140	<1.0	180	<.02	<3	<.3	<4	E.05	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50061800 RIO CANOVANAS NEAR CAMPO RICO, PR

LOCATION.--Lat 18°19'08", long 65°53'21", Hydrologic Unit 21010005, at about 100 ft upstream from bridge, on paved secondary road, 0.4 mi (0.6 km) northeast of junction of Highways 185 and 186, 1.5 mi (2.4 km) south of Campo Rico, and 4.4 mi (7.1 km) south of Loíza.

DRAINAGE AREA.--9.84 mi^2 (25.5 km^2).

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 225 ft (68 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	39	26	26	12	51	25	13	33	20	13	51
2	14	16	24	42	12	21	20	13	32	19	15	17
3	9.0	11	21	34	12	15	19	15	31	22	13	10
4	10	30	20	34	12	13	67	68	29	17	11	41
5	12	e119	21	37	12	11	29	41	27	22	15	32
6	10	e116	163	68	12	11	19	23	25	15	13	15
7	7.0	e116	106	44	16	10	19	36	32	19	11	11
8	7.1	e159	85	30	12	9.7	18	24	32	14	9.9	11
9	48	e243	59	26	12	9.5	17	118	34	13	10	74
10	575	e91	39	26	12	9.2	17	157	194	12	11	14
11	65	e231	39	40	12	9.2	15	140	35	53	11	11
12	29	e1,500	53	32	11	8.8	14	265	27	99	9.5	90
13	19	e784	38	23	10	8.4	13	214	24	33	16	39
14	17	e228	63	22	10	9.0	12	150	24	18	15	52
15	14	e121	35	21	10	10	12	246	21	14	10	1,690
16	13	e402	30	20	11	11	12	92	20	15	15	268
17	12	e716	35	19	12	11	12	67	22	13	11	284
18	14	e196	33	19	11	30	11	114	22	16	11	107
19	16	89	26	18	9.7	17	12	84	18	13	33	65
20	12	72	26	17	12	17	33	122	17	20	25	50
21	10	60	23	17	60	16	16	108	21	22	10	42
22	11	51	23	16	22	11	14	82	20	17	9.1	38
23	9.5	51	22	16	14	9.7	12	190	17	13	8.7	34
24	9.8	65	20	16	12	12	12	130	16	23	8.0	31
25	9.1	52	21	15	11	19	11	150	16	24	8.0	29
26	11	38	22	15	44	64	10	73	18	27	8.5	26
27	11	33	92	14	20	138	19	58	23	16	8.5	26
28	58	31	94	14	12	276	60	49	42	15	8.2	24
29	21	28	76	13	64	113	36	43	20	24	8.9	23
30	11	26	45	13	---	43	18	40	18	29	9.0	22
31	13	---	32	13	---	35	---	36	---	20	19	---
TOTAL	1,082.5	5,714	1,412	760	491.7	1,028.5	604	2,961	910	697	384.3	3,227
MEAN	34.9	190	45.5	24.5	17.0	33.2	20.1	95.5	30.3	22.5	12.4	108
MAX	575	1,500	163	68	64	276	67	265	194	99	33	1,690
MIN	5.0	11	20	13	9.7	8.4	10	13	16	12	8.0	10
AC-FT	2,150	11,330	2,800	1,510	975	2,040	1,200	5,870	1,800	1,380	762	6,400
CFSM	3.55	19.4	4.63	2.49	1.72	3.37	2.05	9.71	3.08	2.28	1.26	10.9
IN.	4.09	21.60	5.34	2.87	1.86	3.89	2.28	11.19	3.44	2.63	1.45	12.20

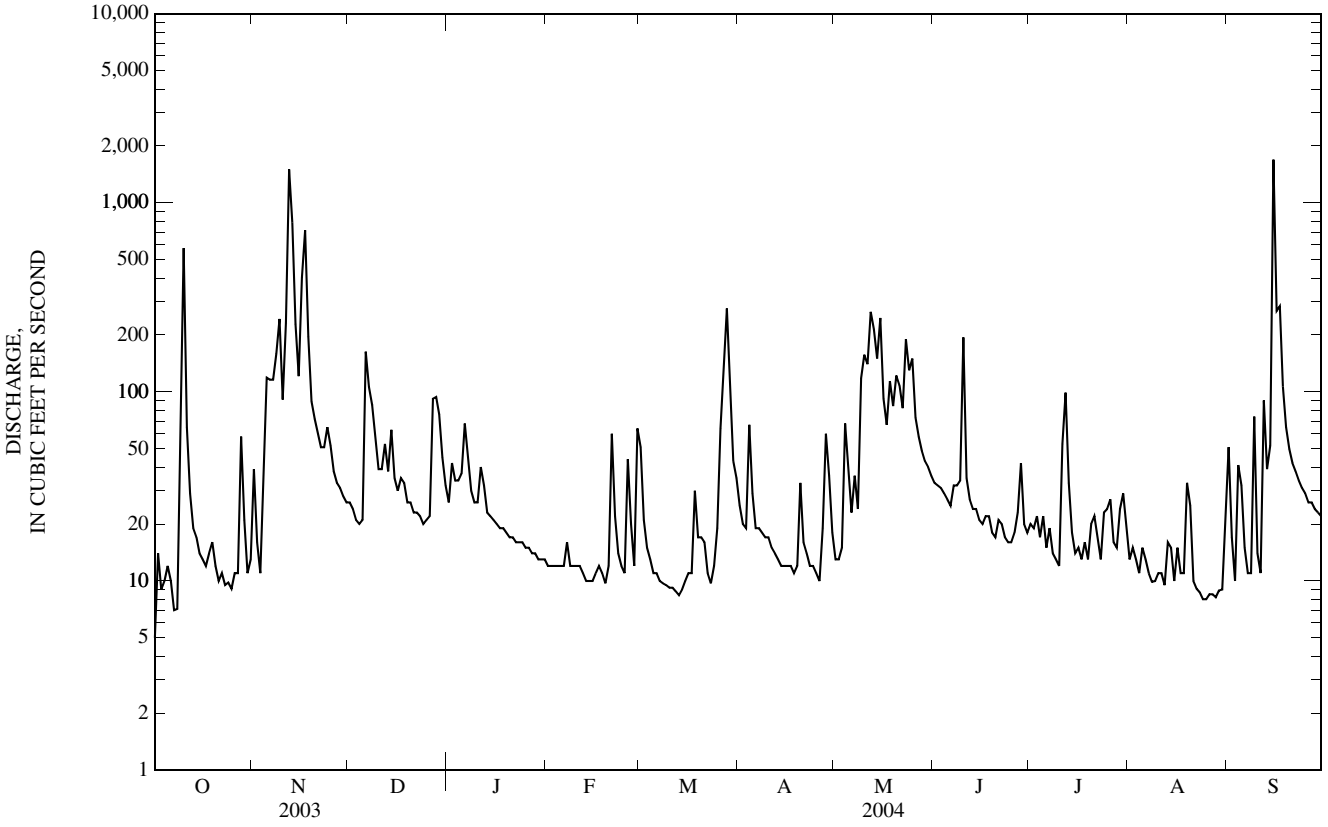
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2004, BY WATER YEAR (WY)

MEAN	40.0	49.7	34.7	25.4	19.0	13.9	17.5	27.6	17.3	17.5	25.5	41.1
MAX	273	190	116	62.4	48.4	36.2	96.6	95.5	63.7	63.7	137	196
(WY)	(1971)	(2004)	(1971)	(1969)	(1988)	(1969)	(2003)	(2004)	(1970)	(1979)	(1979)	(1996)
MIN	6.74	6.66	5.82	6.66	4.04	3.54	4.36	4.28	2.80	3.72	5.69	5.20
(WY)	(1968)	(1981)	(1968)	(1977)	(1977)	(1977)	(1994)	(1974)	(1974)	(1974)	(1991)	(1967)

50061800 RIO CANOVANAS NEAR CAMPO RICO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1967 - 2004	
ANNUAL TOTAL	14,622.1		19,272.0			
ANNUAL MEAN	40.1		52.7		27.7	
HIGHEST ANNUAL MEAN					58.0	1971
LOWEST ANNUAL MEAN					10.5	1994
HIGHEST DAILY MEAN	1,500	Nov 12	1,690	Sep 15	4,230	Sep 10, 1996
LOWEST DAILY MEAN	3.7	Mar 26	5.0	Oct 1	0.80	Jul 24, 1977
ANNUAL SEVEN-DAY MINIMUM	4.0	Mar 23	8.4	Aug 23	1.5	Jul 18, 1977
MAXIMUM PEAK FLOW			13,400	Sep 15	17,300	Sep 21, 1998
MAXIMUM PEAK STAGE			14.75	Sep 15	15.90	Sep 21, 1998
INSTANTANEOUS LOW FLOW					0.80	Jul 24, 1977
ANNUAL RUNOFF (AC-FT)	29,000		38,230		20,050	
ANNUAL RUNOFF (CFSM)	4.07		5.35		2.81	
ANNUAL RUNOFF (INCHES)	55.28		72.86		38.21	
10 PERCENT EXCEEDS	82		106		46	
50 PERCENT EXCEEDS	11		20		12	
90 PERCENT EXCEEDS	4.9		10		5.2	

e Estimated



50063440 QUEBRADA SONADORA NEAR EL VERDE, PR

LOCATION.--Lat 18°19'24", long 65°49'03", Hydrologic Unit 21010005, in Caribbean National Forest at El Yunque, 0.6 mi (1.0 km) upstream from Río Espíritu Santo, 0.2 mi (0.3 km) upstream from Highway 186, and about 1.2 mi (1.9 km) south of El Verde.

DRAINAGE AREA.--1.01 mi^2 (2.62 km^2).

PERIOD OF RECORD.--March 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,230 ft (375 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	0.93	4.6	4.4	1.6	13	3.9	3.8	e3.3	7.1	2.6	e7.0
2	1.6	1.2	3.1	12	1.7	16	3.4	5.1	e2.9	5.3	4.0	e5.4
3	1.3	2.4	4.2	5.9	1.8	3.5	3.8	11	e5.0	10	2.5	e1.8
4	1.2	5.8	6.5	4.4	1.9	2.8	17	45	7.0	3.9	2.7	11
5	1.1	28	16	8.4	2.2	2.3	4.0	41	9.6	4.0	3.8	27
6	0.98	27	69	26	9.6	2.1	2.8	6.9	8.9	3.0	2.3	3.7
7	0.92	20	19	8.1	25	1.9	2.6	4.2	28	17	2.1	6.6
8	1.0	37	39	5.3	4.6	1.8	5.3	4.0	20	3.2	2.4	3.5
9	12	35	10	5.5	5.0	1.7	2.4	108	55	2.6	3.1	7.2
10	41	19	6.1	5.7	5.3	3.5	2.2	76	52	2.3	6.3	2.4
11	4.1	43	7.8	15	3.5	2.7	2.1	86	13	15	4.8	2.7
12	2.4	143	4.7	5.2	6.8	1.8	2.0	90	5.6	35	2.1	17
13	2.3	91	5.5	4.0	2.6	1.6	2.0	60	4.5	4.6	14	4.5
14	1.6	26	29	4.4	2.9	11	2.0	65	4.0	5.9	4.9	27
15	1.3	14	4.9	3.8	11	9.4	1.7	42	3.6	5.1	3.5	195
16	1.2	48	4.0	3.4	8.1	5.0	1.6	33	3.2	16	4.0	65
17	1.1	67	15	3.1	21	18	1.5	14	9.2	3.5	2.7	42
18	2.5	31	6.7	3.0	3.6	31	1.5	38	4.8	8.2	12	25
19	2.1	e12	4.0	2.8	2.8	11	1.6	47	3.3	3.9	3.3	6.9
20	1.1	e8.0	3.6	2.7	7.2	27	3.1	48	2.9	23	2.6	4.9
21	2.4	e6.2	3.3	2.5	42	4.9	1.8	45	3.0	14	2.0	4.1
22	1.1	e5.0	3.1	2.4	5.9	3.4	1.7	32	2.9	4.0	1.8	4.0
23	0.89	e5.2	3.0	2.3	3.2	2.7	2.1	49	2.6	2.9	1.6	3.5
24	0.88	e19	3.2	2.3	2.7	19	2.1	18	2.4	16	e2.1	3.1
25	0.72	5.4	19	2.1	2.2	18	2.1	24	2.3	17	e1.4	3.0
26	1.2	e3.6	11	2.0	3.5	30	1.6	6.7	2.8	6.6	e2.5	2.7
27	1.1	e3.7	27	2.1	2.8	38	25	5.5	21	12	e5.2	2.8
28	5.5	e11	33	2.0	1.9	88	2.6	4.7	22	4.3	e4.8	2.9
29	3.8	e3.1	11	1.8	33	50	4.6	4.3	4.0	3.6	e3.0	2.5
30	1.2	4.0	6.8	1.7	---	6.9	3.5	5.3	4.8	3.3	e1.3	5.6
31	0.88	---	4.6	1.6	---	4.8	---	4.2	---	2.8	e5.8	---
TOTAL	104.07	725.53	387.7	155.9	225.4	432.8	113.6	1,026.7	313.6	265.1	117.2	499.8
MEAN	3.36	24.2	12.5	5.03	7.77	14.0	3.79	33.1	10.5	8.55	3.78	16.7
MAX	41	143	69	26	42	88	25	108	55	35	14	195
MIN	0.72	0.93	3.0	1.6	1.6	1.6	1.5	3.8	2.3	2.3	1.3	1.8
AC-FT	206	1,440	769	309	447	858	225	2,040	622	526	232	991
CFSM	3.32	23.9	12.4	4.98	7.70	13.8	3.75	32.8	10.3	8.47	3.74	16.5
IN.	3.83	26.72	14.28	5.74	8.30	15.94	4.18	37.82	11.55	9.76	4.32	18.41

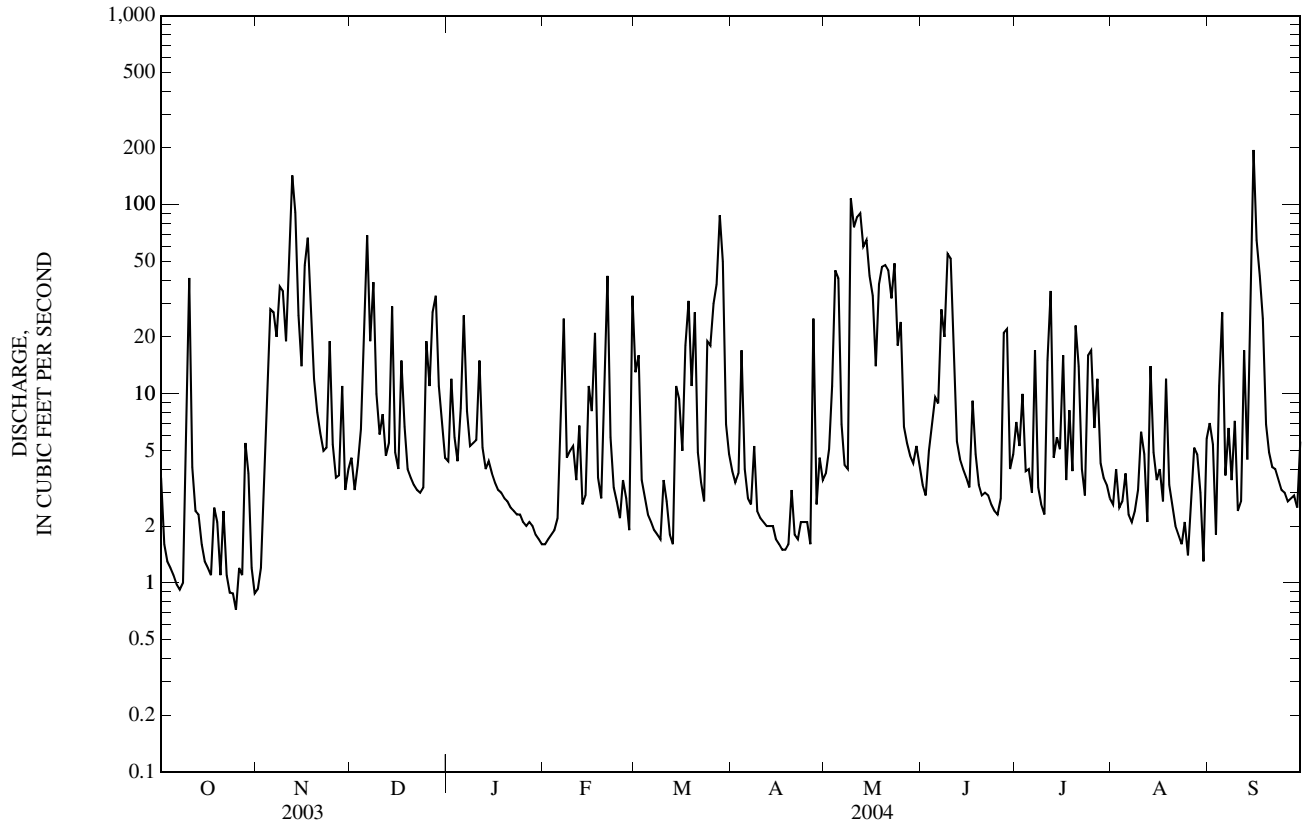
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2004, BY WATER YEAR (WY)

MEAN	5.55	9.98	9.51	7.11	5.88	4.93	5.59	8.14	5.71	5.95	7.22	7.89
MAX	16.8	24.2	22.3	14.1	11.9	14.3	18.1	33.1	13.7	12.7	14.2	23.2
(WY)	(1986)	(2004)	(2000)	(2002)	(1988)	(1990)	(2003)	(2004)	(1987)	(1983)	(1988)	(1998)
MIN	0.22	2.47	0.92	3.42	1.56	0.93	0.90	2.00	0.98	1.90	0.50	2.45
(WY)	(1993)	(1991)	(1990)	(1985)	(1992)	(2003)	(1997)	(1999)	(1985)	(2000)	(1993)	(1986)

50063440 QUEBRADA SONADORA NEAR EL VERDE, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1983 - 2004	
ANNUAL TOTAL	3,148.13		4,367.40			
ANNUAL MEAN	8.63		11.9		6.93	
HIGHEST ANNUAL MEAN					11.9	2004
LOWEST ANNUAL MEAN					3.91	1994
HIGHEST DAILY MEAN	146	Apr 17	195	Sep 15	346	Sep 10, 1996
LOWEST DAILY MEAN	0.48	Mar 29	0.72	Oct 25	0.00	Aug 14, 1993
ANNUAL SEVEN-DAY MINIMUM	0.73	Mar 25	1.2	Oct 2	0.01	Mar 31, 1994
MAXIMUM PEAK FLOW			1,420	Sep 15	2,230	Dec 7, 1987
MAXIMUM PEAK STAGE			8.84	Sep 15	9.42	Dec 7, 1987
INSTANTANEOUS LOW FLOW			0.69	Oct 25	0.00	Aug 13, 1993
ANNUAL RUNOFF (AC-FT)	6,240		8,660		5,020	
ANNUAL RUNOFF (CFSM)	8.54		11.8		6.86	
ANNUAL RUNOFF (INCHES)	115.95		160.86		93.16	
10 PERCENT EXCEEDS	24		33		17	
50 PERCENT EXCEEDS	3.4		4.2		2.8	
90 PERCENT EXCEEDS	1.0		1.7		0.61	

e Estimated



THIS PAGE IS INTENTIONALLY BLANK

Figure 18. Northeastern river basins -- Río Herrera to Río Antón Ruíz basins.

50063800 RIO ESPIRITU SANTO NEAR RIO GRANDE, PR

LOCATION.--Lat 18°21'37", long 65°48'49", Hydrologic Unit 21010005, on upstream left side of bridge on Highway 966, 0.1 mi (0.2 km) upstream from Quebrada Jiménez, and 1.9 mi (3.1 km) southeast of Río Grande.

DRAINAGE AREA.--8.62 mi^2 (22.33 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1959 to April 1963 (annual low flow and occasional measurements only), August 1966 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 40 ft (12 m), from topographic map.

REMARKS.--Records poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	15	59	32	17	78	33	19	37	37	25	36
2	20	17	44	47	17	62	29	33	35	47	30	31
3	18	19	46	40	18	31	34	40	40	52	24	19
4	18	37	45	31	17	23	92	271	43	30	29	45
5	17	140	77	57	18	20	43	160	54	32	38	80
6	17	172	557	131	21	18	30	53	38	25	24	31
7	16	144	122	58	79	18	52	37	95	63	23	38
8	18	163	169	36	32	18	46	36	69	26	23	20
9	45	192	81	38	27	18	28	828	494	21	34	43
10	230	130	57	32	31	21	26	550	422	20	30	20
11	42	337	67	64	22	28	24	379	75	34	44	20
12	28	2,280	52	36	30	21	23	1,040	48	273	20	89
13	23	802	46	29	20	20	22	335	40	43	58	39
14	20	182	168	31	19	36	22	335	36	37	37	82
15	18	120	51	27	36	52	20	285	34	38	26	e1,890
16	17	246	42	25	34	41	20	130	34	60	29	e572
17	16	927	67	24	70	47	19	76	61	33	22	e311
18	18	175	55	23	27	104	18	183	49	40	40	e114
19	21	127	39	22	21	42	17	353	37	32	32	e50
20	16	91	37	22	22	111	27	229	32	100	27	e36
21	18	77	33	21	183	45	20	191	33	71	19	e33
22	15	70	32	21	48	28	19	138	32	40	17	29
23	14	75	30	20	25	22	18	261	30	30	16	24
24	15	156	33	20	22	50	21	92	28	61	18	22
25	14	83	77	19	18	86	22	123	31	81	17	22
26	19	58	58	19	31	132	18	61	34	49	20	22
27	15	52	135	19	26	219	113	51	73	62	28	29
28	33	65	132	19	18	718	27	45	97	38	27	30
29	26	47	80	18	115	210	33	41	31	37	21	30
30	17	50	48	18	---	52	31	45	35	32	17	31
31	14	---	35	17	---	38	---	42	---	27	33	---
TOTAL	849	7,049	2,574	1,016	1,064	2,409	947	6,462	2,197	1,571	848	3,838
MEAN	27.4	235	83.0	32.8	36.7	77.7	31.6	208	73.2	50.7	27.4	128
MAX	230	2,280	557	131	183	718	113	1,040	494	273	58	1,890
MIN	14	15	30	17	17	18	17	19	28	20	16	19
AC-FT	1,680	13,980	5,110	2,020	2,110	4,780	1,880	12,820	4,360	3,120	1,680	7,610
CFSM	3.18	27.3	9.63	3.80	4.26	9.02	3.66	24.2	8.50	5.88	3.17	14.8
IN.	3.66	30.42	11.11	4.38	4.59	10.40	4.09	27.89	9.48	6.78	3.66	16.56

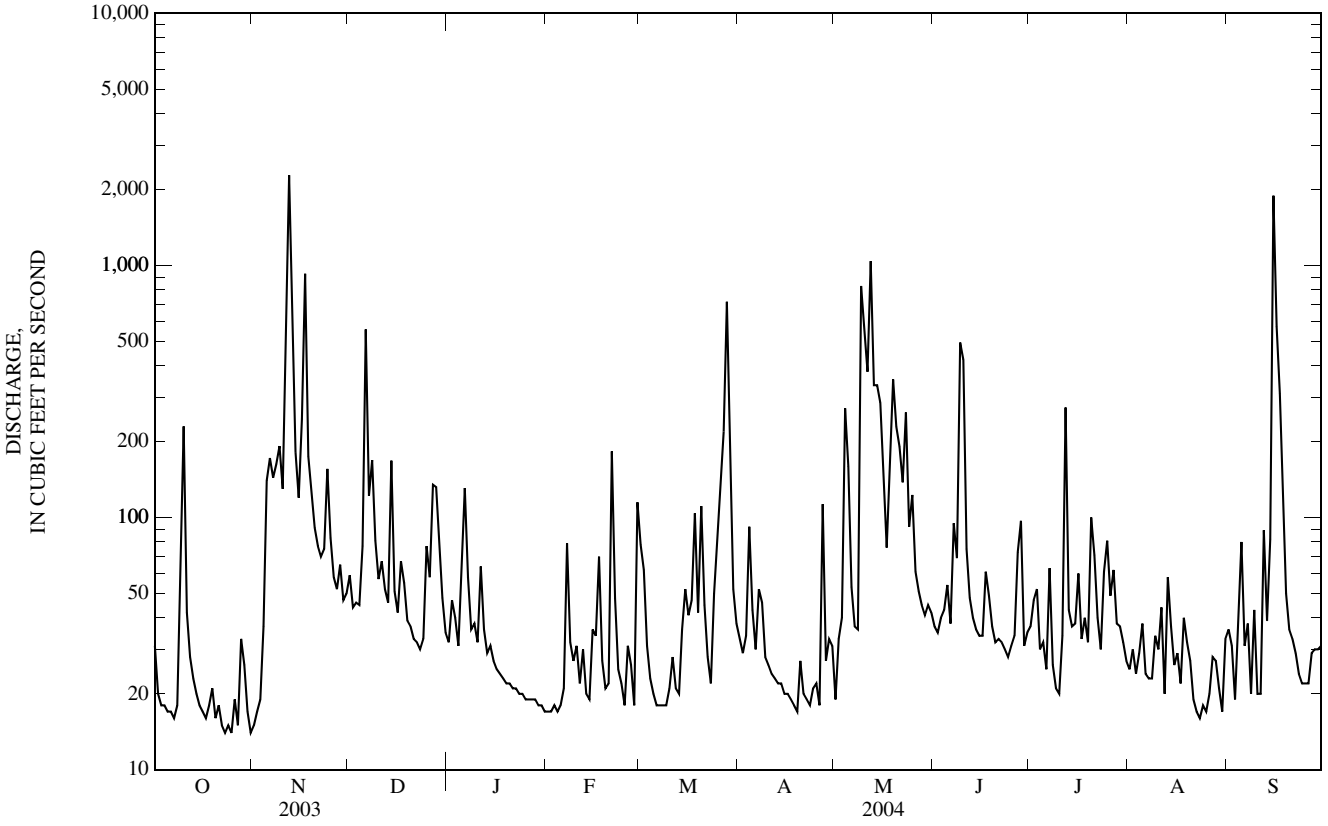
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2004, BY WATER YEAR (WY)

MEAN	60.1	91.4	79.0	55.4	49.0	38.5	47.0	66.5	45.1	50.6	62.3	64.1
MAX	202	235	248	119	117	153	159	208	120	114	126	235
(WY)	(1971)	(2004)	(1999)	(1969)	(1982)	(1990)	(2003)	(2004)	(1970)	(1983)	(1998)	(1998)
MIN	12.3	23.8	16.8	18.5	10.8	9.53	6.27	14.9	10.0	11.1	18.5	17.7
(WY)	(1969)	(2003)	(1994)	(1977)	(1983)	(1996)	(1984)	(1973)	(1975)	(1975)	(1994)	(1971)

50063800 RIO ESPIRITU SANTO NEAR RIO GRANDE, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1966 - 2004	
ANNUAL TOTAL	24,064.4		30,824			
ANNUAL MEAN	65.9		84.2		59.2	
HIGHEST ANNUAL MEAN					98.6	1979
LOWEST ANNUAL MEAN					21.6	1994
HIGHEST DAILY MEAN	2,280	Nov 12	2,280	Nov 12	2,600	Dec 7, 1987
LOWEST DAILY MEAN	8.4	Mar 29	14	Oct 23	3.6	Apr 2, 1996
ANNUAL SEVEN-DAY MINIMUM	10	Mar 25	16	Oct 21	4.0	May 28, 1999
MAXIMUM PEAK FLOW			15,700	Nov 17	21,200	Aug 13, 1990
MAXIMUM PEAK STAGE			13.99	Nov 17	16.62	Aug 13, 1990
ANNUAL RUNOFF (AC-FT)	47,730		61,140		42,870	
ANNUAL RUNOFF (CFSM)	7.65		9.77		6.87	
ANNUAL RUNOFF (INCHES)	103.85		133.02		93.28	
10 PERCENT EXCEEDS	123		164		123	
50 PERCENT EXCEEDS	27		34		27	
90 PERCENT EXCEEDS	14		18		10	

e Estimated



50063800 RIO ESPIRITU SANTO NEAR RIO GRANDE, PR

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958, 1961-66, 1968 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
09...	1315	75	13	8.5	7.2	84	23.1	27	5.96	3.05	.42	.5	6.32
APR													
05...	1205	37	8.7	9.0	7.3	82	22.7	25	5.39	2.84	.47	.6	6.56
JUN													
14...	1215	37	2.4	7.9	7.8	109	26.8	--	--	--	--	--	--
AUG													
12...	0907	20	3.9	8.2	7.7	106	26.1	33	7.31	3.57	.43	.5	7.20

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Phosphorus, water, unfltrd mg/L (00665)
DEC													
09...	25	8.13	<.2	13.5	1.9	54	11.0	<10	<.20	<.01	.090	<.01	<.02
APR													
05...	25	7.35	<.2	14.1	2.0	53	--	<10	--	--	--	--	--
JUN													
14...	37	--	--	--	--	--	--	<10	<.20	<.01	.040	<.01	<.02
AUG													
12...	34	9.20	<.2	16.8	2.2	68	3.72	<10	--	.03	--	--	.01

Date	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)
DEC													
09...	<10	E140	E3,600	--	--	--	--	--	--	--	--	--	--
APR													
05...	<10	--	--	<2	4.4	15	<.2	E.4	<4	<.01	310	<1.0	9.5
JUN													
14...	<10	400	2,600	--	--	--	--	--	--	--	--	--	--
AUG													
12...	<10	270	890	<2	5.8	18	<.2	E.4	<4	<.01	290	<1.0	16.1

Date	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
DEC						
09...	--	--	--	--	--	--
APR						
05...	<.02	<3	<.3	<4	<.10	<16
JUN						
14...	--	--	--	--	--	--
AUG						
12...	<.02	<3	<.3	E2	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

50064200 RIO GRANDE NEAR EL VERDE, PR

LOCATION.--Lat 18°20'42", long 65°50'30", Hydrologic Unit 21010005, on left bank 250 ft (7.6 m) about 350 ft upstream side of bridge at Highway 960, 0.05 mi (0.08 km) southwest of junction of Highways 956 and 960, 1.1 mi (1.8 km) west of El Verde, and 2.7 mi (4.3 km) south of Río Grande.

DRAINAGE AREA.--7.31 mi^2 (18.9 km^2).

PERIOD OF RECORD.--May 1967 to December 1970, January 1972 to September 1982, August 1990 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 131 ft (40 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	18	38	25	11	108	24	14	29	55	14	21
2	16	11	28	40	11	45	20	20	26	36	21	15
3	15	10	25	44	11	24	28	56	33	53	14	10
4	14	50	28	32	11	16	93	283	38	29	19	79
5	12	146	38	69	11	13	30	133	50	37	22	63
6	10	143	397	151	12	12	19	35	27	20	13	20
7	9.6	142	178	54	42	11	19	23	48	42	12	14
8	10	190	180	32	17	10	22	29	48	18	12	34
9	88	280	72	26	14	10	16	411	228	14	13	120
10	577	104	40	23	23	10	15	423	453	13	14	13
11	50	249	38	74	15	9.6	14	425	50	60	21	12
12	26	1,620	34	33	12	9.3	13	791	31	232	11	217
13	22	844	32	23	10	9.1	12	474	26	41	39	54
14	26	242	144	21	11	12	12	426	23	24	30	116
15	14	128	34	19	13	21	12	460	21	17	16	1,980
16	14	433	27	18	14	25	11	195	20	34	20	590
17	13	770	49	17	36	30	11	102	24	18	14	333
18	e18	206	37	16	15	74	10	241	23	17	21	125
19	17	120	25	15	11	27	10	250	17	14	17	58
20	11	70	24	15	12	79	23	251	16	85	e14	41
21	10	55	21	14	207	33	14	266	23	51	12	35
22	9.8	50	19	14	41	16	13	165	19	22	10	32
23	9.5	54	18	14	16	12	12	269	15	14	9.2	27
24	9.8	117	18	14	12	18	10	145	14	70	9.0	24
25	9.0	63	35	13	10	83	11	263	15	77	9.0	24
26	11	38	32	12	58	199	10	69	20	43	9.9	21
27	12	33	205	12	21	297	80	51	74	36	13	19
28	83	34	246	12	12	540	24	43	140	21	10	19
29	20	28	104	12	187	190	37	38	24	55	8.7	18
30	12	30	54	12	---	44	29	36	33	27	8.6	18
31	12	---	30	11	---	30	---	33	---	18	18	---
TOTAL	1,178.7	6,278	2,250	887	876	2,017.0	654	6,420	1,608	1,293	474.4	4,152
MEAN	38.0	209	72.6	28.6	30.2	65.1	21.8	207	53.6	41.7	15.3	138
MAX	577	1,620	397	151	207	540	93	791	453	232	39	1,980
MIN	9.0	10	18	11	10	9.1	10	14	14	13	8.6	10
AC-FT	2,340	12,450	4,460	1,760	1,740	4,000	1,300	12,730	3,190	2,560	941	8,240
CFSM	5.20	28.6	9.93	3.91	4.13	8.90	2.98	28.3	7.33	5.71	2.09	18.9
IN.	6.00	31.95	11.45	4.51	4.46	10.26	3.33	32.67	8.18	6.58	2.41	21.13

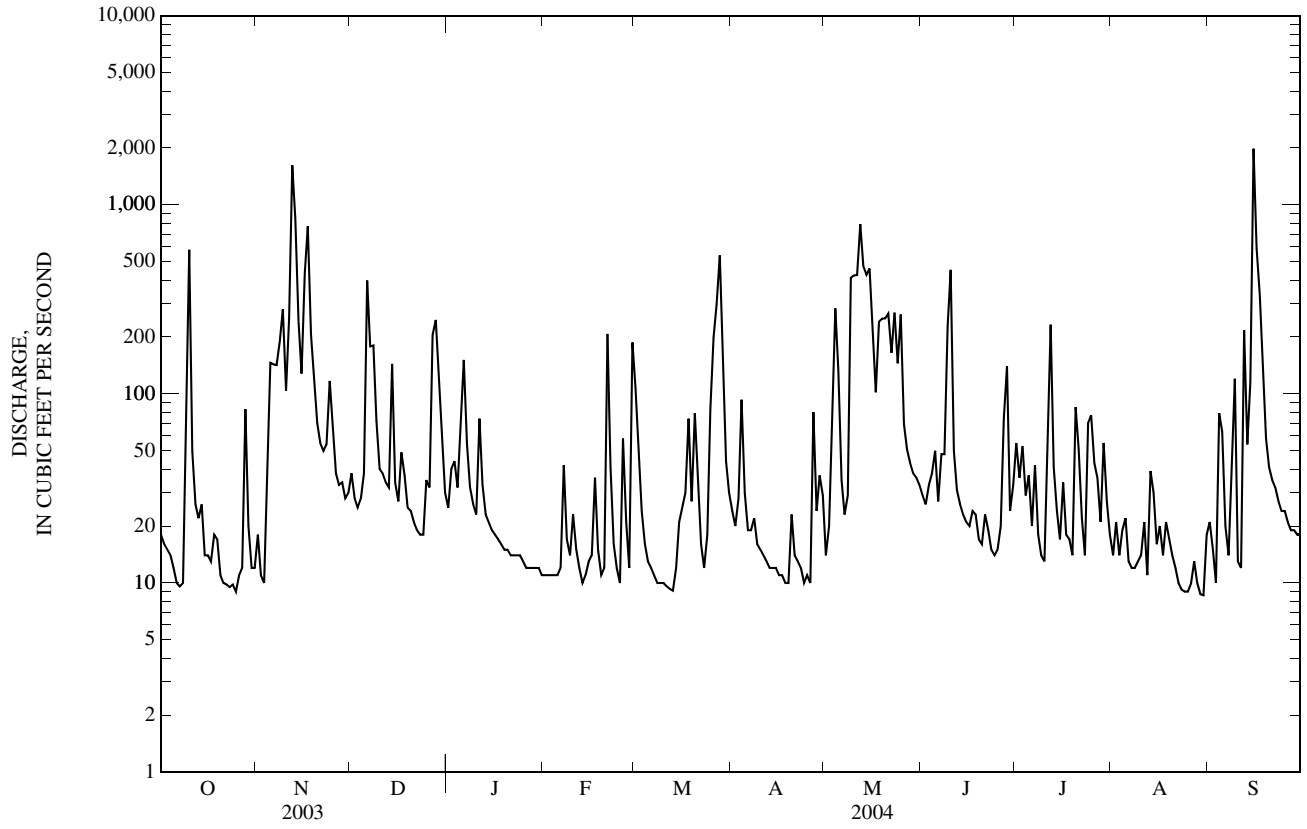
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2004, BY WATER YEAR (WY)

MEAN	53.7	72.3	53.7	43.5	30.4	21.4	31.2	51.3	29.7	33.9	44.1	53.4
MAX	392	209	140	151	76.4	65.1	125	207	86.5	109	90.0	153
(WY)	(1971)	(2004)	(1971)	(1969)	(1969)	(2004)	(2003)	(2004)	(1968)	(1969)	(1968)	(1975)
MIN	8.45	14.3	12.0	10.1	5.80	4.50	6.29	10.2	6.22	8.66	7.39	12.4
(WY)	(1969)	(1981)	(1998)	(1977)	(1977)	(1977)	(1995)	(1974)	(1975)	(1994)	(1991)	(1967)

50064200 RIO GRANDE NEAR EL VERDE, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1967 - 2004	
ANNUAL TOTAL	20,228.2		28,088.1			
ANNUAL MEAN	55.4		76.7		42.0	
HIGHEST ANNUAL MEAN					87.1	1969
LOWEST ANNUAL MEAN					17.3	1994
HIGHEST DAILY MEAN	1,620	Nov 12	1,980	Sep 15	3,470	May 21, 1969
LOWEST DAILY MEAN	4.4	Apr 1	8.6	Aug 30	2.2	Aug 15, 1991
ANNUAL SEVEN-DAY MINIMUM	4.9	Mar 26	9.7	Aug 24	2.5	Aug 10, 1991
MAXIMUM PEAK FLOW			19,600	Sep 15	22,000	Sep 21, 1998
MAXIMUM PEAK STAGE			18.79	Sep 15	19.30	Sep 21, 1998
INSTANTANEOUS LOW FLOW			7.6	Aug 29	1.6	Mar 13, 1977
ANNUAL RUNOFF (AC-FT)	40,120		55,710		30,450	
ANNUAL RUNOFF (CFSM)	7.58		10.5		5.75	
ANNUAL RUNOFF (INCHES)	102.94		142.94		78.12	
10 PERCENT EXCEEDS	136		201		82	
50 PERCENT EXCEEDS	16		24		17	
90 PERCENT EXCEEDS	6.1		11		6.8	

e Estimated



50065500 RIO MAMEYES NEAR SABANA, PR

LOCATION.--Lat 18°19'46", long 65°45'04", Hydrologic Unit 21010005, on left bank, at bridge on Highway 988, 1.4 mi (2.3 km) west of Sabana, 2.0 mi (3.2 km) downstream from Río de la Mina, and 3.2 mi (5.1 km) southeast of Mameyes.

DRAINAGE AREA.--6.88 mi^2 (17.8 km^2).

PERIOD OF RECORD.--August 1967 to December 1973, June 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 275 ft (84 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	13	71	34	16	104	38	18	46	48	21	56
2	19	16	41	43	23	58	30	29	45	56	22	36
3	17	29	47	36	18	34	27	39	48	55	20	32
4	17	70	43	34	18	28	68	213	48	54	20	70
5	15	146	96	36	18	25	28	157	51	50	25	208
6	14	141	403	121	24	23	21	48	58	45	19	62
7	20	139	191	52	121	22	74	48	131	74	18	58
8	17	196	176	32	29	21	57	44	96	42	20	32
9	102	262	98	30	29	20	31	156	189	39	22	37
10	251	160	71	60	31	53	21	241	226	39	25	24
11	41	342	210	96	21	33	18	174	84	74	30	24
12	39	1,230	79	41	27	22	17	384	56	127	18	36
13	29	513	77	33	19	20	16	319	48	48	70	32
14	21	230	228	38	18	57	15	303	42	48	38	97
15	19	167	70	31	39	82	14	184	39	45	24	1,400
16	17	279	54	27	42	47	14	124	36	57	28	515
17	17	349	84	25	93	83	13	85	50	34	21	284
18	33	301	55	24	30	178	15	273	43	50	e87	154
19	22	172	42	23	24	67	19	236	35	33	48	98
20	17	99	38	22	31	143	48	297	33	95	28	79
21	23	76	34	21	211	57	24	234	35	51	21	63
22	16	63	31	21	59	38	20	202	33	34	18	56
23	15	62	30	22	34	30	18	313	39	28	17	49
24	18	175	52	20	27	100	18	185	45	39	20	42
25	14	78	103	19	29	157	25	236	42	68	20	40
26	21	53	71	19	55	181	15	99	41	38	36	35
27	20	47	150	19	29	171	145	78	56	69	31	33
28	46	49	156	19	23	539	22	66	83	32	42	31
29	42	40	92	18	170	376	30	57	40	43	40	36
30	17	53	54	17	---	86	21	95	46	34	21	63
31	14	---	37	17	---	52	---	57	---	24	46	---
TOTAL	1,009	5,550	2,984	1,050	1,308	2,907	922	4,994	1,864	1,573	916	3,782
MEAN	32.5	185	96.3	33.9	45.1	93.8	30.7	161	62.1	50.7	29.5	126
MAX	251	1,230	403	121	211	539	145	384	226	127	87	1,400
MIN	14	13	30	17	16	20	13	18	33	24	17	24
AC-FT	2,000	11,010	5,920	2,080	2,590	5,770	1,830	9,910	3,700	3,120	1,820	7,500
CFSM	4.73	26.9	14.0	4.92	6.56	13.6	4.47	23.4	9.03	7.38	4.29	18.3
IN.	5.46	30.01	16.13	5.68	7.07	15.72	4.99	27.00	10.08	8.51	4.95	20.45

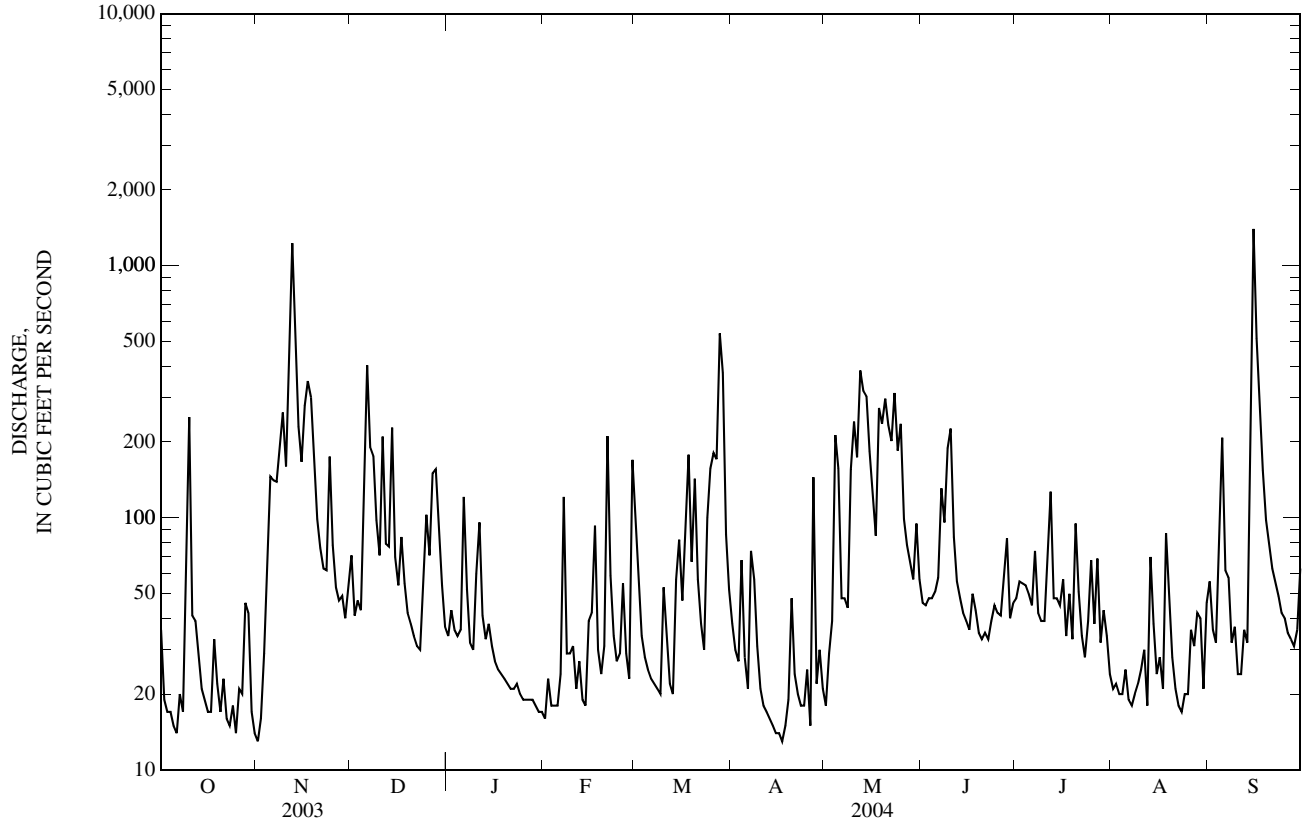
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2004, BY WATER YEAR (WY)

MEAN	62.4	83.9	64.8	53.5	40.9	37.0	44.8	65.2	52.3	48.0	55.1	64.0
MAX	240	191	164	105	68.0	93.8	144	161	112	93.4	85.2	166
(WY)	(1971)	(1985)	(1971)	(1969)	(1988)	(2004)	(2003)	(2004)	(1970)	(1969)	(2000)	(1989)
MIN	20.3	32.6	16.6	25.0	21.7	16.0	14.5	18.7	12.4	20.3	20.4	26.6
(WY)	(1969)	(2003)	(1990)	(1985)	(1968)	(2003)	(1984)	(1973)	(1985)	(1994)	(1994)	(1986)

50065500 RIO MAMEYES NEAR SABANA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1967 - 2004	
ANNUAL TOTAL	24,759		28,859			
ANNUAL MEAN	67.8		78.8		56.5	
HIGHEST ANNUAL MEAN					78.8	2004
LOWEST ANNUAL MEAN					33.1	1994
HIGHEST DAILY MEAN	1,670	Apr 17	1,400	Sep 15	2,780	Sep 18, 1989
LOWEST DAILY MEAN	13	Nov 1	13	Nov 1	6.9	Apr 20, 1970
ANNUAL SEVEN-DAY MINIMUM	15	Mar 8	15	Apr 12	9.4	Jun 12, 1985
MAXIMUM PEAK FLOW			15,600	Nov 12	20,500	Sep 18, 1989
MAXIMUM PEAK STAGE			11.92	Nov 12	13.19	Sep 18, 1989
INSTANTANEOUS LOW FLOW			13	Oct 6	5.1	Apr 8, 1970
ANNUAL RUNOFF (AC-FT)	49,110		57,240		40,930	
ANNUAL RUNOFF (CFSM)	9.86		11.5		8.21	
ANNUAL RUNOFF (INCHES)	133.87		156.04		111.57	
10 PERCENT EXCEEDS	158		184		103	
50 PERCENT EXCEEDS	34		41		34	
90 PERCENT EXCEEDS	17		18		16	

e Estimated



50066000 RIO MAMEYES AT MAMEYES, PR

LOCATION.--Lat 18°22'27", long 65°45'50", Hydrologic Unit 21010005, on right bank, at bridge on Highway 3, 3.1 mi (5.0 km), southwest from Luquillo, 0.4 mi (0.6 km) downstream from Quebrada Anón, and 2.9 mi (4.7 km) east from Escuela Juan González.

DRAINAGE AREA.--13.5 mi^2 (34.7 km^2).

PERIOD OF RECORD.--July 1997 to current year

GAGE.--Water-stage recorder. Elevation of gage is 16.4 ft (5.0 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Discharges above 5,000 ft^3/s (141.6 m^3/s), are based on a rating curve extension and are rated poor. Low flow affected by water supply intake about 1,000 ft (305 m), upstream from station. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88	44	89	49	18	128	57	24	59	33	25	90
2	58	60	62	59	24	67	45	38	53	50	27	56
3	54	69	70	50	28	43	40	48	55	44	22	43
4	52	118	55	49	23	34	124	272	51	37	20	93
5	49	225	96	72	20	26	57	255	54	44	28	232
6	47	219	547	151	20	23	36	e83	50	31	19	85
7	60	277	284	78	124	21	120	61	148	69	17	93
8	60	278	235	47	48	21	103	58	88	31	29	38
9	125	421	125	44	33	18	56	152	177	22	43	45
10	339	307	96	61	39	42	43	252	292	22	32	27
11	110	439	278	152	24	48	31	175	109	29	44	29
12	94	2,210	106	72	31	21	29	454	70	175	18	32
13	84	836	86	51	22	21	27	367	58	65	106	43
14	68	366	259	62	18	48	26	e407	50	61	65	104
15	64	220	99	48	40	93	25	e226	47	68	45	e2,780
16	60	350	79	39	51	56	22	e144	41	66	38	e943
17	57	603	98	35	90	75	20	e103	53	36	25	e488
18	71	368	77	33	34	172	22	e300	53	66	94	e218
19	73	211	61	31	27	69	26	e250	36	41	66	e113
20	56	134	56	29	27	145	60	e330	35	103	42	e80
21	69	106	53	28	246	73	31	305	34	60	25	e63
22	55	105	46	27	83	43	33	249	34	39	23	e55
23	52	96	44	26	43	33	23	517	31	29	20	e42
24	53	310	58	27	35	65	25	232	26	43	26	e36
25	43	133	172	23	42	185	37	290	27	82	22	e34
26	72	88	106	22	60	172	25	128	35	54	42	e31
27	60	74	178	22	39	202	223	100	45	93	49	e31
28	77	75	176	22	25	610	41	82	89	41	64	e31
29	90	62	124	20	150	456	43	71	34	60	73	e32
30	52	75	77	20	---	114	35	115	42	46	30	e51
31	43	---	56	19	---	76	---	88	---	31	63	---
TOTAL	2,335	8,879	3,948	1,468	1,464	3,200	1,485	6,176	1,976	1,671	1,242	6,038
MEAN	75.3	296	127	47.4	50.5	103	49.5	199	65.9	53.9	40.1	201
MAX	339	2,210	547	152	246	610	223	517	292	175	106	2,780
MIN	43	44	44	19	18	18	20	24	26	22	17	27
AC-FT	4,630	17,610	7,830	2,910	2,900	6,350	2,950	12,250	3,920	3,310	2,460	11,980
CFSM	5.62	22.1	9.50	3.53	3.77	7.70	3.69	14.9	4.92	4.02	2.99	15.0
IN.	6.48	24.65	10.96	4.08	4.06	8.88	4.12	17.15	5.49	4.64	3.45	16.76

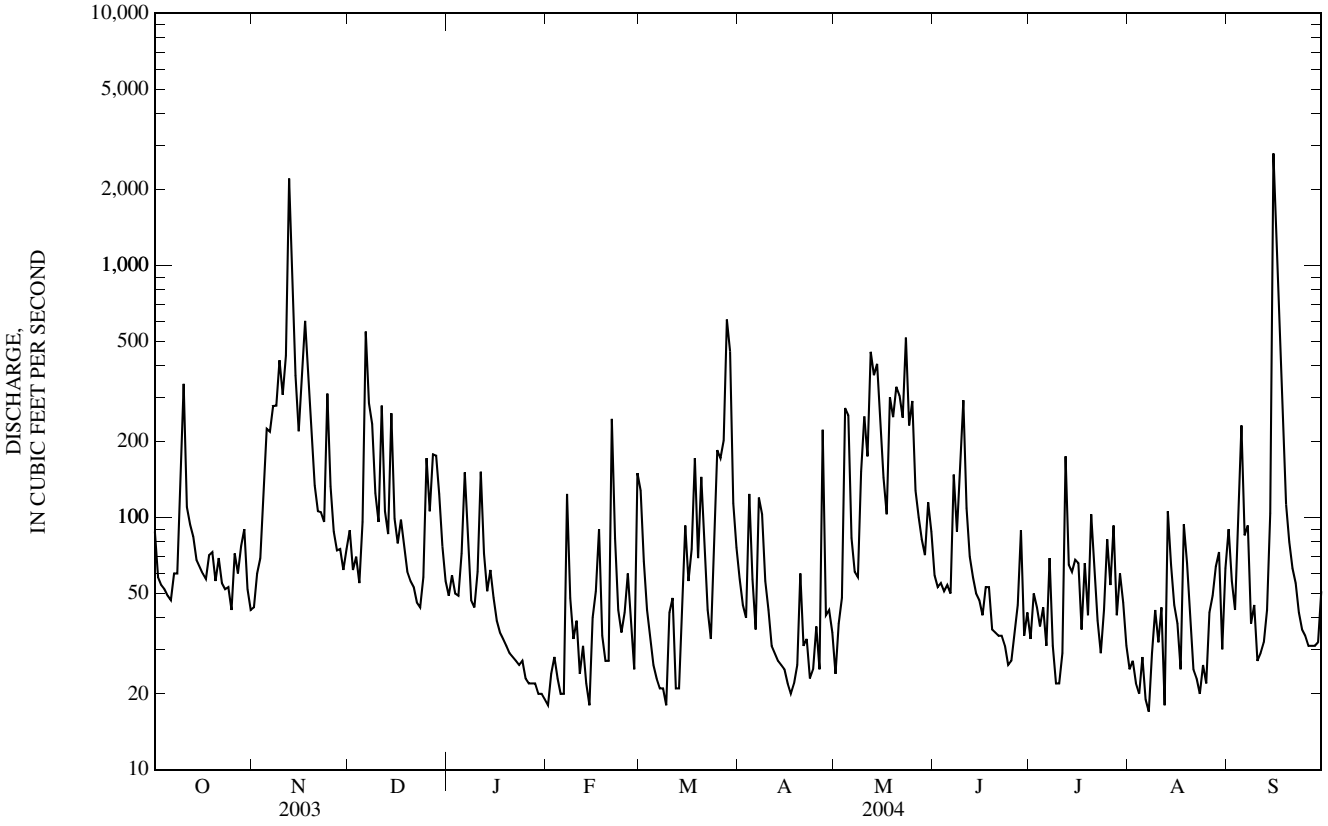
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2004, BY WATER YEAR (WY)

MEAN	91.7	158	133	70.2	47.4	43.7	82.7	96.5	54.6	49.5	78.5	116
MAX	135	296	264	122	72.5	103	193	199	86.2	93.0	126	274
(WY)	(1999)	(2004)	(1999)	(1999)	(2000)	(2004)	(2003)	(2004)	(1998)	(1999)	(2000)	(1998)
MIN	58.8	36.6	18.4	43.4	34.5	12.4	17.5	32.7	36.2	25.8	38.9	51.4
(WY)	(2001)	(2003)	(1998)	(2001)	(2002)	(2003)	(2000)	(1999)	(2001)	(2000)	(2002)	(2001)

50066000 RIO MAMEYES AT MAMEYES, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1997 - 2004	
ANNUAL TOTAL	33,954.5		39,882			
ANNUAL MEAN	93.0		109		85.7	
HIGHEST ANNUAL MEAN					109	2004
LOWEST ANNUAL MEAN					52.3	2001
HIGHEST DAILY MEAN	2,210	Nov 12	2,780	Sep 15	2,780	Sep 15, 2004
LOWEST DAILY MEAN	7.5	Mar 31	17	Aug 7	6.0	Apr 29, 2000
ANNUAL SEVEN-DAY MINIMUM	9.7	Mar 25	20	Jan 26	7.3	Apr 23, 2000
MAXIMUM PEAK FLOW			15,600	Sep 15	not determined	Aug 22 2001
MAXIMUM PEAK STAGE			13.57	Sep 15	15.64	Aug 22, 2001
ANNUAL RUNOFF (AC-FT)	67,350		79,110		62,100	
ANNUAL RUNOFF (CFSM)	6.94		8.13		6.40	
ANNUAL RUNOFF (INCHES)	94.26		110.72		86.91	
10 PERCENT EXCEEDS	208		247		174	
50 PERCENT EXCEEDS	46		56		42	
90 PERCENT EXCEEDS	15		25		16	

e Estimated



50067000 RIO SABANA AT SABANA, PR

LOCATION.--Lat 18°19'52", long 65°43'52", Hydrologic Unit 21010005, on right bank along Highway 988, 0.3 mi (0.5 km) north of junction of Highways 988 and 983 in Sabana, and 3.3 mi (5.3 km) south of Luquillo.

DRAINAGE AREA.--3.96 mi^2 (10.3 km^2).

PERIOD OF RECORD.--October 1979 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 260 ft (80 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Low flow affected by the Puerto Rico Aqueduct and Sewer Authority water intake 1.0 mi (1.6 km) upstream, and purification plant 0.2 mi (0.32 km). Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	4.6	e19	12	e5.9	19	9.7	4.1	22	5.4	e4.6	14
2	8.7	7.5	e17	13	6.4	7.3	8.3	4.9	20	5.8	e4.2	15
3	8.5	13	e16	12	e6.0	5.7	7.8	4.3	19	5.1	e3.8	9.7
4	7.4	11	16	12	e5.8	5.6	11	48	17	7.9	e3.6	20
5	6.9	36	23	12	e5.7	4.9	7.3	63	16	6.1	e3.5	47
6	7.0	49	147	26	6.1	4.6	6.5	11	20	4.8	3.7	8.9
7	8.8	70	68	13	27	4.6	17	9.1	30	6.9	3.3	8.3
8	10	61	55	11	7.8	4.5	9.7	7.5	19	4.4	4.0	4.1
9	35	105	27	10	6.9	4.6	13	7.1	35	4.3	6.1	3.2
10	115	73	21	21	6.0	6.4	7.0	14	83	4.1	4.5	3.0
11	18	150	132	40	5.3	5.6	5.6	11	19	4.7	4.5	3.1
12	12	822	29	17	5.2	4.2	5.7	109	14	12	e4.0	3.4
13	9.5	270	24	14	5.3	4.2	5.1	110	12	12	e8.5	2.6
14	8.0	113	82	14	4.7	10	4.9	89	11	7.3	e5.0	16
15	7.1	64	25	e12	7.6	13	4.5	27	11	5.7	e3.5	887
16	7.0	85	21	e11	9.1	5.6	4.4	18	11	4.6	e2.9	323
17	6.6	170	22	e11	21	7.0	4.6	13	11	8.4	e2.5	110
18	9.2	99	19	e10	6.2	29	4.8	38	9.7	13	e14	62
19	7.0	56	18	e9.5	5.1	8.3	5.0	46	9.0	4.4	e8.5	34
20	6.3	37	17	e9.0	4.9	21	13	115	8.0	12	e5.3	25
21	8.4	32	16	e8.5	36	10	5.2	59	8.5	5.4	e3.4	21
22	5.9	29	15	e8.1	11	5.6	5.2	69	7.7	4.5	e2.9	26
23	5.9	28	14	7.8	5.7	4.6	4.4	182	7.1	4.0	e2.5	19
24	5.5	131	21	7.6	4.8	7.2	4.3	92	7.0	3.8	e2.2	15
25	5.2	36	29	7.5	8.7	26	5.7	121	7.0	8.1	2.4	13
26	16	25	19	7.0	8.4	53	3.7	44	6.7	5.1	6.7	14
27	12	22	51	7.2	6.4	29	84	35	7.3	14	4.2	12
28	5.8	21	36	6.9	4.9	211	6.5	30	6.6	5.6	18	12
29	5.9	19	23	6.3	41	81	6.1	26	5.9	12	13	13
30	5.1	e21	15	6.2	---	22	4.6	69	6.1	6.8	4.3	17
31	5.4	---	14	6.0	---	13	---	29	---	e5.2	5.2	---
TOTAL	391.1	2,660.1	1,051	368.6	284.9	637.5	284.6	1,505.0	466.6	213.4	164.8	1,761.3
MEAN	12.6	88.7	33.9	11.9	9.82	20.6	9.49	48.5	15.6	6.88	5.32	58.7
MAX	115	822	147	40	41	211	84	182	83	14	18	887
MIN	5.1	4.6	14	6.0	4.7	4.2	3.7	4.1	5.9	3.8	2.2	2.6
AC-FT	776	5,280	2,080	731	565	1,260	565	2,990	926	423	327	3,490
CFSM	3.19	22.4	8.56	3.00	2.48	5.19	2.40	12.3	3.93	1.74	1.34	14.8
IN.	3.67	24.99	9.87	3.46	2.68	5.99	2.67	14.14	4.38	2.00	1.55	16.55

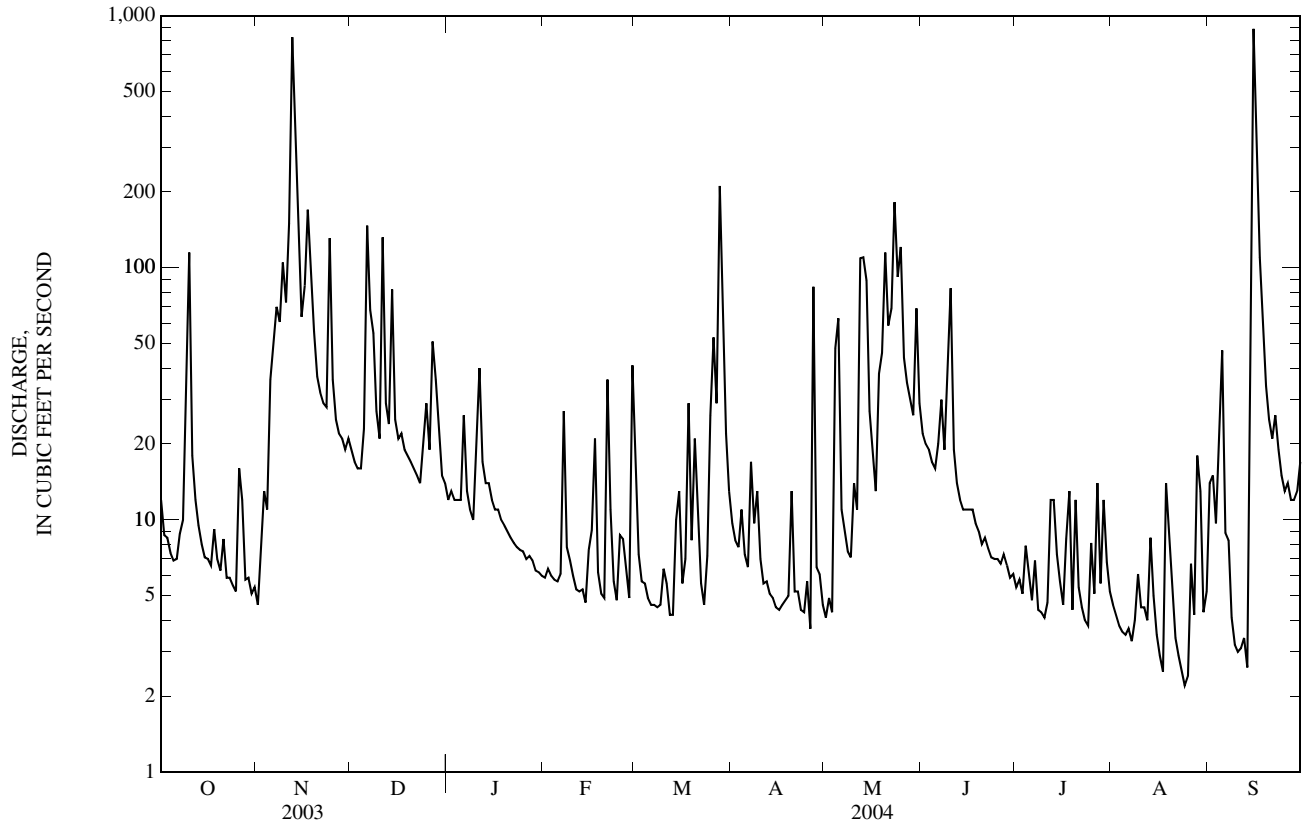
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2004, BY WATER YEAR (WY)

MEAN	22.3	36.1	26.6	15.6	11.8	10.4	13.8	29.0	18.2	14.3	17.4	25.2
MAX	66.4	88.7	64.1	48.5	23.2	36.0	69.9	63.9	50.6	36.0	39.9	74.2
(WY)	(1986)	(2004)	(1982)	(1996)	(1997)	(1987)	(2003)	(1982)	(1987)	(1996)	(1995)	(1996)
MIN	6.48	5.38	3.92	6.01	2.94	1.70	2.20	4.65	3.64	2.82	3.09	7.23
(WY)	(1983)	(2003)	(1990)	(2003)	(1983)	(2003)	(1984)	(1994)	(1997)	(2000)	(1994)	(1987)

50067000 RIO SABANA AT SABANA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1980 - 2004	
ANNUAL TOTAL	8,885.9		9,788.9			
ANNUAL MEAN	24.3		26.7		20.1	
HIGHEST ANNUAL MEAN					31.9	1996
LOWEST ANNUAL MEAN					7.85	1994
HIGHEST DAILY MEAN	1,120	Apr 17	887	Sep 15	1,120	Apr 17, 2003
LOWEST DAILY MEAN	1.0	Mar 18	2.2	Aug 24	0.96	Apr 10, 1983
ANNUAL SEVEN-DAY MINIMUM	1.2	Mar 25	3.5	Aug 21	1.0	Apr 6, 1983
MAXIMUM PEAK FLOW			5,330	Sep 15	9,600	Jan 5, 1992
MAXIMUM PEAK STAGE			16.55	Sep 15	19.74	Jan 5, 1992
INSTANTANEOUS LOW FLOW					0.86	Apr 17, 1983
ANNUAL RUNOFF (AC-FT)	17,630		19,420		14,540	
ANNUAL RUNOFF (CFSM)	6.15		6.75		5.07	
ANNUAL RUNOFF (INCHES)	83.47		91.96		68.84	
10 PERCENT EXCEEDS	57		60		38	
50 PERCENT EXCEEDS	7.8		9.7		8.4	
90 PERCENT EXCEEDS	2.2		4.4		2.7	

e Estimated



50070900 RIO FAJARDO AT PARAISO NEAR FAJARDO, PR

LOCATION.--Lat 18°16'52", long 65°42'08", Hydrologic Unit 21010005, on left bank, 1.0 mi (1.6 km) south from Escuela Peñón, 4.5 mi (7.2 km) southwest from Fajardo Plaza, and 6.8 mi (10.9 km) south from Luquillo Plaza.

DRAINAGE AREA.--9.47 mi^2 (24.5 km^2).

PERIOD OF RECORD.--October 2003 to September 2004.

GAGE.--Water-stage recorder. Datum of gage is 213 ft (65 m) above mean sea level from topographic map. Established for low-flow discharges, no rating definition above 6.90 ft, 473 ft^3/s.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Low flow affected by diversions for water supply about 60.0 ft (18.3 m) downstream from gaging station, in the same pool formed by a V-notch cement weir. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	9.8	55	32	12	67	43	15	31	23	13	56
2	14	10	43	45	20	27	35	41	36	15	13	45
3	12	31	38	34	16	16	27	46	36	22	11	44
4	17	70	56	39	21	12	>76	>177	33	28	15	90
5	12	107	67	51	14	10	31	88	33	26	24	>123
6	10	71	>191	>100	18	9.0	23	42	34	19	11	79
7	12	109	>166	48	56	8.3	40	51	52	20	9.9	42
8	12	52	146	30	16	8.6	72	32	36	13	18	22
9	98	>155	92	26	14	7.6	59	49	60	12	13	47
10	>186	101	76	>65	23	18	28	72	>128	11	12	25
11	51	>222	>131	136	11	15	20	85	60	11	14	21
12	44	>473	73	65	17	7.2	18	114	39	43	12	30
13	51	>473	56	40	9.9	6.3	15	>136	32	38	59	41
14	23	231	>155	47	8.5	16	14	132	28	30	21	94
15	18	160	73	31	17	20	13	>134	25	17	16	>473
16	15	215	53	25	14	15	13	79	22	25	21	>473
17	14	>190	74	23	57	30	12	53	34	15	13	>227
18	19	>221	47	21	14	76	11	>121	28	15	57	121
19	18	174	40	19	10	23	16	>109	20	16	62	83
20	13	124	40	18	9.4	75	>94	>207	20	60	25	65
21	23	106	33	19	93	32	43	>192	e19	28	13	52
22	12	94	30	17	39	20	24	>159	e20	17	11	50
23	11	89	28	26	16	13	17	>199	18	14	9.5	38
24	12	>124	>97	19	11	15	16	148	15	16	8.7	32
25	10	96	72	15	13	80	46	>179	21	76	14	26
26	56	75	72	14	34	>171	16	93	27	34	15	22
27	32	65	>148	13	14	116	>101	74	20	75	9.5	20
28	14	58	114	13	9.7	>207	28	63	51	30	11	21
29	38	52	84	18	>95	>201	27	49	18	66	26	29
30	14	62	49	12	---	84	19	53	19	25	21	47
31	11	---	38	12	---	58	---	39	---	16	32	---
TOTAL	894	4,019.8	2,437	1,073	702.5	1,464.0	997	3,031	1,015	856	610.6	2,538
MEAN	28.8	134	78.6	34.6	24.2	47.2	33.2	97.8	33.8	27.6	19.7	84.6
MAX	186	473	191	136	95	207	101	207	128	76	62	473
MIN	10	9.8	28	12	8.5	6.3	11	15	15	11	8.7	20
AC-FT	1,770	7,970	4,830	2,130	1,390	2,900	1,980	6,010	2,010	1,700	1,210	5,030
CFSM	3.05	14.1	8.30	3.66	2.56	4.99	3.51	10.3	3.57	2.92	2.08	8.93
IN.	3.51	15.79	9.57	4.21	2.76	5.75	3.92	11.91	3.99	3.36	2.40	9.97

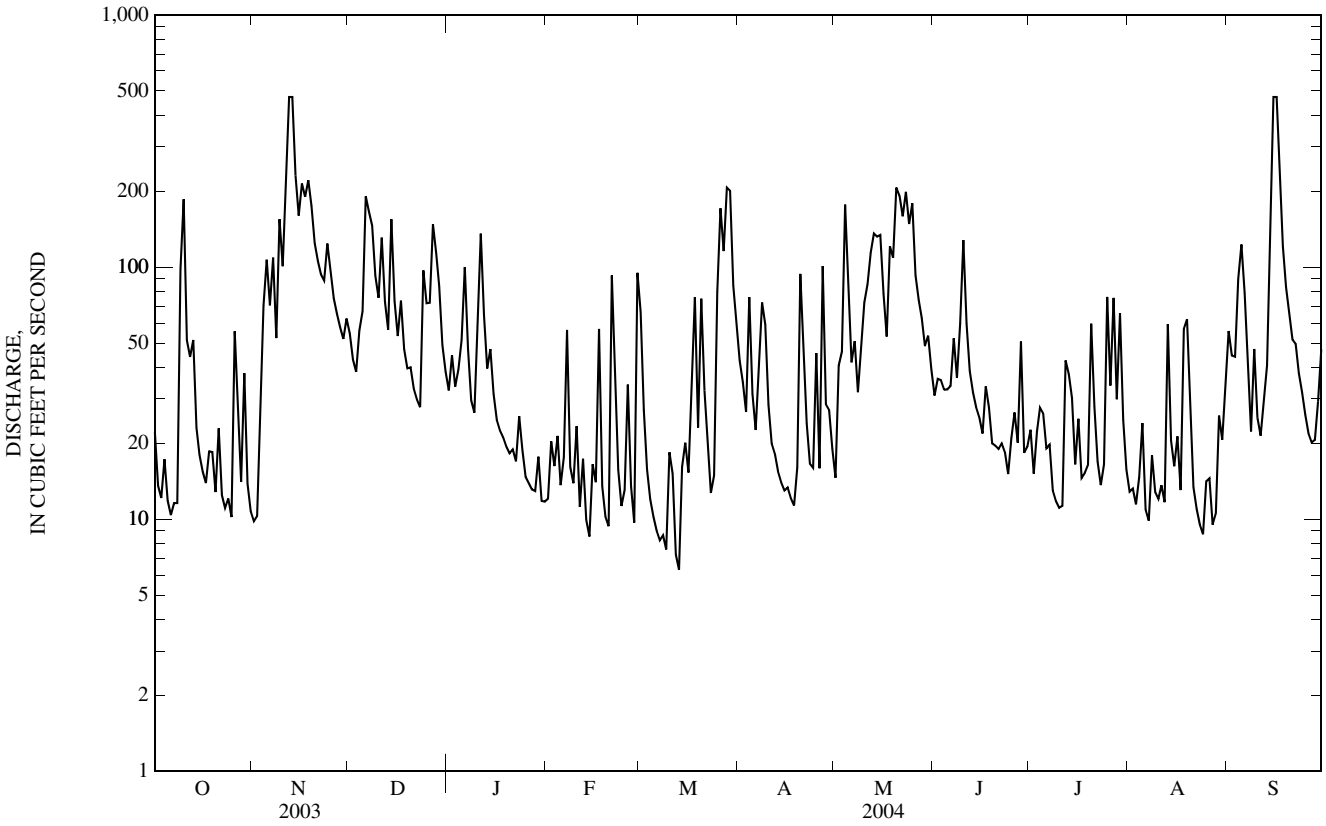
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2004 - 2004, BY WATER YEAR (WY)

MEAN	28.8	134	78.6	34.6	24.2	47.2	33.2	97.8	33.8	27.6	19.7	84.6
MAX	28.8	134	78.6	34.6	24.2	47.2	33.2	97.8	33.8	27.6	19.7	84.6
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)
MIN	28.8	134	78.6	34.6	24.2	47.2	33.2	97.8	33.8	27.6	19.7	84.6
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)

50070900 RIO FAJARDO AT PARAISO NEAR FAJARDO, PR—Continued

SUMMARY STATISTICS	FOR 2004 WATER YEAR	
ANNUAL TOTAL	19,637.9	
ANNUAL MEAN	53.7	
HIGHEST DAILY MEAN	473	Nov 12
LOWEST DAILY MEAN	6.3	Mar 13
ANNUAL SEVEN-DAY MINIMUM	10	Mar 7
MAXIMUM PEAK FLOW	not determined	Sep 15
MAXIMUM PEAK STAGE	12.40	Sep 15
ANNUAL RUNOFF (AC-FT)	38,950	
ANNUAL RUNOFF (CFSM)	5.67	
ANNUAL RUNOFF (INCHES)	77.14	
10 PERCENT EXCEEDS	124	
50 PERCENT EXCEEDS	30	
90 PERCENT EXCEEDS	12	

e Estimated
> Actual value is known to be greater than the value shown



50071000 RIO FAJARDO NEAR FAJARDO, PR

LOCATION.--Lat 18°17'56", long 65°41'42", Hydrologic Unit 21010005, on left bank off Highway 976, 0.1 mi (0.2 km) upstream from Highway 977 bridge, 0.3 mi (0.5 km) downstream from Quebrada Peñón, 1.1 mi (1.8 km) northeast of Colonia Paraíso, and 3.3 mi (5.3 km) southwest of Fajardo.

DRAINAGE AREA.--14.9 mi^2 (38.6 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1960-61 (occasional low- and peak-flow measurements only), March 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 137.60 ft (41.940 m) above mean sea level. Due to flood damage, gage datum has had changes as follows: March 24, 1961 to May 5, 1969, 138.95 ft (42.352 m); May 6, 1969 to March 16, 1972, 135.05 ft (41.163 m); March 17, 1972 to March 25, 1975, 138.60 ft (42.245 m).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Low flow affected by diversions for water supply about 0.25 mi (0.40 km) upstream from gaging station (estimated mean daily discharges is 9.0 ft^3/s (0.255 m^3/s)). Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	27	48	36	12	93	52	22	56	36	15	55
2	37	29	41	47	20	36	44	42	52	27	15	41
3	34	59	37	37	17	22	39	48	54	34	14	41
4	42	111	48	42	24	18	126	329	50	38	18	126
5	34	201	54	52	16	14	41	117	48	40	31	229
6	31	97	442	157	16	12	33	50	50	31	15	67
7	37	206	202	49	70	11	47	66	72	31	12	39
8	39	77	187	33	21	10	105	41	57	23	19	24
9	167	247	84	28	16	9.4	74	57	119	22	13	43
10	437	147	63	76	26	25	37	78	364	20	12	24
11	83	750	144	206	13	24	29	101	73	19	13	23
12	76	2,440	63	72	20	9.7	26	162	56	52	11	24
13	e50	937	50	44	11	8.4	23	418	49	53	56	e38
14	e40	410	209	49	10	19	22	199	45	46	23	134
15	e34	207	65	38	20	29	20	183	42	27	16	e2,350
16	e31	291	50	31	16	20	20	80	39	36	22	e1,260
17	e29	472	68	29	70	35	16	55	48	21	14	e533
18	e40	592	46	26	18	102	15	215	45	18	65	193
19	e34	212	40	24	12	31	21	252	37	20	54	115
20	e32	134	40	22	11	103	146	370	34	56	26	91
21	e37	109	36	21	126	47	48	313	34	31	13	76
22	e30	93	36	20	48	27	34	275	33	18	11	76
23	e27	87	31	26	21	17	25	448	31	14	8.9	63
24	e25	422	158	22	14	19	26	254	29	15	7.7	57
25	e24	91	74	17	27	90	57	445	32	71	13	52
26	e90	64	68	17	39	263	25	136	43	33	15	47
27	e55	56	206	16	19	143	274	101	31	65	9.6	44
28	e35	50	124	16	12	597	38	81	68	32	12	44
29	59	46	94	23	164	562	35	70	32	70	25	51
30	36	52	49	16	---	112	28	109	33	29	19	74
31	29	---	41	14	---	66	---	71	---	19	28	---
TOTAL	1,803	8,716	2,898	1,306	909	2,574.5	1,526	5,188	1,756	1,047	626.2	6,034
MEAN	58.2	291	93.5	42.1	31.3	83.0	50.9	167	58.5	33.8	20.2	201
MAX	437	2,440	442	206	164	597	274	448	364	71	65	2,350
MIN	24	27	31	14	10	8.4	15	22	29	14	7.7	23
AC-FT	3,580	17,290	5,750	2,590	1,800	5,110	3,030	10,290	3,480	2,080	1,240	11,970
CFSM	3.90	19.5	6.27	2.83	2.10	5.57	3.41	11.2	3.93	2.27	1.36	13.5
IN.	4.50	21.76	7.24	3.26	2.27	6.43	3.81	12.95	4.38	2.61	1.56	15.06

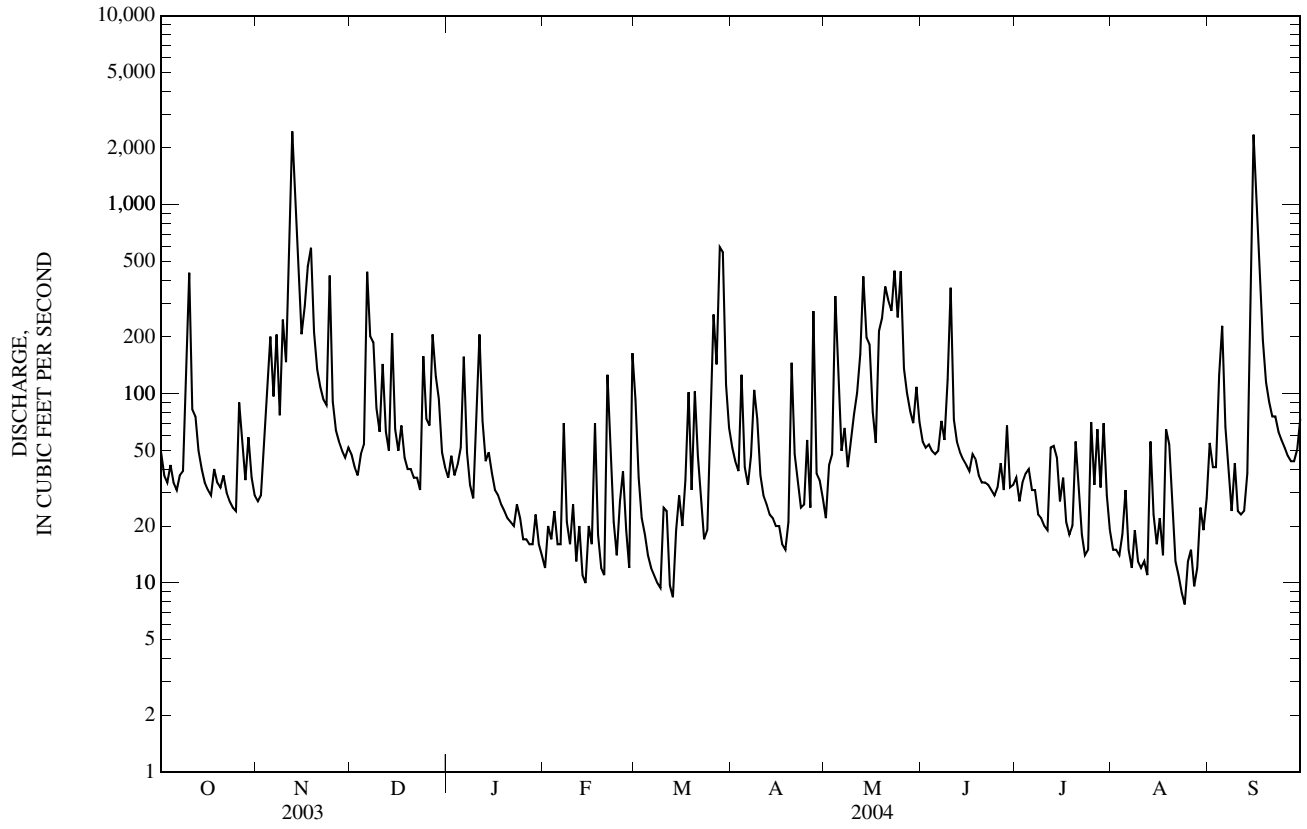
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2004, BY WATER YEAR (WY)

MEAN	92.3	114	85.3	49.8	37.7	34.5	46.7	87.5	58.1	47.8	56.9	90.3
MAX	260	328	237	150	80.4	109	178	399	166	132	159	421
(WY)	(1971)	(2000)	(1976)	(1996)	(1982)	(1987)	(2003)	(1979)	(1962)	(1969)	(1979)	(1989)
MIN	19.1	25.5	14.9	15.4	10.8	6.62	4.02	17.7	10.0	10.6	9.70	18.9
(WY)	(1969)	(2003)	(1990)	(1977)	(1983)	(2003)	(1984)	(1973)	(1985)	(2000)	(1994)	(1994)

50071000 RIO FAJARDO NEAR FAJARDO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1961 - 2004	
ANNUAL TOTAL	28,924.8		34,383.7			
ANNUAL MEAN	79.2		93.9		67.1	
HIGHEST ANNUAL MEAN					140	1979
LOWEST ANNUAL MEAN					19.0	1994
HIGHEST DAILY MEAN	2,870	Apr 17	2,440	Nov 12	8,800	Sep 18, 1989
LOWEST DAILY MEAN	2.5	Mar 14	7.7	Aug 24	1.0	May 6, 1984
ANNUAL SEVEN-DAY MINIMUM	3.5	Mar 12	11	Aug 22	1.5	Apr 18, 1984
MAXIMUM PEAK FLOW			11,800	Nov 12	21,700	Sep 18, 1989
MAXIMUM PEAK STAGE			12.82	Nov 12	20.00	Sep 18, 1989
INSTANTANEOUS LOW FLOW			6.0	Aug 24	0.86	May 3, 1984
ANNUAL RUNOFF (AC-FT)	57,370		68,200		48,620	
ANNUAL RUNOFF (CFSM)	5.32		6.31		4.50	
ANNUAL RUNOFF (INCHES)	72.21		85.84		61.20	
10 PERCENT EXCEEDS	168		203		132	
50 PERCENT EXCEEDS	32		40		32	
90 PERCENT EXCEEDS	7.3		15		10	

e Estimated



50071000 RIO FAJARDO NEAR FAJARDO, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
03...	1250	46	12	8.7	7.3	129	25.6	35	7.59	3.95	1.17	.9	11.7
APR													
08...	1015	58	30	8.4	7.2	89	24.8	22	4.95	2.38	1.19	.7	7.92
JUN													
08...	0945	42	3.6	9.2	7.5	128	29.7	--	--	--	--	--	--
AUG													
10...	0945	12	3.0	8.6	7.6	126	27.6	29	6.26	3.28	.91	.8	10.3

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
03...	39	13.7	<.2	26.9	3.9	--	92	11.5	<10	<.20	<.01	--	.180
APR													
08...	24	8.46	<.2	17.7	2.9	<.1	60	--	<20	.30	.02	.17	.180
JUN													
08...	35	--	--	--	--	--	--	--	<10	<.20	<.01	--	.100
AUG													
10...	36	12.8	<.2	25.3	3.6	--	84	2.64	<10	--	.02	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC													
03...	<.01	--	--	--	<.02	10	40	E1,000	--	--	--	--	--
APR													
08...	.01	.28	.48	2.1	.03	<10	--	--	<2	23.7	20	<.2	<.8
JUN													
08...	<.01	--	--	--	<.02	<10	230	7,500	--	--	--	--	--
AUG													
10...	--	--	--	--	.01	<10	110	420	<2	25.7	19	<.2	<.8

Date	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
DEC											
03...	--	--	--	--	--	--	--	--	--	--	--
APR											
08...	M	<.01	990	<1.0	26.8	<.02	<3	<.3	<4	<.40	<16
JUN											
08...	--	--	--	--	--	--	--	--	--	--	--
AUG											
10...	<4	<.01	270	<1.0	18.7	<.02	<3	<.3	E2	<.10	<16

50071000 RIO FAJARDO NEAR FAJARDO, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED
PESTICIDE ANALYSES

Date	Time	2,4,5-T water unfltrd ug/L (39740)	2,4-D water unfltrd ug/L (39730)	Aldrin, water, unfltrd ug/L (39330)	alpha-Endosulfan, water, unfltrd ug/L (39388)	Carbophenothion, water, unfltrd ug/L (39786)	Chlordane, technical, water, unfltrd ug/L (39350)	Chlorpyrifos water unfltrd ug/L (38932)	Diazinon, water, unfltrd ug/L (39570)	Dichlorprop, water, unfltrd ug/L (82183)	Dieldrin, water, unfltrd ug/L (39380)	Disulfoton, water, unfltrd ug/L (39011)	Endrin, water, unfltrd ug/L (39390)
AUG													
10...	0945	<.01	<.01	<.01	<.03	<.02	<.1	<.01	<.02	<.02	<.016	<.10	<.01

Date	Ethion, water, unfltrd ug/L (39398)	Fonofos water unfltrd ug/L (82614)	Heptachlor epoxide water unfltrd ug/L (39420)	Heptachlor, water, unfltrd ug/L (39410)	Lindane water, unfltrd ug/L (39340)	Malathion, water, unfltrd ug/L (39530)	Methyl parathion, water, unfltrd ug/L (39600)	Mirex, water, unfltrd ug/L (39755)	p,p'-DDD, water, unfltrd ug/L (39360)	p,p'-DDE, water, unfltrd ug/L (39365)	p,p'-DDT, water, unfltrd ug/L (39370)	p,p'-Methoxychlor, water, unfltrd ug/L (39480)	Parathion, water, unfltrd ug/L (39540)
AUG													
10...	<.01	<.01	<.009	<.01	<.014	<.10	<.01	<.006	<.016	<.014	<.010	<.006	<.01

Date	PCBs, water, unfltrd ug/L (39516)	Phorate water unfltrd ug/L (39023)	Silvex, water, unfltrd ug/L (39760)	Toxaphene, water, unfltrd ug/L (39400)	Tribuphos, water, unfltrd ug/L (39040)
AUG					
10...	<.1	<.02	<.02	<1	<.02

< Actual value is known to be less than the value shown
E Estimated value
M Presence verified, not quantified

50072500 RIO FAJARDO BELOW FAJARDO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°19'35", long 65°38'47", 1.2 mi (1.9 km) southwest of Playa de Fajardo, and 0.5 mi (0.8 km) east of Fajardo Plaza.

DRAINAGE AREA.--23.4 mi^2 (60.6 km^2).

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
APR 08...	1310	67.4	64	8.2	7.2	104	27.1	28	6.05	3.12	1.48	.8	9.52
JUN 08...	1335	48	4.0	9.1	7.7	147	28.9	--	--	--	--	--	--
AUG 10...	1320	16	7.0	7.5	7.4	164	31.6	32	7.06	3.43	1.02	.9	11.4

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
APR 08...	26	10.2	<.2	17.4	4.1	<.1	68	--	28	.40	.03	.20	.220
JUN 08...	39	--	--	--	--	--	--	--	<10	<.20	<.01	--	.080
AUG 10...	62	16.8	<.2	23.0	5.3	--	105	4.58	14	--	.02	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
APR 08...	.02	.37	.62	2.7	.05	10	5,200	56,000	E1	34.5	23	<.2	<.8
JUN 08...	<.01	--	--	--	<.02	<10	300	4,500	--	--	--	--	--
AUG 10...	--	--	--	--	.01	<10	E820	630	<2	37.3	26	<.2	<.8

Date	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
APR 08...	M	<.01	1,530	<1.0	42.8	<.02	<3	<.3	<4	<.40	<16
JUN 08...	--	--	--	--	--	--	--	--	--	--	--
AUG 10...	<4	<.01	360	<1.0	35.5	<.02	<3	<.3	<4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50074950 QUEBRADA GUABA NEAR NAGUABO, PR

LOCATION.--Lat 18°17'02", long 65°47'20", Hydrologic Unit 21010005, on right bank, off Highway 191 at El Yunque Caribbean National Forest, 4.8 mi (7.7 km) southeast of Campamento Eliza Colberg, 1.3 mi (2.1 km) southeast of Mt. Britton, 2.0 mi (3.2 km) northwest of Pico del Este and 7.3 mi (11.7 km) southeast of Río Grande Plaza.

DRAINAGE AREA.--0.12 mi^2 (0.31 km^2).

PERIOD OF RECORD.--June 1992 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,100 ft (640 m), from topographic map.

REMARKS.--Records poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.80	e2.8	e0.54	0.62	0.23	0.66	4.9	0.48	0.60	0.59	0.41	0.71
2	e0.48	e2.2	e0.43	0.75	0.26	0.38	10	0.50	0.57	0.46	0.38	0.37
3	e0.67	e1.1	e0.52	0.73	0.20	0.28	3.8	0.56	0.48	0.56	0.31	0.42
4	e0.58	e3.3	e1.3	0.77	0.17	0.22	1.8	3.0	0.50	0.68	0.31	1.4
5	e0.48	e2.4	e0.62	0.76	0.16	0.21	1.2	0.65	0.43	0.60	0.33	2.0
6	e0.60	e1.4	e5.4	2.0	0.27	0.17	1.1	0.37	0.37	0.57	0.31	0.95
7	e0.44	e1.4	e2.4	0.67	0.65	0.17	e1.2	0.49	0.42	0.56	0.30	1.5
8	e0.55	e4.5	e0.77	0.38	0.44	0.16	e1.1	0.73	0.90	0.40	0.36	0.58
9	e2.0	e6.1	e0.83	0.18	0.35	0.15	e0.98	0.81	1.7	0.36	0.33	0.39
10	e4.0	e2.6	e1.4	0.23	0.45	0.17	e0.90	2.4	4.4	0.40	0.37	0.22
11	e3.2	e8.6	e1.4	0.29	0.27	0.19	e0.85	3.3	0.81	1.2	0.33	0.18
12	e3.9	25	e1.3	0.25	0.22	0.18	e0.80	6.9	0.76	1.7	0.28	0.98
13	e1.4	19	e1.1	0.23	0.18	0.16	e0.75	6.4	0.51	0.38	0.38	0.60
14	e0.53	14	e3.2	0.23	0.14	0.19	e0.73	9.9	0.38	0.26	0.39	1.4
15	e1.0	10	e1.4	0.22	0.20	0.30	e0.65	9.0	0.95	0.25	0.36	24
16	e0.49	15	e1.1	0.23	0.16	0.22	e0.55	4.2	1.1	0.27	0.37	16
17	e0.58	15	e0.99	0.22	0.29	0.25	e0.50	5.1	0.53	0.22	0.36	13
18	e0.62	12	0.35	0.19	0.16	0.73	e0.45	9.8	0.50	0.20	0.66	7.5
19	e0.49	e9.6	0.32	0.31	0.16	0.28	e0.75	6.9	0.54	0.18	1.2	3.5
20	e0.44	e9.9	0.34	0.30	0.48	0.76	e7.1	7.4	0.53	0.64	0.54	1.7
21	e0.40	e5.4	0.43	0.32	3.3	0.35	0.54	8.2	0.55	0.52	0.45	1.3
22	e1.5	e3.4	0.47	0.44	1.1	0.36	0.27	5.5	0.47	0.38	0.28	0.83
23	e0.53	e3.6	0.54	0.55	0.64	0.47	0.23	5.6	0.43	0.38	0.17	0.68
24	e0.33	e2.9	0.71	0.53	0.38	2.2	0.23	3.6	0.37	0.36	0.16	0.64
25	e0.45	e1.4	0.77	0.29	0.29	1.7	0.25	4.2	0.31	0.74	0.19	0.79
26	e0.59	e0.45	0.93	0.26	2.6	2.3	0.20	2.7	0.45	0.44	0.15	0.53
27	e0.58	e0.68	1.3	0.32	1.2	2.7	1.5	3.3	0.69	0.52	0.14	0.49
28	e4.0	e0.62	1.4	0.27	0.71	8.0	0.53	1.3	1.5	0.44	0.17	0.46
29	e7.3	e0.51	0.57	0.26	2.1	6.1	0.40	0.90	0.94	0.45	0.13	0.45
30	e5.1	e0.55	0.56	0.24	---	2.3	0.48	0.77	0.65	0.39	0.14	0.52
31	e3.7	---	0.56	0.23	---	2.4	---	0.69	---	0.43	0.26	---
TOTAL	47.73	185.41	33.95	13.27	17.76	34.71	44.74	115.65	23.34	15.53	10.52	84.09
MEAN	1.54	6.18	1.10	0.43	0.61	1.12	1.49	3.73	0.78	0.50	0.34	2.80
MAX	7.3	25	5.4	2.0	3.3	8.0	10	9.9	4.4	1.7	1.2	24
MIN	0.33	0.45	0.32	0.18	0.14	0.15	0.20	0.37	0.31	0.18	0.13	0.18
AC-FT	95	368	67	26	35	69	89	229	46	31	21	167
CFSM	12.8	51.5	9.13	3.57	5.10	9.33	12.4	31.1	6.48	4.17	2.83	23.4
IN.	14.80	57.48	10.52	4.11	5.51	10.76	13.87	35.85	7.24	4.81	3.26	26.07

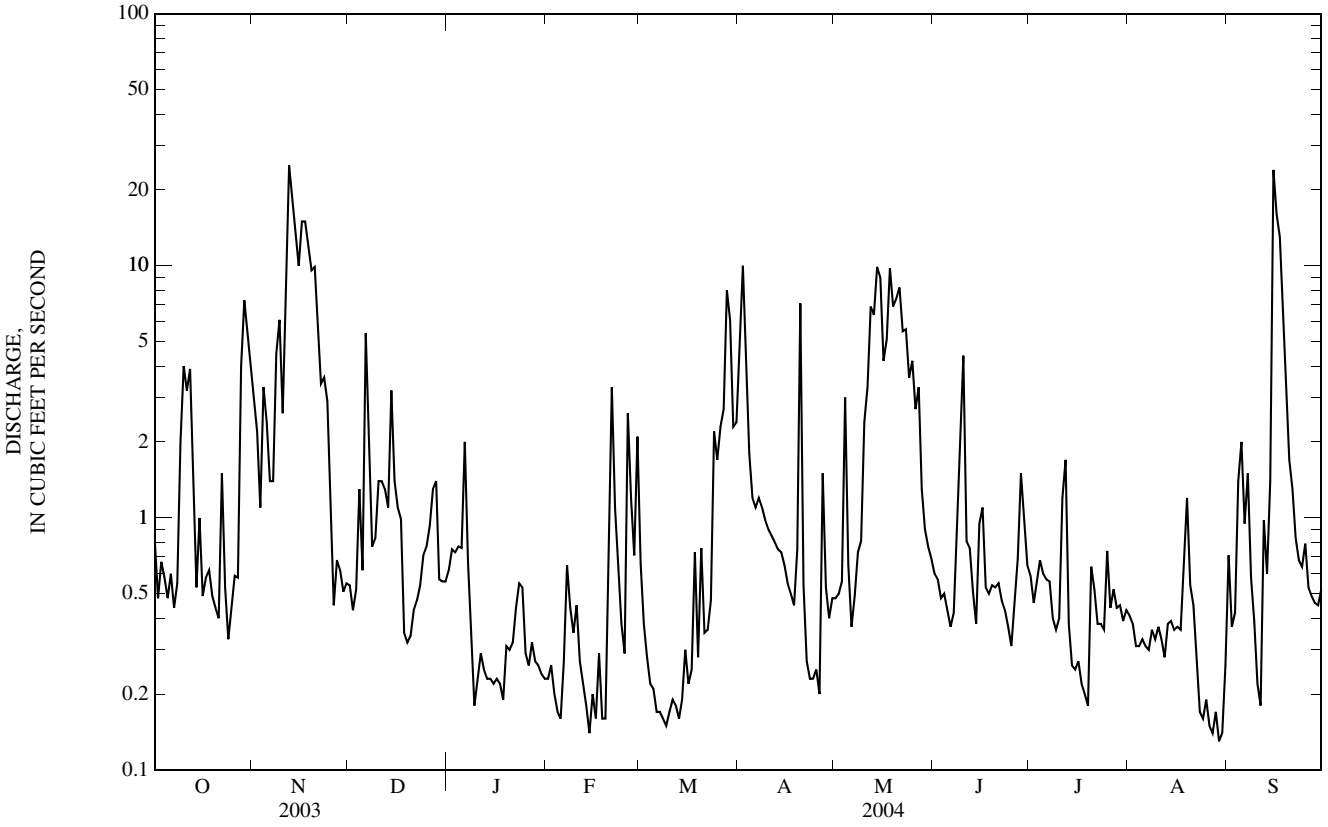
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2004, BY WATER YEAR (WY)

MEAN	0.56	1.05	0.61	0.49	0.42	0.31	0.56	0.77	0.44	0.45	0.47	0.77
MAX	1.54	6.18	1.24	0.67	0.71	1.12	2.18	3.73	1.10	1.18	0.89	2.80
(WY)	(2004)	(2004)	(2000)	(1997)	(2000)	(2004)	(2003)	(2004)	(2003)	(1992)	(2003)	(2004)
MIN	0.25	0.24	0.22	0.28	0.28	0.15	0.20	0.13	0.18	0.22	0.19	0.34
(WY)	(1993)	(2003)	(1994)	(1994)	(2002)	(2003)	(2000)	(1999)	(2000)	(1994)	(1993)	(1993)

50074950 QUEBRADA GUABA NEAR NAGUABO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1992 - 2004	
ANNUAL TOTAL	516.98		626.70			
ANNUAL MEAN	1.42		1.71		0.57	
HIGHEST ANNUAL MEAN					1.71	2004
LOWEST ANNUAL MEAN					0.32	1994
HIGHEST DAILY MEAN	25	Nov 12	25	Nov 12	25	Nov 12, 2003
LOWEST DAILY MEAN	0.11	Mar 27	0.13	Aug 29	0.06	May 31, 1999
ANNUAL SEVEN-DAY MINIMUM	0.12	Mar 25	0.15	Aug 24	0.07	May 27, 1999
MAXIMUM PEAK FLOW			116	Sep 15	133	Apr 17, 2003
MAXIMUM PEAK STAGE			10.95	Sep 15	11.20	Apr 17, 2003
INSTANTANEOUS LOW FLOW					0.05	May 1, 1997
ANNUAL RUNOFF (AC-FT)	1,030		1,240		414	
ANNUAL RUNOFF (CFSM)	11.8		14.3		4.77	
ANNUAL RUNOFF (INCHES)	160.26		194.28		64.76	
10 PERCENT EXCEEDS	2.9		4.4		0.92	
50 PERCENT EXCEEDS	0.58		0.56		0.31	
90 PERCENT EXCEEDS	0.22		0.22		0.16	

e Estimated



50075000 RIO ICACOS NEAR NAGUABO, PR

LOCATION.--Lat 18°16'38", long 65°47'09", Hydrologic Unit 21010005, in Caribbean National Forest at Highway 191 at El Yunque, 1.6 mi (2.6 km) upstream from confluence with Río Cubuy, 2.8 mi (4.5 km) north of Florida, and 5.3 mi (8.5 km) northwest of Naguabo Plaza.

DRAINAGE AREA.--1.26 mi^2 (3.26 km^2).

PERIOD OF RECORD.--July 1945 to March 1953 (operated by the Puerto Rico Water Resources Authority), annual maximum, water years 1953-62, annual low-flow measurements 1962-66, October 1979 to current year.

REVISED RECORDS.--WDR PR-02-1: 1995-2001 (M).

GAGE.--Water-stage recorder, crest-stage gage and sharp-crested weir. Elevation of gage is 2,020 ft (616 m), from topographic map.

REMARKS.--Records fair. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

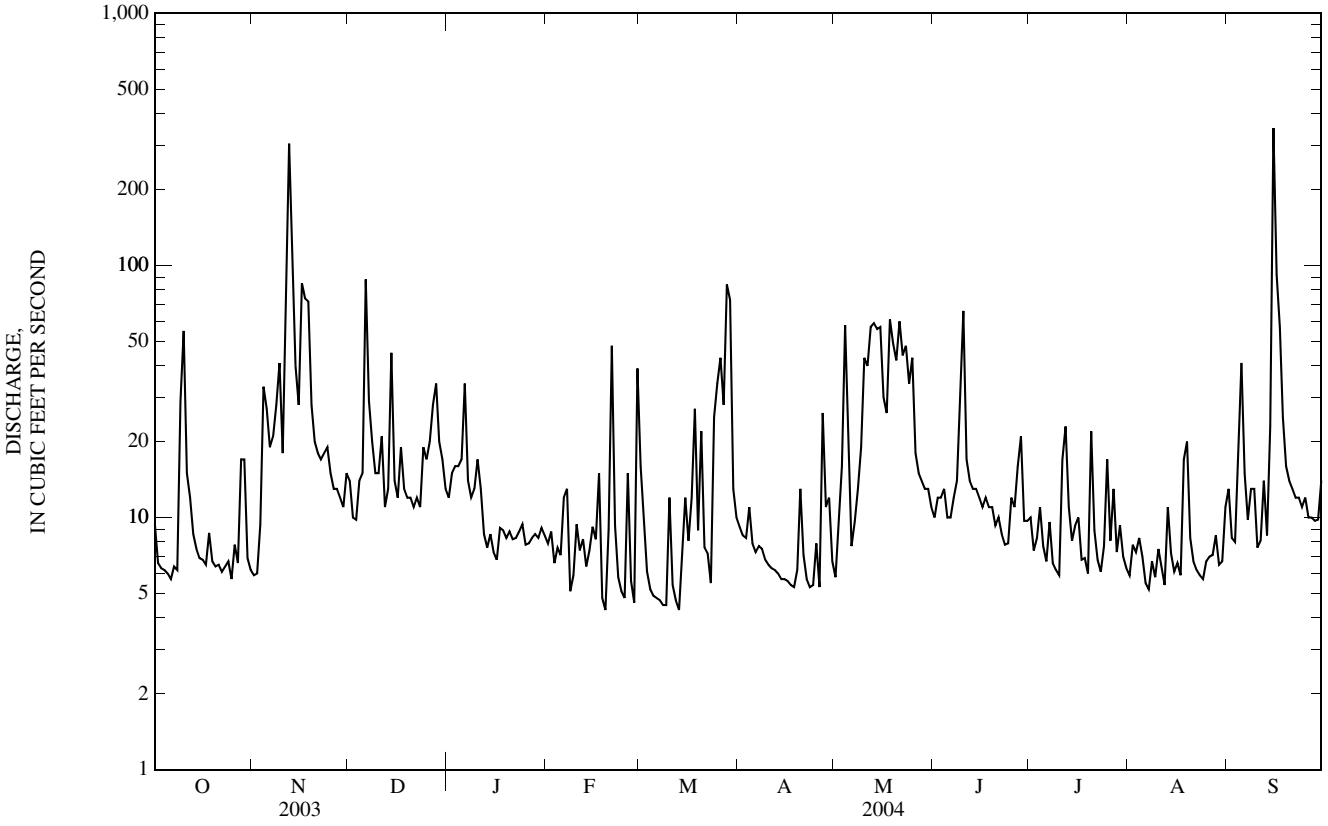
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.4	5.9	14	12	7.9	16	9.2	5.8	10	10	5.9	13
2	6.6	6.0	10	15	8.8	10	8.5	10	12	7.4	7.8	8.3
3	6.3	9.4	9.8	16	6.6	6.1	8.3	16	12	8.3	7.3	8.0
4	6.2	33	14	16	7.6	5.2	11	58	13	11	8.3	21
5	6.0	27	15	17	7.1	4.9	7.9	17	10	7.7	7.0	41
6	5.7	19	88	34	12	4.8	7.3	7.7	10	6.7	5.5	15
7	6.4	21	29	14	13	4.7	7.7	9.6	12	9.6	5.2	9.8
8	6.2	28	20	12	5.1	4.5	7.5	13	14	6.6	6.7	13
9	29	41	15	13	5.9	4.5	6.8	19	35	6.2	5.8	13
10	55	18	15	17	9.4	12	6.5	43	66	5.9	7.5	7.6
11	15	88	21	13	7.4	5.4	6.3	40	17	17	6.4	8.1
12	12	304	11	8.6	8.2	4.7	6.2	57	14	23	5.4	14
13	8.6	123	13	7.6	6.4	4.3	6.0	59	13	11	11	8.5
14	7.5	40	45	8.6	7.4	7.6	5.7	56	13	8.1	7.2	23
15	6.9	28	14	7.3	9.2	12	5.7	57	12	9.3	6.1	351
16	6.8	85	12	6.8	8.2	8.1	5.6	30	11	10	6.6	92
17	6.5	74	19	9.1	15	12	5.4	26	12	6.8	5.9	57
18	8.7	72	13	8.9	4.8	27	5.3	61	11	6.9	17	25
19	6.7	28	12	8.3	4.3	8.9	6.2	49	11	6.0	20	16
20	6.4	20	12	8.8	9.0	22	13	42	9.3	22	8.3	14
21	6.5	18	11	8.2	48	7.6	7.1	60	10	8.9	6.7	13
22	6.1	17	12	8.3	9.3	7.2	5.7	44	8.6	6.8	6.2	12
23	6.4	18	11	8.8	5.8	5.5	5.3	48	7.8	6.1	5.9	12
24	6.7	19	19	9.4	5.1	25	5.4	34	7.9	7.7	5.7	11
25	5.7	15	17	7.8	4.8	34	7.9	43	12	17	6.7	12
26	7.8	13	20	7.9	15	43	5.3	18	11	8.1	7.0	10
27	6.6	13	28	8.3	5.6	28	26	15	16	13	7.1	10
28	17	12	34	8.6	4.6	84	11	14	21	7.3	8.5	9.7
29	17	11	20	8.3	39	73	12	13	9.7	9.3	6.5	9.8
30	6.9	15	17	9.1	---	13	6.7	13	9.7	7.0	6.7	14
31	6.2	---	13	8.5	---	10	---	11	---	6.3	11	---
TOTAL	314.8	1,221.3	603.8	346.2	300.5	515.0	238.5	989.1	431.0	297.0	238.9	871.8
MEAN	10.2	40.7	19.5	11.2	10.4	16.6	7.95	31.9	14.4	9.58	7.71	29.1
MAX	55	304	88	34	48	84	26	61	66	23	20	351
MIN	5.7	5.9	9.8	6.8	4.3	4.3	5.3	5.8	7.8	5.9	5.2	7.6
AC-FT	624	2,420	1,200	687	596	1,020	473	1,960	855	589	474	1,730
CFSM	8.06	32.3	15.5	8.86	8.22	13.2	6.31	25.3	11.4	7.60	6.12	23.1
IN.	9.29	36.06	17.83	10.22	8.87	15.20	7.04	29.20	12.72	8.77	7.05	25.74

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2004, BY WATER YEAR (WY)

MEAN	15.3	19.3	16.2	13.4	13.0	10.0	12.3	15.8	12.0	12.8	14.3	17.6
MAX	32.1	46.8	34.6	27.0	44.0	26.2	34.4	31.9	20.5	38.9	24.5	40.5
(WY)	(1986)	(1951)	(1999)	(1952)	(1950)	(1949)	(1950)	(2004)	(1996)	(1952)	(1945)	(1996)
MIN	4.78	7.90	4.99	6.65	4.86	3.96	4.77	5.25	5.19	6.44	5.91	7.03
(WY)	(1993)	(2003)	(1990)	(1994)	(1983)	(1951)	(1984)	(1999)	(1985)	(1994)	(1993)	(1986)

50075000 RIO ICACOS NEAR NAGUABO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1945 - 2004	
ANNUAL TOTAL	5,543.6		6,367.9			
ANNUAL MEAN	15.2		17.4		14.3	
HIGHEST ANNUAL MEAN					21.0	1952
LOWEST ANNUAL MEAN					7.92	1994
HIGHEST DAILY MEAN	438	Apr 17	351	Sep 15	571	Sep 10, 1996
LOWEST DAILY MEAN	3.6	Mar 31	4.3	Feb 19	1.5	Mar 22, 1946
ANNUAL SEVEN-DAY MINIMUM	4.4	Mar 22	5.0	Mar 3	2.0	Apr 7, 1946
MAXIMUM PEAK FLOW			1,850	Sep 15	Not determined	Apr 17, 2003
MAXIMUM PEAK STAGE			7.69	Sep 15	Not determined	Apr 17, 2003
ANNUAL RUNOFF (AC-FT)	11,000		12,630		10,370	
ANNUAL RUNOFF (CFSM)	12.1		13.8		11.4	
ANNUAL RUNOFF (INCHES)	163.67		188.00		154.39	
10 PERCENT EXCEEDS	28		34		27	
50 PERCENT EXCEEDS	8.1		10		8.3	
90 PERCENT EXCEEDS	5.0		5.9		4.8	



50076000 RIO BLANCO NEAR FLORIDA, PR

LOCATION.--Lat 18°13'45", long 65°47'06", Hydrologic Unit 21010005, on left bank of Highway 191, 0.5 mi (0.8 km) upstream from Quebrada Sonadora, 0.7 mi (1.1 km) upstream from intersection of Highways 191 and 31, 0.8 mi (1.3 km) south of Florida.

DRAINAGE AREA.--12.3 mi^2 (31.9 km^2).

PERIOD OF RECORD.--October 1982 to January 1985, July 2002 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 50 ft (15 m), from topographic map.

REMARKS.-Records fair except those for estimated daily discharges which are poor. Low flow affected by diversion for water supply and hydroelectric power generation.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	46	81	54	42	120	54	43	76	72	43	53
2	48	47	70	73	47	65	49	75	82	56	50	47
3	47	69	66	70	42	50	47	86	85	84	40	56
4	49	224	e101	77	44	45	96	365	85	86	51	194
5	46	214	81	107	42	42	50	124	86	68	62	152
6	44	130	e621	191	52	41	43	61	70	53	41	62
7	43	158	227	69	92	40	43	81	123	65	39	47
8	43	127	e154	53	45	39	43	52	83	47	42	106
9	239	258	81	52	50	40	45	113	135	42	39	158
10	648	123	73	64	66	70	40	190	830	40	38	43
11	130	894	108	128	44	47	38	227	80	60	42	41
12	e84	2,940	e69	61	52	39	38	351	66	186	42	111
13	67	918	e64	e52	40	38	36	528	61	74	98	60
14	61	338	e111	52	40	46	35	317	58	59	48	165
15	54	178	e72	49	49	64	35	547	56	51	44	4,110
16	52	e510	e61	48	49	57	35	171	54	67	49	794
17	50	510	e115	47	110	77	34	126	65	44	40	466
18	58	685	71	46	44	162	33	293	57	69	80	159
19	54	203	e62	45	41	63	43	269	52	45	119	96
20	49	134	62	44	43	138	114	416	50	107	54	81
21	51	114	e55	44	275	65	62	421	69	61	39	70
22	47	103	53	44	77	50	44	233	52	47	36	63
23	48	105	e58	45	48	39	37	308	48	41	33	60
24	52	104	e54	44	42	75	36	272	46	47	30	55
25	46	94	e60	42	42	186	51	377	56	107	32	63
26	121	83	e81	41	189	409	37	124	56	61	32	52
27	76	79	117	41	58	210	211	103	76	87	33	50
28	94	78	171	44	44	471	120	93	122	64	32	49
29	106	73	e99	45	198	318	79	87	56	129	32	52
30	53	89	83	42	---	70	51	84	64	61	31	52
31	48	---	59	42	---	57	---	80	---	49	44	---
TOTAL	2,666	9,628	3,240	1,856	2,007	3,233	1,679	6,617	2,899	2,129	1,435	7,567
MEAN	86.0	321	105	59.9	69.2	104	56.0	213	96.6	68.7	46.3	252
MAX	648	2,940	621	191	275	471	211	547	830	186	119	4,110
MIN	43	46	53	41	40	38	33	43	46	40	30	41
AC-FT	5,290	19,100	6,430	3,680	3,980	6,410	3,330	13,120	5,750	4,220	2,850	15,010
CFSM	6.99	26.1	8.50	4.87	5.63	8.48	4.55	17.4	7.86	5.58	3.76	20.5
IN.	8.06	29.12	9.80	5.61	6.07	9.78	5.08	20.01	8.77	6.44	4.34	22.89

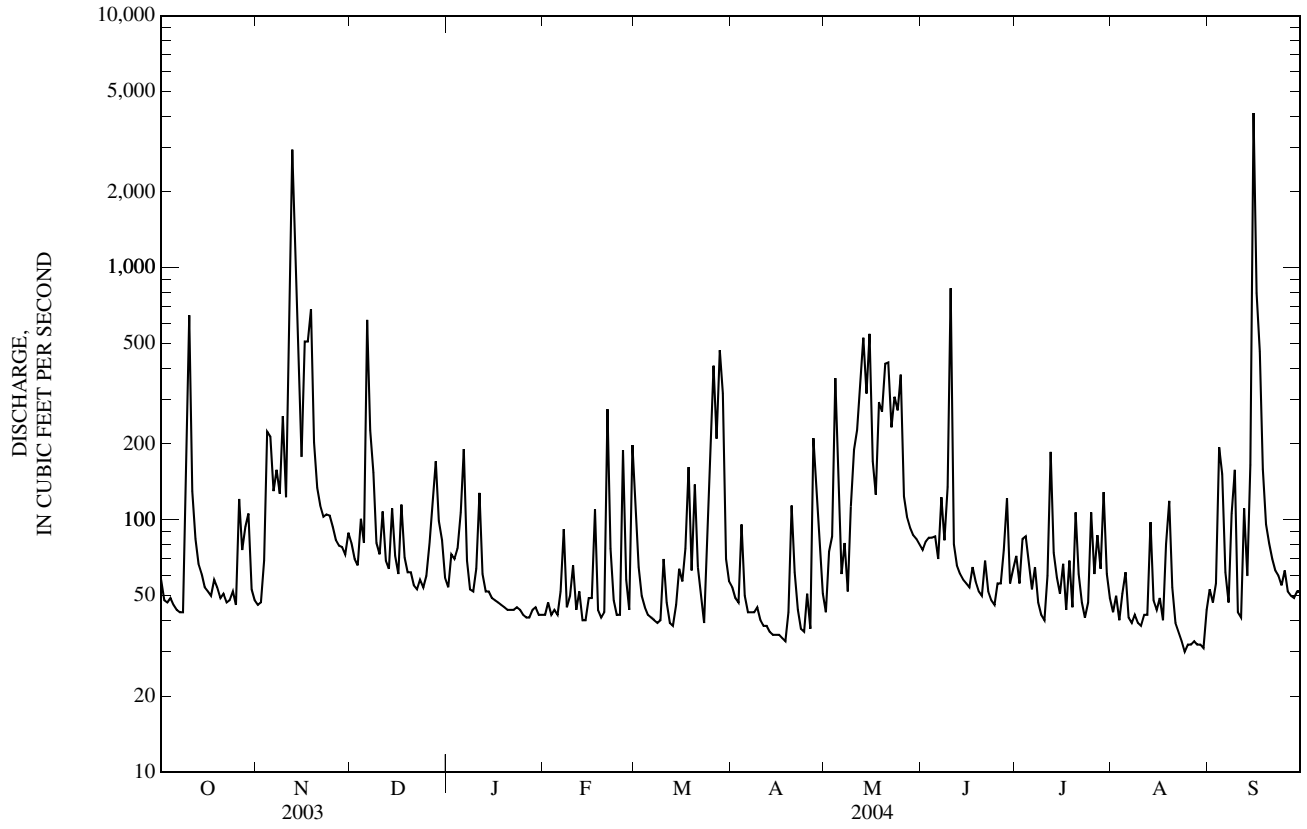
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2004, BY WATER YEAR (WY)

MEAN	73.0	142	76.4	51.2	54.8	48.5	119	106	75.4	68.8	76.3	104
MAX	89.3	321	105	59.9	69.2	104	323	213	96.6	103	119	252
(WY)	(1985)	(2004)	(2004)	(2004)	(2004)	(2004)	(2003)	(2004)	(2004)	(1983)	(1983)	(2004)
MIN	50.5	47.5	54.3	41.7	16.8	24.5	20.2	64.5	62.0	50.0	46.3	49.0
(WY)	(1983)	(2003)	(2003)	(1983)	(1983)	(2003)	(1984)	(1984)	(1983)	(1984)	(2004)	(1983)

50076000 RIO BLANCO NEAR FLORIDA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1983 - 2004	
ANNUAL TOTAL	40,165		44,956			
ANNUAL MEAN	110		123		82.2	
HIGHEST ANNUAL MEAN					123	2004
LOWEST ANNUAL MEAN					55.7	1984
HIGHEST DAILY MEAN	5,850	Apr 17	4,110	Sep 15	5,850	Apr 17, 2003
LOWEST DAILY MEAN	16	Mar 22	30	Aug 24	9.6	Apr 10, 1983
ANNUAL SEVEN-DAY MINIMUM	19	Mar 22	32	Aug 24	10	Apr 7, 1983
MAXIMUM PEAK FLOW			27,900	Sep 15	50,600	Apr 17, 2003
MAXIMUM PEAK STAGE			22.53	Sep 15	24.40	Apr 17, 2003
INSTANTANEOUS LOW FLOW					8.8	Apr 10, 1983
ANNUAL RUNOFF (AC-FT)	79,670		89,170		59,560	
ANNUAL RUNOFF (CFSM)	8.95		9.99		6.68	
ANNUAL RUNOFF (INCHES)	121.47		135.96		90.81	
10 PERCENT EXCEEDS	169		212		142	
50 PERCENT EXCEEDS	54		61		46	
90 PERCENT EXCEEDS	25		41		20	

e Estimated



THIS PAGE IS INTENTIONALLY BLANK

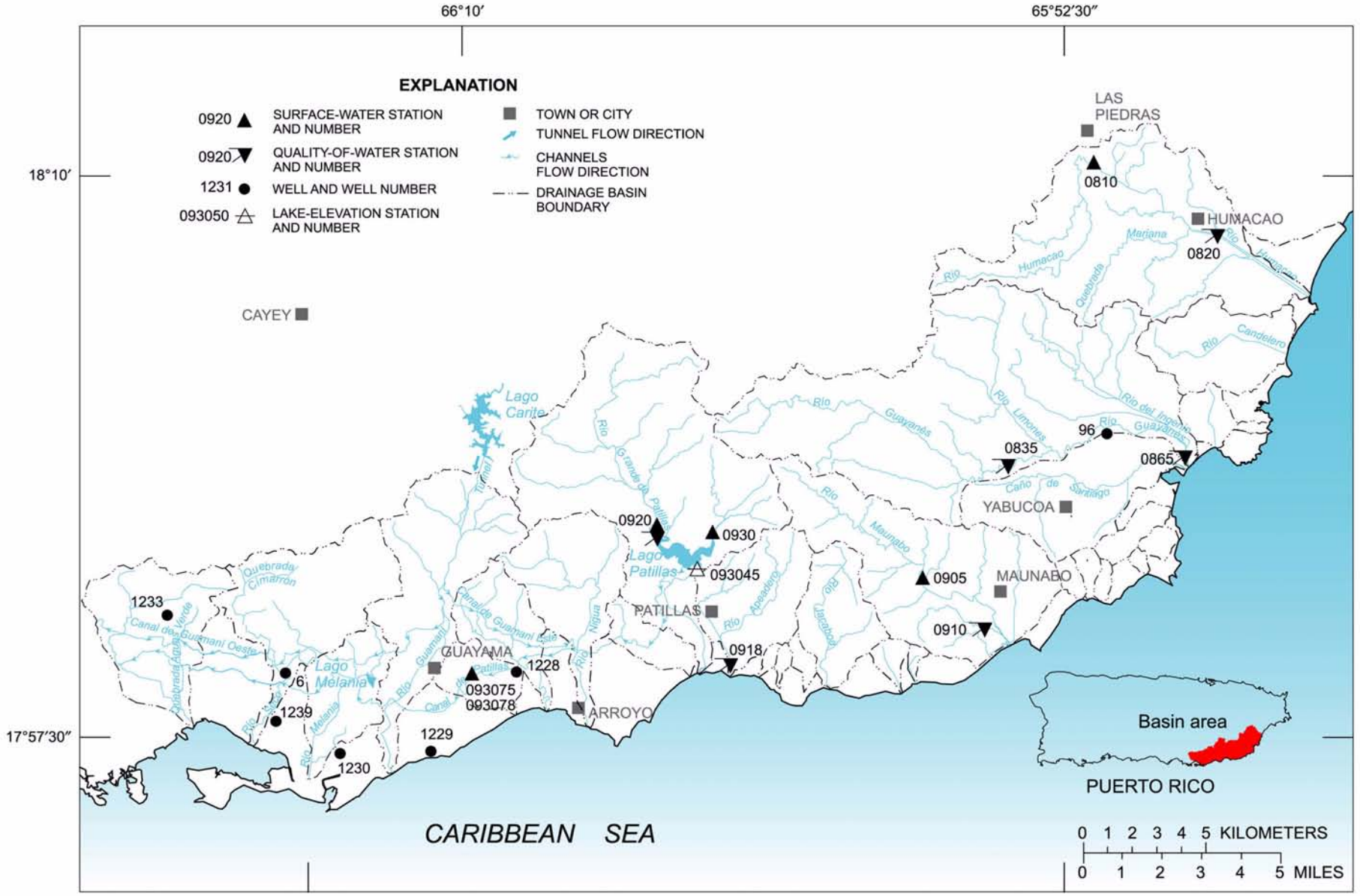


Figure 19. Southeastern river basins -- Río Humacao to Quebrada Aguas Verdes basins.

50081000 RIO HUMACAO AT LAS PIEDRAS, PR

LOCATION.--Lat 18°10'27", long 65°52'11", Hydrologic Unit 21010005, on left bank at downstream side of bridge on Highway 921, 0.6 mi (1.0 km) southeast of junction with Highway 30, 0.8 mi (1.3 km) downstream from Quebrada Blanca and 0.8 mi (1.3 km) south of Las Piedras.

DRAINAGE AREA.--6.65 mi^2 (17.2 km^2).

PERIOD OF RECORD.--September 1958 to December 1967 (monthly discharge measurements), July 1974 to September 1977, October 1987 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 260 ft (79 m), from topographic map. Prior to July 1974, crest-stage gage at different datum. July 1974 to September 1977 at site 90 ft (27 m) upstream at present datum.

REMARKS.--Records fair except those above 1,000 ft^3/s (28.3 m^3/s), which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

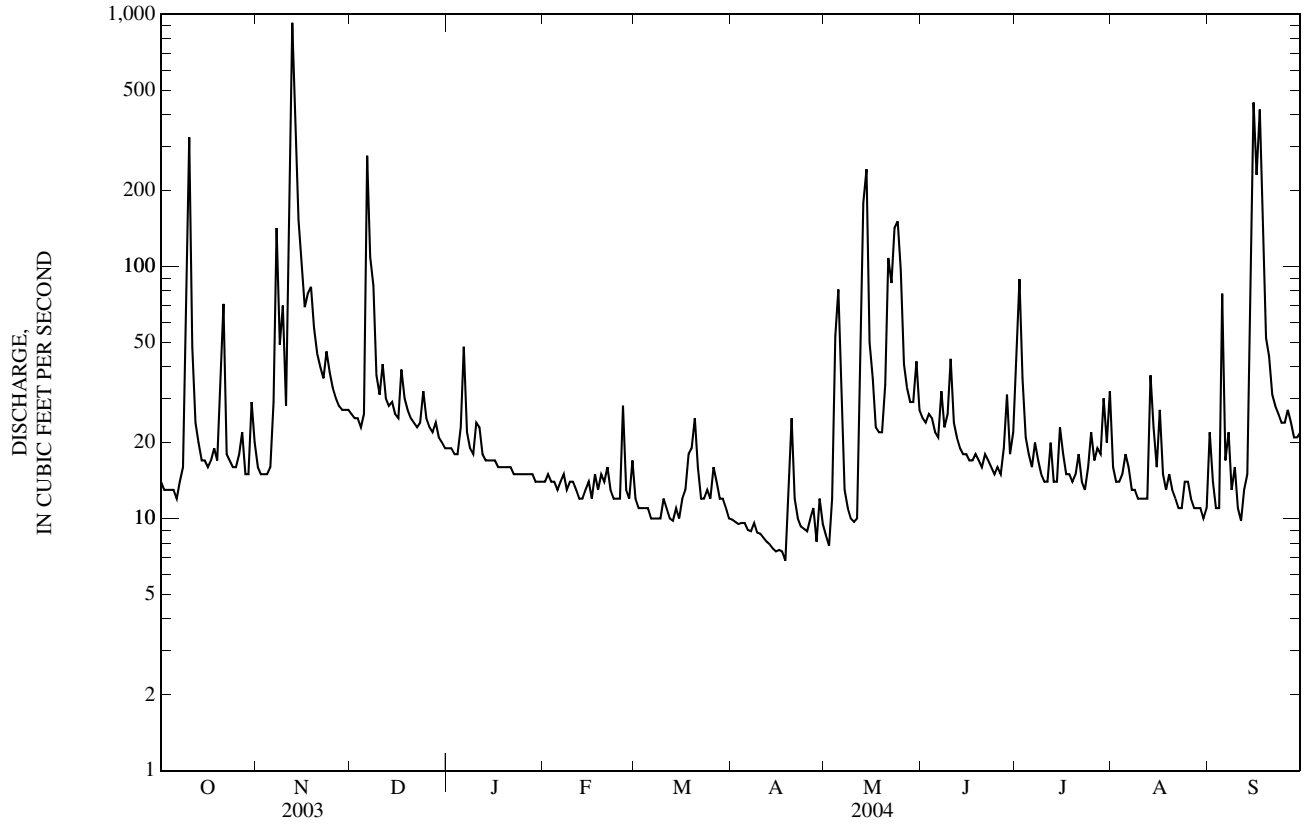
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	16	26	19	14	12	9.9	8.6	25	50	16	22
2	13	15	25	19	15	11	9.7	7.8	24	89	14	14
3	13	15	25	18	14	11	9.5	12	26	36	14	11
4	13	15	23	18	14	11	9.6	53	25	21	15	11
5	13	16	26	23	13	11	9.6	81	22	18	18	78
6	12	29	275	48	14	10	9.0	28	21	16	16	17
7	14	142	109	22	15	10	8.9	13	32	20	13	22
8	16	49	84	19	13	10	9.6	11	23	17	13	13
9	39	70	37	18	14	10	8.8	10	26	15	12	16
10	325	28	31	24	14	12	8.7	9.7	43	14	12	11
11	48	237	41	23	13	11	8.4	10	24	14	12	9.8
12	24	925	30	18	12	10	8.1	40	21	20	12	13
13	20	319	28	17	12	9.8	7.9	179	19	14	37	15
14	17	153	29	17	13	11	7.6	243	18	14	23	61
15	17	99	26	17	14	10	7.4	50	18	23	16	447
16	16	69	25	17	12	12	7.5	36	17	18	27	231
17	17	78	39	16	15	13	7.4	23	17	15	15	419
18	19	83	30	16	13	18	6.8	22	18	15	13	144
19	17	57	27	16	15	19	14	22	17	14	15	52
20	33	45	25	16	14	25	25	34	16	15	13	44
21	71	40	24	16	16	16	12	108	18	18	12	31
22	18	36	23	15	13	12	10	86	17	14	11	28
23	17	46	24	15	12	12	9.3	142	16	13	11	26
24	16	38	32	15	12	13	9.1	151	15	16	14	24
25	16	33	25	15	12	12	8.9	97	16	22	14	24
26	18	30	23	15	28	16	10	41	15	17	12	27
27	22	28	22	15	13	14	11	33	19	19	11	24
28	15	27	24	15	12	12	8.1	29	31	18	11	21
29	15	27	21	14	17	12	12	29	18	30	11	21
30	29	27	20	14	---	11	9.5	42	22	20	10	22
31	20	---	19	14	---	10	---	27	---	32	11	---
TOTAL	957	2,792	1,218	564	408	386.8	293.3	1,678.1	639	677	454	1,898.8
MEAN	30.9	93.1	39.3	18.2	14.1	12.5	9.78	54.1	21.3	21.8	14.6	63.3
MAX	325	925	275	48	28	25	25	243	43	89	37	447
MIN	12	15	19	14	12	9.8	6.8	7.8	15	13	10	9.8
AC-FT	1,900	5,540	2,420	1,120	809	767	582	3,330	1,270	1,340	901	3,770
CFSM	4.64	14.0	5.91	2.74	2.12	1.88	1.47	8.14	3.20	3.28	2.20	9.52
IN.	5.35	15.62	6.81	3.16	2.28	2.16	1.64	9.39	3.57	3.79	2.54	10.62

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2004, BY WATER YEAR (WY)

MEAN	30.6	40.5	29.8	19.8	15.6	11.4	11.2	17.5	17.8	18.6	20.5	36.2
MAX	77.5	126	112	37.5	22.2	16.4	27.8	54.1	41.1	38.1	34.7	121
(WY)	(1999)	(1988)	(1988)	(1999)	(1997)	(1989)	(2003)	(2004)	(1996)	(1993)	(1996)	(1996)
MIN	10.4	9.67	8.80	8.38	8.00	5.49	5.88	7.26	5.91	7.02	9.45	10.0
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(1977)	(1990)	(1977)	(2001)	(1974)	(1990)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1974 - 2004	
ANNUAL TOTAL	10,024.9		11,966.0			
ANNUAL MEAN	27.5		32.7		22.6	
HIGHEST ANNUAL MEAN					37.6	1988
LOWEST ANNUAL MEAN					12.1	1990
HIGHEST DAILY MEAN	925	Nov 12	925	Nov 12	2,010	Sep 10, 1996
LOWEST DAILY MEAN	3.9	Mar 13	6.8	Apr 18	2.2	Jul 15, 1974
ANNUAL SEVEN-DAY MINIMUM	4.5	Mar 12	7.5	Apr 12	2.8	Jul 19, 1974
MAXIMUM PEAK FLOW			2,370	Sep 15	20,800	Sep 6, 1960
MAXIMUM PEAK STAGE			6.80	Sep 15	34.40	Sep 6, 1960
ANNUAL RUNOFF (AC-FT)	19,880		23,730		16,340	
ANNUAL RUNOFF (CFSM)	4.13		4.92		3.39	
ANNUAL RUNOFF (INCHES)	56.08		66.94		46.08	
10 PERCENT EXCEEDS	44		48		34	
50 PERCENT EXCEEDS	17		17		14	
90 PERCENT EXCEEDS	6.0		10		7.3	

50081000 RIO HUMACAO AT LAS PIEDRAS, PR—Continued



50082000 RIO HUMACAO AT HIGHWAY 3 AT HUMACAO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°08'49", long 65°49'37", at bridge on Highway 3, 300 ft (91 m) downstream from Quebrada Mariana, and 0.4 mi (0.6 km) south of Humacao Plaza.

DRAINAGE AREA.--17.3 mi^2 (44.8 km^2).

PERIOD OF RECORD.--Water years 1958-66, 1969 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
15...	1330	43	23	7.1	7.5	310	28.4	94	25.5	7.36	2.92	1	23.0
APR													
14...	1000	7.5	2.3	7.0	7.4	382	26.0	110	30.6	8.03	2.17	1	29.6
JUN													
09...	0810	53	76	7.8	7.6	252	25.6	--	--	--	--	--	--
AUG													
19...	0640	13	34	7.4	7.5	313	25.7	81	22.5	5.97	1.90	.9	19.0

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
15...	89	24.4	<.2	35.7	8.4	--	180	--	<10	.40	.07	.86	.870
APR													
14...	120	34.8	<.2	39.2	9.9	<.1	226	--	<10	.90	.74	.43	.500
JUN													
09...	82	--	--	--	--	--	--	--	12	.40	.02	--	.580
AUG													
19...	107	27.4	<.2	37.8	8.3	--	189	6.70	66	--	.08	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC													
15...	.01	.33	1.3	5.6	.08	<10	49,000	E160,000	--	--	--	--	--
APR													
14...	.07	.16	1.4	6.2	.15	<10	--	--	<2	72.7	36	<.2	<.8
JUN													
09...	<.01	.38	.98	4.3	.17	<10	16,000	320,000	--	--	--	--	--
AUG													
19...	--	--	--	--	.12	<10	E2,300	38,000	<2	80.4	33	<.2	<.8

50082000 RIO HUMACAO AT HIGHWAY 3 AT HUMACAO, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC 15...	--	--	--	--	--	--	--	--	--	--	--
APR 14...	M	<.01	180	<1.0	58.4	<.02	<3	E.2	E4	E.06	<16
JUN 09...	--	--	--	--	--	--	--	--	--	--	--
AUG 19...	M	<.01	1,690	E.7	204	<.02	<3	<.3	7	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50083500 RIO GUAYANES AT YABUCOA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°03'33", long 65°54'03", at bridge on Highway 182, 1.4 mi (2.2 km) west-northwest of Yabucoa Plaza.

DRAINAGE AREA.--17.2 mi^2 (44.6 km^2).

PERIOD OF RECORD.--Water years 1958-62, 1968-70, 1980 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC 15...	1550	103	30	7.0	7.1	167	24.9	48	12.2	4.32	1.79	.9	13.6
APR 06...	1415	28	6.2	7.2	7.2	190	27.7	56	14.0	5.16	1.42	1	16.6
JUN 16...	1305	43	22	6.9	7.4	178	27.1	--	--	--	--	--	--
AUG 13...	0745	56	67	7.1	7.1	169	25.8	42	11.3	3.26	1.57	.8	11.7

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
DEC 15...	51	11.9	<.2	30.4	4.5	--	109	30.2	<10	.40	.02	.530	<.01
APR 06...	65	13.8	<.2	38.0	4.2	<.1	132	--	<10	<.20	.02	.300	<.01
JUN 16...	64	--	--	--	--	--	--	--	16	.50	.02	.310	<.01
AUG 13...	56	12.8	<.2	30.8	4.2	--	110	16.8	113	--	.05	--	--

Date	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)
DEC 15...	.38	.93	4.1	.08	<10	2,000	25,000	--	--	--	--	--	--
APR 06...	--	--	--	.03	<10	--	--	<2	50.1	18	<.2	<.8	M
JUN 16...	.48	.81	3.6	.13	<10	2,800	36,000	--	--	--	--	--	--
AUG 13...	--	--	--	.21	20	50,000	220,000	<2	91.5	41	<.2	E.6	20

Date	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
DEC 15...	--	--	--	--	--	--	--	--	--	--
APR 06...	<.01	1,000	<1.0	68.9	<.02	<3	<.3	<4	<.20	<16
JUN 16...	--	--	--	--	--	--	--	--	--	--
AUG 13...	<.01	5,260	1.5	319	<.02	<3	<.3	18	<.10	<16

50083500 RIO GUAYANES AT YABUCOA, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED
PESTICIDE ANALYSES

Date	Time	2,4,5-T water unfltrd ug/L (39740)	2,4-D water unfltrd ug/L (39730)	Aldrin, water, unfltrd ug/L (39330)	alpha-Endosulfan, water, unfltrd ug/L (39388)	Carbophenothion, water, unfltrd ug/L (39786)	Chlordane, technical, water, unfltrd ug/L (39350)	Chlorpyrifos water unfltrd ug/L (38932)	Diazinon, water, unfltrd ug/L (39570)	Dichlorprop, water, unfltrd ug/L (82183)	Dieldrin, water, unfltrd ug/L (39380)	Disulfoton, water, unfltrd ug/L (39011)	Endrin, water, unfltrd ug/L (39390)
AUG													
13...	0745	<.01	.01	<.01	<.03	<.02	<.1	<.01	<.02	<.02	<.016	<.10	<.01

Date	Ethion, water, unfltrd ug/L (39398)	Fonofos water unfltrd ug/L (82614)	Heptachlor epoxide water unfltrd ug/L (39420)	Heptachlor, water, unfltrd ug/L (39410)	Lindane water, unfltrd ug/L (39340)	Malathion, water, unfltrd ug/L (39530)	Methyl parathion, water, unfltrd ug/L (39600)	Mirex, water, unfltrd ug/L (39755)	p,p'-DDD, water, unfltrd ug/L (39360)	p,p'-DDE, water, unfltrd ug/L (39365)	p,p'-DDT, water, unfltrd ug/L (39370)	p,p'-Methoxychlor, water, unfltrd ug/L (39480)	Parathion, water, unfltrd ug/L (39540)
AUG													
13...	<.01	<.01	<.009	<.01	<.014	<.10	<.01	<.006	<.016	<.014	<.010	<.006	<.01

Date	PCBs, water, unfltrd ug/L (39516)	Phorate water unfltrd ug/L (39023)	Silvex, water, unfltrd ug/L (39760)	Toxaphene, water, unfltrd ug/L (39400)	Tribuphos, water, unfltrd ug/L (39040)
AUG					
13...	<.1	<.02	<.02	<1	<.02

< Actual value is known to be less than the value shown
E Estimated value
M Presence verified, not quantified

50086500 RIO GUAYANES ABOVE MOUTH AT PLAYA DE GUAYANES, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°03'45", long 65°49'42", at old railroad crossing, 0.2 mi (0.3 km) from mouth, 0.4 mi (0.6 km) west of Playa de Guayanés, and 3.5 mi (5.6 km) northeast of Yabucoa Plaza.

DRAINAGE AREA.--34.0 mi^2 (88.1 km^2).

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
APR													
06...	1120	--	7.8	7.5	7.4	220	25.2	62	15.7	5.42	1.54	1	19.8
JUN													
16...	0935	--	17	7.8	7.5	192	25.7	--	--	--	--	--	--
AUG													
13...	1108	97	18	7.0	7.3	180	26.5	50	13.3	4.05	1.71	.9	15.4

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
APR													
06...	69	17.3	<.2	37.7	5.7	<.1	145	--	10	<.20	.03	.360	<.01
JUN													
16...	64	--	--	--	--	--	--	--	19	<.20	.02	.430	<.01
AUG													
13...	59	12.7	<.2	29.3	4.1	--	117	30.7	20	--	.03	--	--

Date	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)
APR													
06...	.04	<10	--	--	<2	56.3	20	<.2	<.8	<4	<.01	1,170	<1.0
JUN													
16...	.05	<10	E820	9,000	--	--	--	--	--	--	--	--	--
AUG													
13...	.08	<10	2,600	65,000	<2	55.5	25	<.2	<.8	M	<.01	1,390	E.6

Date	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
APR							
06...	118	<.02	<3	<.3	<4	<.20	<16
JUN							
16...	--	--	--	--	--	--	--
AUG							
13...	92.4	<.02	<3	<.3	5	E.05	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50090500 RIO MAUNABO AT LIZAS, PR

LOCATION.--Lat 18°01'38", long 65°56'24", Hydrologic Unit 21010005, on right bank, off Highway 759 at Lizas, about 1.0 mi (1.6 km) downstream from Quebrada Coroco, and about 3.0 mi (4.8 km) northwest of Maunabo.

DRAINAGE AREA.--5.38 mi^2 (13.9 km^2).

PERIOD OF RECORD.--February 1971 to January 1985, February 1991 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 230 ft (70 m), from topographic map.

REMARKS.--Records poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	13	30	18	8.0	7.8	6.6	4.6	17	17	16	33
2	15	14	29	20	9.1	6.3	6.2	5.5	16	12	15	25
3	14	97	27	17	7.8	5.8	5.9	8.0	18	30	17	20
4	15	34	28	16	7.5	5.6	5.7	14	22	22	19	122
5	14	25	55	25	7.4	5.3	5.2	14	18	19	22	59
6	14	33	441	84	8.2	5.2	4.8	8.9	20	12	17	20
7	14	111	92	26	19	5.0	4.9	4.8	35	12	38	18
8	14	70	74	20	9.2	4.9	4.6	4.0	26	11	29	91
9	58	85	41	17	10	5.6	4.5	3.8	31	11	16	37
10	448	56	35	17	15	10	4.3	4.6	37	11	16	21
11	85	536	100	60	8.6	6.2	4.1	4.4	32	11	15	19
12	41	734	41	22	7.5	6.8	3.8	7.3	18	15	18	18
13	39	274	34	17	6.9	4.9	3.5	31	16	12	51	17
14	26	208	70	16	6.9	10	3.3	28	15	11	28	68
15	23	129	36	15	8.2	9.1	3.3	41	14	11	25	439
16	20	121	31	15	9.0	6.5	3.4	25	15	16	35	266
17	18	87	60	13	46	7.5	3.1	13	15	11	19	220
18	34	147	33	12	10	51	2.9	9.3	14	13	18	280
19	19	93	29	12	15	20	16	12	13	11	16	78
20	17	70	30	12	18	23	8.3	79	12	16	16	49
21	35	60	26	11	18	13	5.9	225	16	50	15	37
22	18	60	23	11	11	15	5.2	163	13	15	15	32
23	18	54	24	12	8.7	10	4.0	106	12	13	14	29
24	e65	75	57	11	7.7	9.8	3.4	83	11	12	14	26
25	e26	51	44	9.8	7.4	8.6	3.3	46	12	19	16	25
26	e21	43	29	9.6	15	12	3.4	30	18	14	14	23
27	e18	40	29	9.3	9.1	10	4.6	25	13	13	14	22
28	e16	37	25	9.0	7.4	9.9	3.5	22	21	12	14	21
29	e14	35	22	9.5	15	8.6	5.1	23	12	84	17	20
30	14	33	21	8.7	---	7.6	3.1	20	14	25	14	19
31	13	---	19	8.5	---	7.0	---	18	---	18	16	---
TOTAL	1,201	3,425	1,635	563.4	336.6	318.0	145.9	1,083.2	546	559	609	2,154
MEAN	38.7	114	52.7	18.2	11.6	10.3	4.86	34.9	18.2	18.0	19.6	71.8
MAX	448	734	441	84	46	51	16	225	37	84	51	439
MIN	13	13	19	8.5	6.9	4.9	2.9	3.8	11	11	14	17
AC-FT	2,380	6,790	3,240	1,120	668	631	289	2,150	1,080	1,110	1,210	4,270
CFSM	7.20	21.2	9.80	3.38	2.16	1.91	0.90	6.49	3.38	3.35	3.65	13.3
IN.	8.30	23.68	11.31	3.90	2.33	2.20	1.01	7.49	3.78	3.87	4.21	14.89

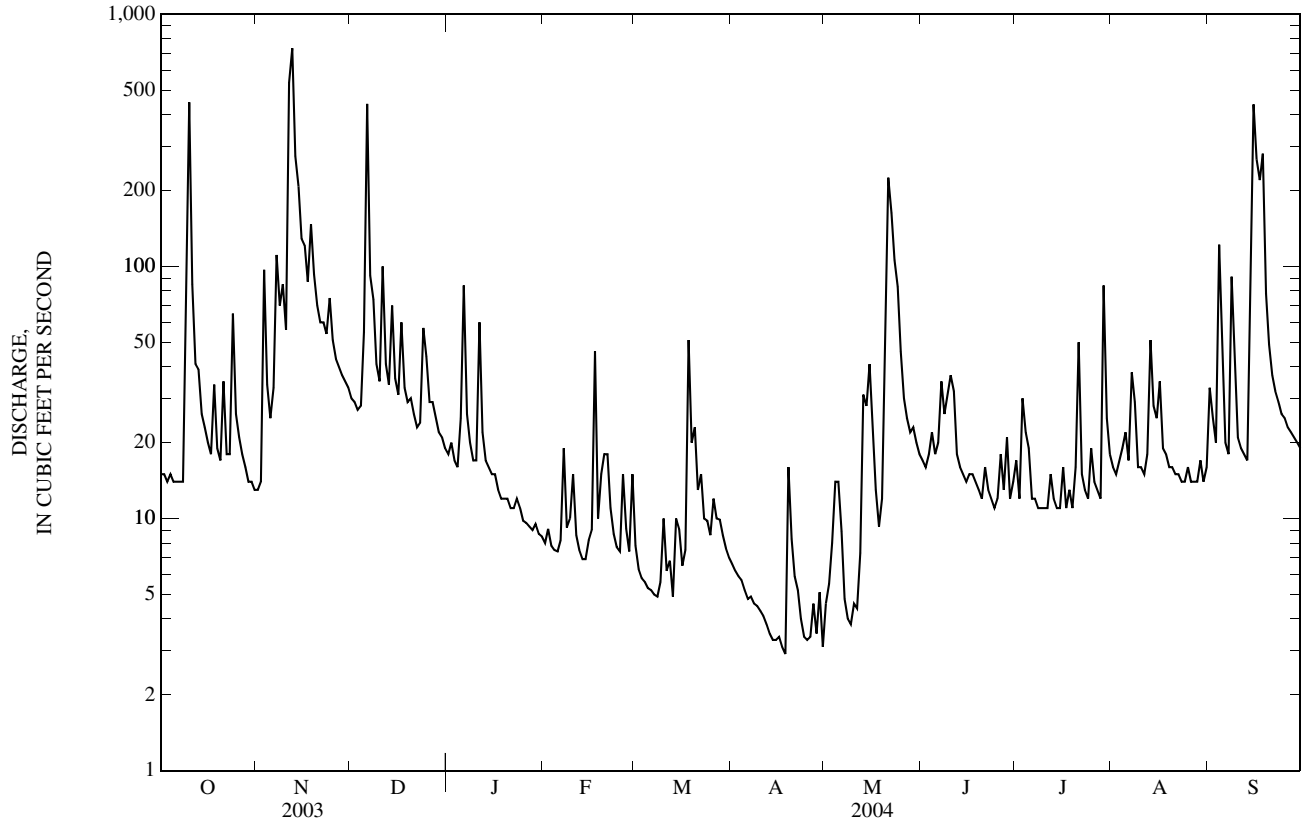
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 2004, BY WATER YEAR (WY)

MEAN	27.7	34.8	21.3	15.2	12.4	9.61	8.87	14.2	18.1	17.6	24.1	29.7
MAX	52.6	114	52.7	40.2	24.5	18.9	35.4	34.9	47.1	40.2	131	94.6
(WY)	(1979)	(2004)	(2004)	(1998)	(1982)	(1976)	(2003)	(2004)	(1979)	(1993)	(1979)	(1996)
MIN	10.4	7.46	8.74	7.79	6.10	4.32	3.92	4.46	4.40	3.70	6.18	7.99
(WY)	(1994)	(1982)	(1994)	(1981)	(1979)	(1979)	(1979)	(1999)	(1974)	(1974)	(1974)	(1980)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1971 - 2004	
ANNUAL TOTAL	13,401.9		12,576.1			
ANNUAL MEAN	36.7		34.4		19.6	
HIGHEST ANNUAL MEAN					36.7	1979
LOWEST ANNUAL MEAN					10.8	1994
HIGHEST DAILY MEAN	734	Nov 12	734	Nov 12	2,480	Aug 31, 1979
LOWEST DAILY MEAN	4.3	Mar 28	2.9	Apr 18	2.2	Jul 16, 1974
ANNUAL SEVEN-DAY MINIMUM	5.0	Mar 25	3.3	Apr 12	2.8	Jul 11, 1974
MAXIMUM PEAK FLOW			2,520	Sep 15	9,950	Sep 20, 1994
MAXIMUM PEAK STAGE			10.42	Sep 15	17.46	Sep 20, 1994
ANNUAL RUNOFF (AC-FT)	26,580		24,940		14,200	
ANNUAL RUNOFF (CFSM)	6.82		6.39		3.64	
ANNUAL RUNOFF (INCHES)	92.67		86.96		49.51	
10 PERCENT EXCEEDS	70		69		35	
50 PERCENT EXCEEDS	20		16		11	
90 PERCENT EXCEEDS	7.8		5.6		5.3	

e Estimated

50090500 RIO MAUNABO AT LIZAS, PR—Continued



50091000 RIO MAUNABO AT MAUNABO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°00'24", long 65°54'19", at bridge on Highway 3, 0.4 mi (0.6 km) southwest of Maunabo Plaza, and 1.3 mi (2.1 km) upstream from mouth.

DRAINAGE AREA.--12.4 mi^2 (32.1 km^2).

PERIOD OF RECORD.--Water years 1958-66, 1975 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC 12...	1250	60	2.5	6.8	7.2	257	26.9	74	18.5	6.70	1.59	1	18.9
APR 07...	1115	11	2.9	6.8	7.4	333	29.1	98	23.8	9.37	1.76	1	27.2
JUN 15...	0845	22	7.7	7.0	7.6	276	25.4	--	--	--	--	--	--
AUG 23...	1352	13	2.3	7.0	7.5	272	31.7	71	18.2	6.31	1.18	1	18.5

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC 12...	74	20.3	<.2	33.3	10.4	--	154	--	<10	.70	.30	.80	.810
APR 07...	97	26.5	<.2	39.0	12.2	.2	198	--	<10	2.2	1.90	.26	.270
JUN 15...	90	--	--	--	--	--	--	--	<10	.70	.56	.44	.460
AUG 23...	92	22.9	<.2	38.8	9.5	--	172	6.17	<10	--	.41	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC 12...	.01	.40	1.5	6.7	.15	<10	37,000	E140,000	--	--	--	--	--
APR 07...	.01	.30	2.5	10.9	.40	10	--	--	<2	47.2	31	<.2	<.8
JUN 15...	.02	.14	1.2	5.1	.06	<10	E670	7,300	--	--	--	--	--
AUG 23...	--	--	--	--	.12	<10	E100	E1,100	E1	41.8	27	<.2	<.8

50091000 RIO MAUNABO AT MAUNABO, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC											
12...	--	--	--	--	--	--	--	--	--	--	--
APR											
07...	M	<.01	360	<1.0	32.2	<.02	<3	<.3	<4	E.17	<16
JUN											
15...	--	--	--	--	--	--	--	--	--	--	--
AUG											
23...	M	<.01	220	<1.0	19.7	<.02	E2	<.3	E3	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50091800 RIO CHICO AT PROVIDENCIA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 17°59'16", long 66°00'18", at flat low bridge 200 ft (61 m) south of Highway 3, 0.5 mi (0.8 km) above mouth, and 1.5 mi (2.4 km) southeast of Patillas Plaza.

DRAINAGE AREA.--4.9 mi^2 (12.8 km^2).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
APR													
07...	0835	.28	6.1	2.3	7.2	588	27.2	82	19.0	8.40	7.02	3	52.4
JUN													
15...	1120	3.9	2.3	5.4	7.7	396	27.9	--	--	--	--	--	--
AUG													
25...	0855	2.6	6.7	2.5	7.2	506	28.3	84	20.2	8.08	5.08	2	38.2

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
APR													
07...	173	55.0	<.2	27.8	17.5	.2	291	--	<20	21	22.0	.07	.090
JUN													
15...	134	--	--	--	--	--	--	--	<10	6.6	6.70	.27	.370
AUG													
25...	155	42.6	<.2	28.8	12.5	--	249	1.74	<10	--	12.6	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)
APR													
07...	.02	21	93.4	3.10	70	--	--	<2	12.9	152	<.2	<.8	10
JUN													
15...	.10	7.0	30.9	.98	20	3,000	36,000	--	--	--	--	--	--
AUG													
25...	--	--	--	2.18	50	2,700	7,000	E1	17.1	97	<.2	E.4	M

Date	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
APR										
07...	M	170	1.1	107	.02	<3	.5	10	2.48	E10
JUN										
15...	--	--	--	--	--	--	--	--	--	--
AUG										
25...	M	190	E.7	35.3	E.01	E2	.4	12	1.18	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR

LOCATION.--Lat 18°02'04", long 66°01'58", Hydrologic Unit 21010004, on left bank, at old foot bridge abutment, off Highway 184, 1.2 mi (1.9 km) upstream from Lago Patillas Dam and 2.2 mi (3.5 km) northwest of Patillas.

DRAINAGE AREA.--18.3 mi^2 (47.4 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1959 to October 1965 (annual low flow and occasional measurements only), January 1966 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 235 ft (72 m), from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	57	58	44	28	42	27	23	61	143	43	58
2	32	65	54	45	36	29	26	23	64	138	38	40
3	31	64	51	42	31	26	25	29	71	214	35	32
4	36	64	50	41	28	25	25	243	79	104	35	192
5	38	52	65	53	27	24	25	306	79	84	46	53
6	35	92	1,340	131	27	23	23	172	76	58	34	35
7	35	e500	623	60	37	23	24	57	101	48	45	30
8	35	174	414	47	28	22	24	48	88	43	83	117
9	e74	319	200	43	29	22	24	39	200	38	39	93
10	e1,000	138	130	43	31	27	25	36	172	36	37	41
11	e500	e800	120	52	27	30	22	41	160	33	34	32
12	130	e3,000	98	49	26	24	21	98	74	40	32	29
13	100	e1,000	87	41	25	22	20	176	60	34	79	27
14	82	e800	128	40	25	28	20	218	51	31	57	107
15	70	406	85	39	29	28	19	255	45	29	45	e2,000
16	61	352	78	37	29	42	19	146	43	39	73	e1,000
17	55	239	87	37	44	75	19	84	38	23	44	e800
18	60	e600	79	35	31	163	18	67	37	24	37	e680
19	53	226	68	35	44	61	67	122	35	24	34	e200
20	89	154	65	34	36	89	51	192	34	31	31	e140
21	105	123	63	35	41	61	33	558	38	148	30	e100
22	62	109	58	34	34	45	28	417	39	51	29	e96
23	56	121	57	38	28	35	23	603	38	46	29	e90
24	139	335	54	41	26	33	29	447	36	41	28	72
25	74	164	53	33	25	31	33	285	47	111	38	64
26	64	105	52	32	36	46	24	153	76	65	30	58
27	60	85	56	31	38	50	32	105	102	48	29	57
28	65	73	59	31	27	46	26	85	162	40	29	54
29	56	67	54	30	72	37	28	82	95	85	26	49
30	74	62	48	29	---	31	26	72	99	65	26	47
31	70	---	46	29	---	29	---	64	---	53	40	---
TOTAL	3,373	10,346	4,480	1,311	945	1,269	806	5,246	2,300	1,967	1,235	6,393
MEAN	109	345	145	42.3	32.6	40.9	26.9	169	76.7	63.5	39.8	213
MAX	1,000	3,000	1,340	131	72	163	67	603	200	214	83	2,000
MIN	31	52	46	29	25	22	18	23	34	23	26	27
AC-FT	6,690	20,520	8,890	2,600	1,870	2,520	1,600	10,410	4,560	3,900	2,450	12,680
CFSM	5.95	18.8	7.90	2.31	1.78	2.24	1.47	9.25	4.19	3.47	2.18	11.6
IN.	6.86	21.03	9.11	2.66	1.92	2.58	1.64	10.66	4.68	4.00	2.51	13.00

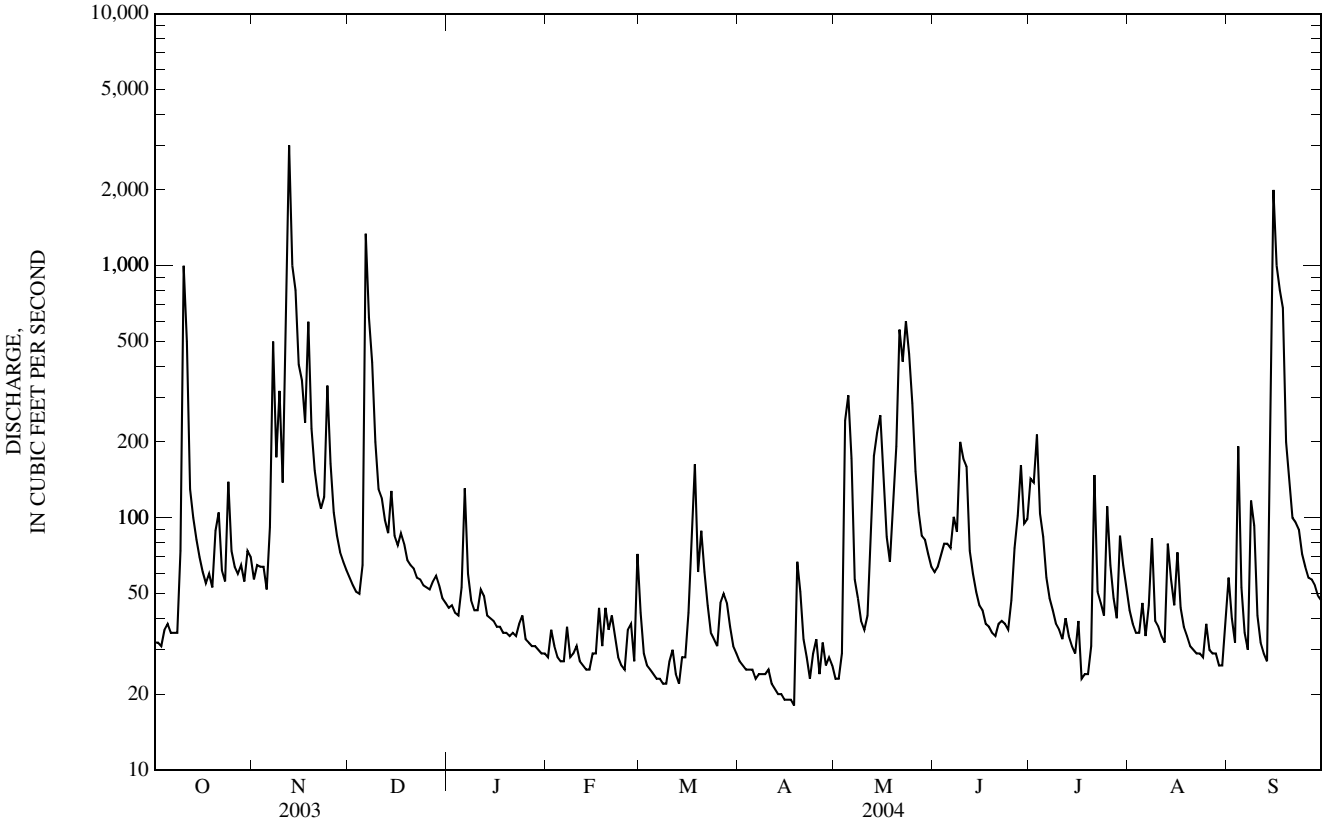
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2004, BY WATER YEAR (WY)

MEAN	95.9	96.7	56.2	36.2	28.8	24.9	24.1	52.0	63.4	60.9	69.1	98.8
MAX	593	393	195	125	94.6	51.2	76.7	172	200	164	231	432
(WY)	(1971)	(1978)	(1999)	(1992)	(1982)	(1998)	(2003)	(1969)	(1979)	(1979)	(1979)	(1998)
MIN	14.4	16.1	8.63	14.0	7.09	6.74	9.98	10.3	13.1	14.1	17.2	12.1
(WY)	(1968)	(1968)	(1968)	(1973)	(1973)	(1968)	(1968)	(1974)	(1974)	(1974)	(1994)	(1967)

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1966 - 2004	
ANNUAL TOTAL	34,580		39,671			
ANNUAL MEAN	94.7		108		58.5	
HIGHEST ANNUAL MEAN					117	1979
LOWEST ANNUAL MEAN					19.8	1994
HIGHEST DAILY MEAN	3,000	Nov 12	3,000	Nov 12	4,780	Sep 16, 1975
LOWEST DAILY MEAN	13	Mar 13	18	Apr 18	4.8	May 9, 1968
ANNUAL SEVEN-DAY MINIMUM	15	Mar 11	19	Apr 12	5.0	Apr 10, 1968
MAXIMUM PEAK FLOW			5,380	Sep 15	30,900	Jan 5, 1992
MAXIMUM PEAK STAGE			11.22	Sep 15	unknown	Jan 5, 1992
INSTANTANEOUS LOW FLOW			17	Apr 18	4.6	May 13, 1968
ANNUAL RUNOFF (AC-FT)	68,590		78,690		42,410	
ANNUAL RUNOFF (CFSM)	5.18		5.92		3.20	
ANNUAL RUNOFF (INCHES)	70.29		80.64		43.46	
10 PERCENT EXCEEDS	154		181		99	
50 PERCENT EXCEEDS	54		47		28	
90 PERCENT EXCEEDS	20		26		13	

e Estimated



50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
12...	1015	93	44	8.1	7.7	154	22.7	46	10.1	5.03	.47	.9	13.3
MAR													
26...	1230	27	<2.0	8.4	7.9	160	25.2	47	10.5	5.08	.42	.8	12.9
JUN													
15...	1440	44	6.4	7.8	8.0	152	28.7	--	--	--	--	--	--
AUG													
26...	1115	30	<2.0	8.2	8.0	153	26.7	39	9.12	3.86	.24	.7	10.3

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
DEC													
12...	46	12.9	<.2	26.3	9.2	--	105	--	<10	<.20	.01	.320	<.01
MAR													
26...	49	11.2	<.2	22.6	9.8	<.1	102	--	<10	<.20	<.01	.050	<.01
JUN													
15...	47	--	--	--	--	--	--	--	<10	<.20	.01	.080	<.01
AUG													
26...	49	10.2	<.2	22.5	8.3	--	94	7.64	<10	--	.02	--	--

Date	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)
DEC													
12...	.03	<10	E610	8,000	--	--	--	--	--	--	--	--	--
MAR													
26...	<.02	<10	--	--	<2	11.1	22	<.2	<.8	<4	<.01	60	<1.0
JUN													
15...	<.02	<10	330	2,400	--	--	--	--	--	--	--	--	--
AUG													
26...	.01	<10	120	360	3	10.8	19	<.2	<.8	<4	<.01	70	<1.0

Date	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
DEC							
12...	--	--	--	--	--	--	--
MAR							
26...	7.0	<.02	<3	<.3	<4	<.10	<32
JUN							
15...	--	--	--	--	--	--	--
AUG							
26...	7.5	<.02	3	<.3	<4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

50093000 RIO MARIN NEAR PATILLAS, PR

LOCATION.--Lat 18°02'16", long 66°00'31", Hydrologic Unit 21010004, on left bank, 3.52 mi (5.66 km) southeast from Escuela Francisco Zenón Gedy, 1.45 mi (2.33 km) northeast from Lago Patillas Dam and 2.10 mi (3.38 km) north from Patillas town.

DRAINAGE AREA.--4.45 mi^2 (11.5 km^2).

PERIOD OF RECORD.--February 2000 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 295.3 ft (90 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.9	12	19	13	8.6	13	8.4	7.7	16	21	14	21
2	9.8	12	18	15	8.9	11	8.7	7.6	15	16	13	19
3	9.6	28	17	13	8.5	9.5	8.5	11	17	60	13	16
4	9.4	14	18	13	8.3	9.6	8.2	36	25	26	17	80
5	9.3	12	30	20	8.1	11	8.3	34	18	19	14	36
6	9.3	24	294	53	9.0	12	7.9	20	16	14	11	15
7	9.2	81	98	19	15	10	8.0	13	25	13	37	13
8	9.1	75	64	15	8.8	9.9	7.9	11	20	12	23	75
9	52	63	36	15	9.8	10	7.9	9.2	35	11	14	36
10	256	25	29	15	12	15	7.5	9.8	53	11	13	19
11	45	342	42	19	9.0	13	7.2	9.4	44	11	12	17
12	22	619	26	13	8.3	13	6.9	18	25	28	12	17
13	23	224	23	12	7.9	10	6.8	40	21	13	43	15
14	16	154	46	12	8.0	28	6.6	29	18	11	26	53
15	15	106	24	12	9.1	19	6.5	57	17	11	30	464
16	14	83	23	11	9.8	16	6.5	23	16	19	40	219
17	14	64	46	12	30	14	6.4	14	16	12	19	209
18	15	137	24	11	9.9	53	6.3	11	16	13	16	183
19	13	63	21	13	35	19	14	16	16	11	17	74
20	17	45	21	11	15	23	11	70	16	17	15	41
21	20	38	19	10	18	e20	8.8	180	17	58	13	32
22	13	35	18	9.8	13	e19	7.9	153	14	19	13	30
23	13	40	18	11	12	e14	7.1	129	14	20	13	25
24	23	71	18	9.8	12	e10	6.8	97	13	15	12	24
25	14	36	18	9.5	13	9.2	6.7	49	15	32	15	23
26	14	27	17	9.4	14	21	8.7	33	24	17	13	21
27	13	24	19	9.4	12	12	9.5	25	18	17	12	21
28	13	22	16	9.2	12	17	10	21	30	15	13	22
29	12	21	15	9.5	25	11	9.1	22	16	63	14	19
30	15	20	14	9.0	---	9.1	7.1	18	17	25	12	19
31	12	---	14	9.1	---	8.6	---	17	---	17	15	---
TOTAL	739.6	2,517	1,105	422.7	370.0	469.9	241.2	1,190.7	623	647	544	1,858
MEAN	23.9	83.9	35.6	13.6	12.8	15.2	8.04	38.4	20.8	20.9	17.5	61.9
MAX	256	619	294	53	35	53	14	180	53	63	43	464
MIN	9.1	12	14	9.0	7.9	8.6	6.3	7.6	13	11	11	13
AC-FT	1,470	4,990	2,190	838	734	932	478	2,360	1,240	1,280	1,080	3,690
CFSM	5.36	18.9	8.01	3.06	2.87	3.41	1.81	8.63	4.67	4.69	3.94	13.9
IN.	6.18	21.04	9.24	3.53	3.09	3.93	2.02	9.95	5.21	5.41	4.55	15.53

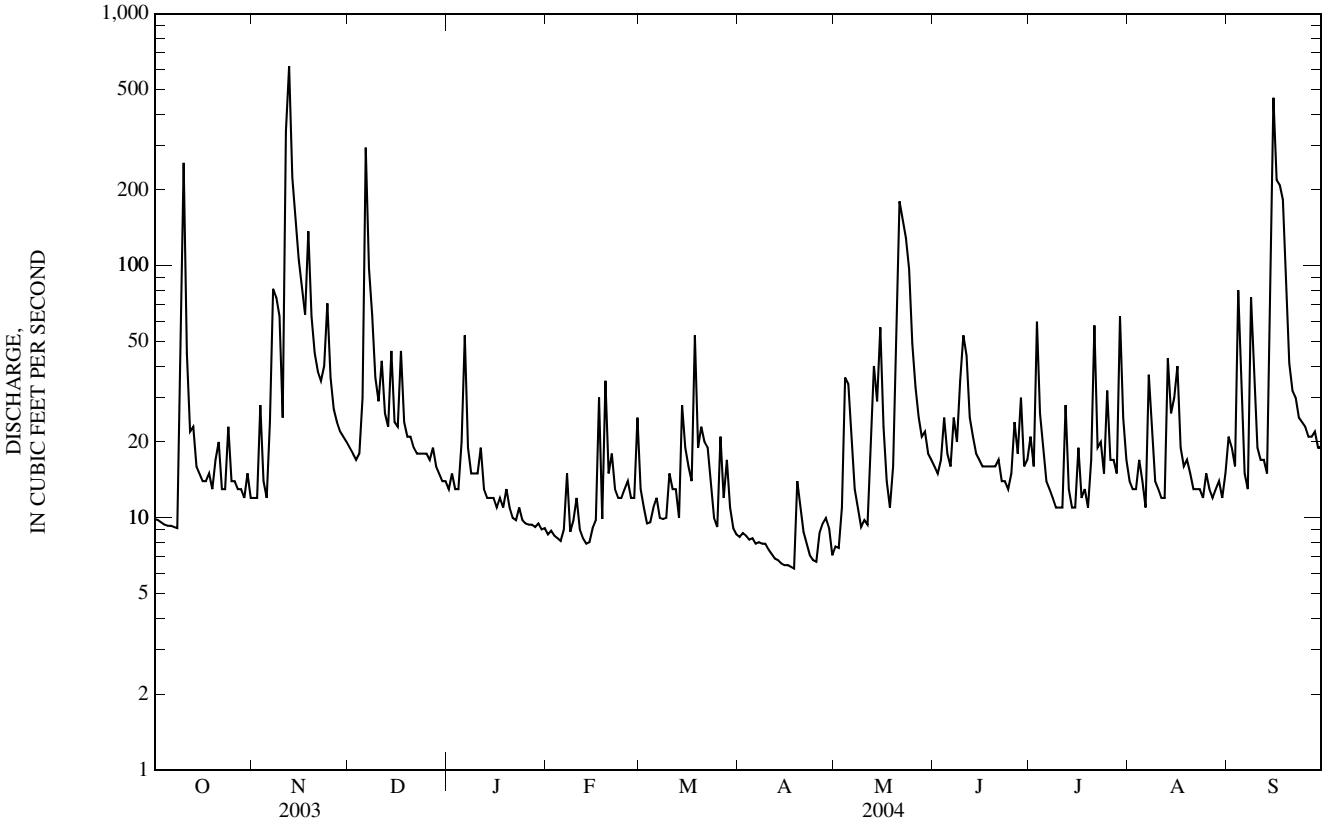
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2004, BY WATER YEAR (WY)

MEAN	18.0	30.8	21.7	10.1	10.1	7.79	13.4	18.5	16.4	14.1	21.8	27.5
MAX	23.9	83.9	35.6	13.6	12.8	15.2	29.7	38.4	30.4	23.0	33.5	61.9
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2003)	(2004)	(2002)	(2003)	(2003)	(2004)
MIN	10.1	11.4	10.4	6.19	7.10	4.80	5.87	10.6	4.77	7.16	15.3	14.7
(WY)	(2003)	(2003)	(2003)	(2001)	(2001)	(2000)	(2000)	(2001)	(2001)	(2000)	(2000)	(2002)

50093000 RIO MARIN NEAR PATILLAS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2000 - 2004	
ANNUAL TOTAL	9,194.2		10,728.1			
ANNUAL MEAN	25.2		29.3		18.2	
HIGHEST ANNUAL MEAN					29.3	2004
LOWEST ANNUAL MEAN					11.5	2001
HIGHEST DAILY MEAN	619	Nov 12	619	Nov 12	619	Nov 12, 2003
LOWEST DAILY MEAN	5.3	Mar 26	6.3	Apr 18	4.0	Jun 21, 2001
ANNUAL SEVEN-DAY MINIMUM	5.5	Mar 23	6.6	Apr 12	4.2	Jun 17, 2001
MAXIMUM PEAK FLOW			4,010	Sep 15	4,970	Sep 1, 2001
MAXIMUM PEAK STAGE			12.33	Sep 15	13.28	Sep 1, 2001
INSTANTANEOUS LOW FLOW			5.9	Apr 17	3.7	Jun 22, 2001
ANNUAL RUNOFF (AC-FT)	18,240		21,280		13,200	
ANNUAL RUNOFF (CFSM)	5.66		6.59		4.09	
ANNUAL RUNOFF (INCHES)	76.86		89.68		55.62	
10 PERCENT EXCEEDS	46		53		30	
50 PERCENT EXCEEDS	13		15		10	
90 PERCENT EXCEEDS	7.1		8.9		5.8	

e Estimated



50093045 LAGO PATILLAS AT DAMSITE NEAR PATILLAS, PR

LOCATION.--Lat 18°01'15", long 66°01'19", Hydrologic Unit 21010004, on right edge, in a concrete tower at damsite, 1.05 mi (1.69 km) northeast from Patillas Plaza, 0.45 mi (0.72 km) northeast from Escuela Segunda Unidad de Real and 2.30 mi (3.70 km) from Escuela Segunda Unidad de Jesús María Rodríguez.

DRAINAGE AREA.--25.6 mi^2 (66.3 km^2).

ELEVATION RECORDS

PERIOD OF RECORD.--March 1995 to current year.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago Patillas was completed in 1914. The dam is a semihydraulic earthfill structure about 147 ft (45 m) height, a top width of 15 ft (4.6 m), maximum pool elevation of 230 ft (70.1 m), a base width of 625 ft (190 m), a crest length of 1,067 ft (325 m) and has maximum pool storage of 17,073 acre-feet (21.05 hm^3). The Patillas Dam is owned by the Puerto Rico Electric Power Authority (PREPA) and its primary purpose is for irrigation of lands served by the Patillas irrigation canal. Gage-height and precipitation satellite telemetry at station. New capacity table based on U.S. Geological Survey Water- Resources Investigations Report 99-4030, April 1997.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation, 225.92 ft (68.86 m) September 10, 1996; minimum elevation, 211.19 ft (64.37 m), May 29, 1995, and July 19, 1997.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 224.26 ft (68.35 m), November 12; minimum elevation, 217.58 ft (66.32 m), September 16.

Capacity Table
(based on data from U.S. Geological Survey Water-Resources Investigations Report 99-4030, 1997)
(Elevation in ft, capacity in acre-ft)

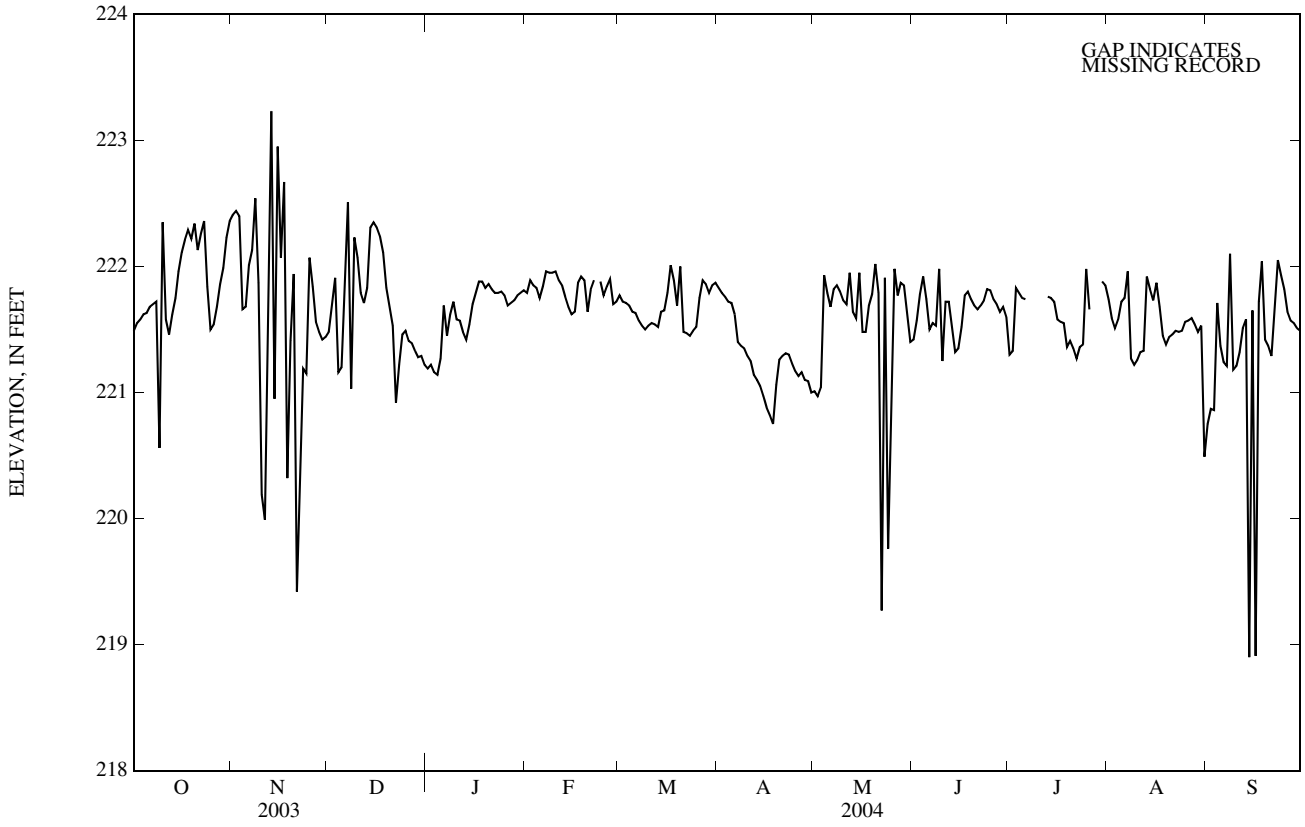
Elevation	Contents	Elevation	Contents
147	0	192	4,281
163	819	209	7,629
179	2,294	222	11,220

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	221.49	222.41	221.48	221.19	221.79	221.77	221.83	221.01	221.42	221.30	221.74	220.75
2	221.55	222.44	221.68	221.22	221.89	221.72	221.79	220.97	221.57	221.33	221.59	220.87
3	221.58	222.40	221.91	221.16	221.85	221.71	221.76	221.04	221.78	221.83	221.51	220.86
4	221.62	221.66	221.16	221.14	221.83	221.69	221.72	221.93	221.92	221.79	221.58	221.71
5	221.63	221.68	221.20	221.27	221.75	221.64	221.71	221.79	221.74	221.75	221.72	221.37
6	221.68	222.01	221.91	221.69	221.84	221.63	221.62	221.68	221.50	221.74	221.75	221.24
7	221.70	222.13	222.51	221.45	221.96	221.57	221.40	221.82	221.55	A	221.96	221.21
8	221.72	222.54	221.03	221.62	221.95	221.53	221.37	221.85	221.53	A	221.27	222.10
9	220.56	221.87	222.23	221.72	221.95	221.50	221.35	221.80	221.98	A	221.22	221.18
10	222.35	220.19	222.07	221.58	221.96	221.53	221.29	221.73	221.25	A	221.26	221.21
11	221.58	219.99	221.79	221.57	221.89	221.55	221.25	221.70	221.72	A	221.32	221.32
12	221.46	222.31	221.71	221.48	221.85	221.54	221.14	221.95	221.72	A	221.33	221.51
13	221.62	223.23	221.83	221.42	221.76	221.52	221.10	221.64	221.52	221.76	221.92	221.58
14	221.75	220.95	222.31	221.54	221.68	221.64	221.05	221.59	221.32	221.75	221.82	218.90
15	221.96	222.95	222.35	221.70	221.62	221.65	220.97	221.95	221.35	221.72	221.73	221.65
16	222.11	222.07	222.31	221.79	221.64	221.79	220.88	221.48	221.52	221.58	221.87	218.91
17	222.21	222.67	222.24	221.88	221.87	222.01	220.82	221.48	221.77	221.56	221.68	221.72
18	222.29	220.32	222.11	221.88	221.92	221.89	220.75	221.69	221.80	221.55	221.45	222.04
19	222.22	221.41	221.83	221.83	221.89	221.69	221.06	221.78	221.74	221.36	221.38	221.42
20	222.34	221.94	221.68	221.86	221.64	222.00	221.26	222.02	221.69	221.41	221.44	221.37
21	222.13	219.42	221.53	221.82	221.82	221.48	221.29	221.79	221.66	221.35	221.46	221.29
22	222.26	220.27	220.92	221.79	221.89	221.47	221.31	219.27	221.69	221.27	221.49	221.65
23	222.36	221.19	221.22	221.79	A	221.45	221.30	221.91	221.73	221.36	221.48	222.05
24	221.84	221.15	221.46	221.80	221.88	221.49	221.23	219.76	221.82	221.38	221.49	221.93
25	221.50	222.07	221.49	221.77	221.77	221.52	221.17	221.23	221.81	221.98	221.56	221.82
26	221.54	221.84	221.41	221.69	221.84	221.75	221.13	221.98	221.74	221.66	221.57	221.64
27	221.68	221.56	221.39	221.71	221.90	221.89	221.16	221.77	221.70	A	221.59	221.57
28	221.86	221.48	221.33	221.73	221.70	221.86	221.10	221.87	221.64	A	221.54	221.55
29	221.99	221.42	221.28	221.77	221.72	221.79	221.09	221.85	221.68	A	221.48	221.51
30	222.23	221.44	221.29	221.79	---	221.85	221.00	221.64	221.60	221.88	221.53	221.49
31	222.36	---	221.22	221.81	---	221.87	---	221.40	---	221.85	220.49	---
MEAN	221.84	221.63	221.67	221.63	---	221.68	221.26	221.53	221.65	---	221.52	221.31

A No gage-height record

50093045 LAGO PATILLAS AT DAMSITE NEAR PATILLAS, PR—Continued



50093075 CANAL DE RIEGO DE PATILLAS ABOVE GUAYAMA FILTRATION PLANT, PR

LOCATION.--Lat 17°58'57", long 66°06'05", Hydrologic Unit 21010004, 0.85 mi (1.37 km) southeast from Guayama Plaza church, 1.8 mi (2.90 km) north northeast from Central Machete and 2.85 mi (4.58 km) northwest from Arroyo town church.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--February to September 2003.

GAGE.--Water-stage recorder. Altitude of gage is about 98 ft (30 m) from topographic map.

REMARKS.--Records fair. Controlled by Lago Patillas dam.

EXTREMES OBSERVED FOR CURRENT PERIOD.--Maximum discharge, undetermined November 11, gage height, 3.47 ft (1.06 m); minimum daily discharge 8.4 ft^3/s (.24 m^3/s) November 19.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.5	19.2	18.2	16.4	15.2	17.1	16.8	17.8	18.9	18.9	19.0	15.2
2	14.7	19.4	18.3	16.6	15.3	16.2	17.0	18.1	19.7	20.1	18.6	19.2
3	15.0	19.5	18.4	16.3	15.3	16.8	16.8	18.2	19.5	19.9	17.9	20.3
4	15.9	18.9	18.2	16.1	15.5	16.7	16.5	18.6	19.9	19.0	18.7	21.2
5	15.8	18.9	18.5	16.3	16.5	16.6	16.4	19.4	22.2	18.2	18.9	21.2
6	14.8	19.4	>14	17.1	20.0	17.0	16.1	19.4	22.6	20.1	18.6	20.3
7	14.2	21.9	18.3	16.6	16.1	17.0	15.7	20.2	23.1	20.0	19.2	20.7
8	14.9	23.3	22.5	16.4	15.8	16.4	16.0	20.4	24.4	20.0	18.9	21.0
9	16.0	21.4	19.3	16.6	14.7	16.2	16.3	20.3	23.0	20.0	18.9	21.1
10	>19	20.9	18.0	16.5	13.6	16.5	16.2	19.9	23.6	19.4	19.5	20.4
11	19.0	>21	17.8	16.9	13.1	15.9	16.5	20.1	23.3	18.6	20.0	20.2
12	19	>15	17.8	16.4	13.0	16.0	16.1	20.2	22.9	21.4	20.4	20.8
13	17.8	16.1	17.9	16.6	12.9	16.4	15.8	20.4	23.0	20.2	21.7	22.3
14	17.3	15.4	18.1	17.5	13.0	16.5	16.4	20.2	22.4	19.5	21.3	19.0
15	16	20.6	17.8	17.3	13.1	16.0	16.4	20.6	21.3	20.7	21.3	15.4
16	16.6	16.9	17.4	16.8	14.0	15.7	17.2	20.6	20.1	20.6	21.5	13.2
17	16.9	15.7	17.2	16.3	15.3	15.8	17.5	20.2	17.2	20.0	21.0	14.1
18	17.2	15.3	17.0	16.3	14.3	18.1	17.5	19.6	17.6	20.0	20.6	25.1
19	17.3	8.39	17.1	16.3	13.6	18.4	17.8	18.8	19.1	20.0	20.9	16.1
20	17.0	19.1	17.4	16.3	13.8	18.5	18.5	19.7	19.3	20.8	20.6	16.0
21	17.1	18.7	17.5	16.0	14.1	18.5	17.5	21.9	19.3	19.7	20.9	15.4
22	17.0	>18	14.4	15.6	14.0	18.6	17.2	21.0	19.4	17.6	21.0	15.2
23	17.1	20.2	17.1	16.0	15.0	17.4	17.5	20.8	19.2	17.6	20.4	15.0
24	18.0	21.5	17.8	16.1	12.8	15.6	17.6	22.2	18.8	18.7	19.4	14.6
25	16.8	19.3	18.1	15.9	14.9	15.5	17.6	20.3	18.8	18.0	19.3	16.8
26	16.9	18.8	17.9	16.1	17.6	15.3	17.3	19.1	18.8	19.8	19.0	20.6
27	17.0	18.8	18.1	16.0	14.8	15.3	17.0	18.2	20.1	18.9	19.4	19.7
28	16.7	18.9	17.9	15.2	17.4	15.5	16.9	17.8	20.3	19.1	19.7	17.7
29	15.5	18.6	17.2	15.2	18.0	15.3	16.7	18.1	19.2	18.9	20.2	17.5
30	22.6	18.3	16.8	15.2	---	15.7	18.5	18.2	18.1	18.7	20.2	17.5
31	19.3	---	16.5	15.0	---	16.0	---	18.3	---	18.7	18.3	---
TOTAL	522.9	557.39	548.5	503.9	432.7	512.5	507.3	608.6	615.1	603.1	615.3	552.8
MEAN	16.9	18.6	17.7	16.3	14.9	16.5	16.9	19.6	20.5	19.5	19.8	18.4
MAX	23	23	22	18	20	19	18	22	24	21	22	25
MIN	14	8.4	14	15	13	15	16	18	17	18	18	13
MED	17	19	18	16	15	16	17	20	20	20	20	19
AC-FT	1,040	1,110	1,090	999	858	1,020	1,010	1,210	1,220	1,200	1,220	1,100

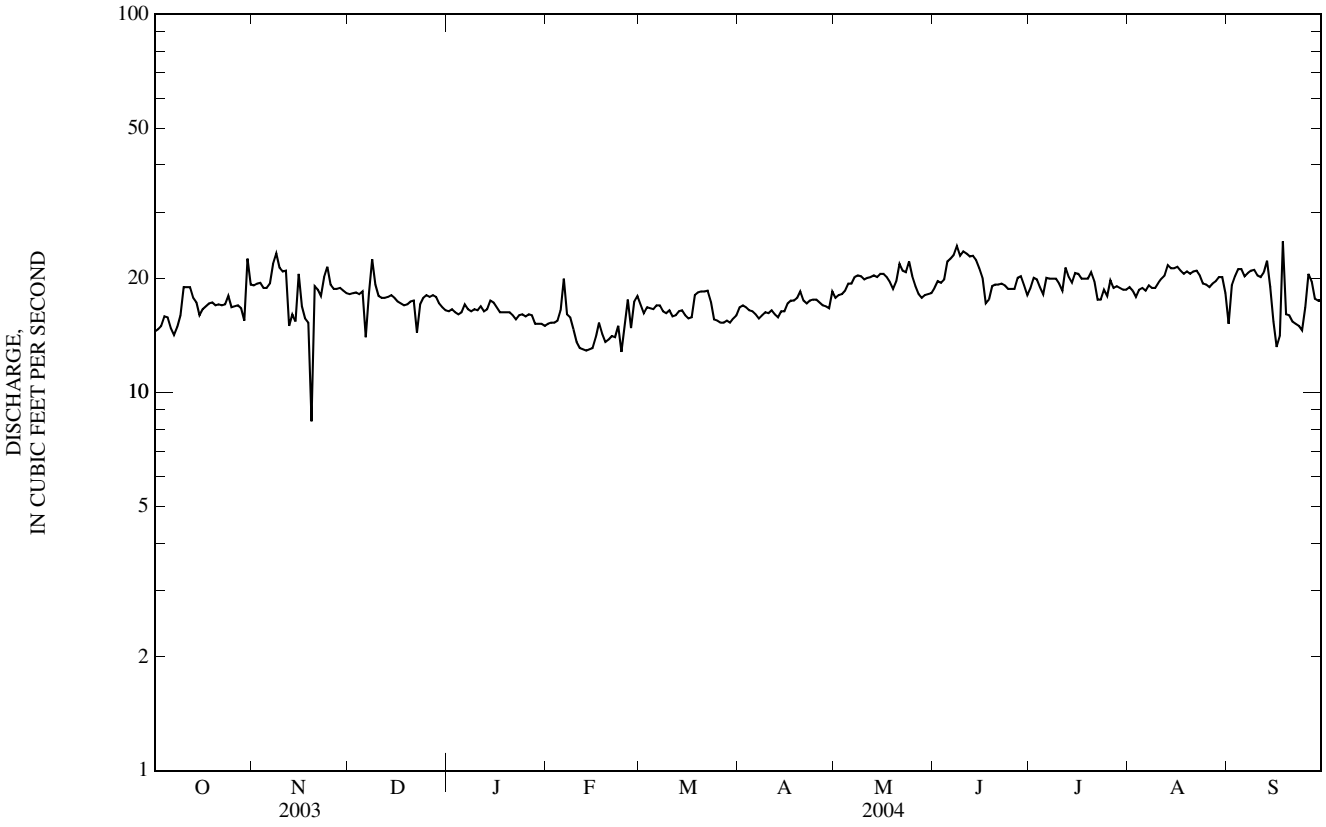
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2003 - 2004, BY WATER YEAR (WY)

MEAN	16.9	18.6	17.7	16.3	14.9	16.6	16.9	17.0	17.8	18.2	17.9	17.3
MAX	16.9	18.6	17.7	16.3	14.9	16.6	16.9	19.6	20.5	19.5	19.8	18.4
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2003)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)
MIN	16.9	18.6	17.7	16.3	14.9	16.5	16.9	14.3	15.2	17.0	16.0	16.2
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)

SUMMARY STATISTICS	FOR 2004 WATER YEAR		WATER YEARS 2003 - 2004	
ANNUAL TOTAL	6,580.09			
ANNUAL MEAN	18.0		18.0	
HIGHEST ANNUAL MEAN			18.0	2004
LOWEST ANNUAL MEAN			18.0	2004
HIGHEST DAILY MEAN	25	Sep 18	28	Apr 18, 2003
LOWEST DAILY MEAN	8.4	Nov 19	8.4	Nov 19, 2003
ANNUAL SEVEN-DAY MINIMUM	13	Feb 10	13	May 6, 2003
MAXIMUM PEAK FLOW	>50	Nov 11	>50	Nov 11, 2003
MAXIMUM PEAK STAGE	3.47	Nov 11	3.47	Nov 11, 2003
ANNUAL RUNOFF (AC-FT)	13,050		13,020	
10 PERCENT EXCEEDS	21		21	
50 PERCENT EXCEEDS	18		18	
90 PERCENT EXCEEDS	15		15	

> Actual value is known to be greater than the value shown

50093075 CANAL DE RIEGO DE PATILLAS ABOVE GUAYAMA FILTRATION PLANT, PR—Continued



50093078 CANAL DE RIEGO DE PATILLAS BELOW GUAYAMA FILTRATION PLANT, PR

LOCATION.--Lat 18°58'57", long 66°06'05", Hydrologic Unit 21010004, on downstream side of Guayama Filtration Plant intake 0.95 mi (1.53 km) southeast from Guayama town church, 1.8 mi (2.90 km) north northeast from Central Machete and 2.8 mi (4.50 km) northwest from Arroyo town church.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--February to September 2003.

GAGE.--Water-stage recorder. Altitude of gage is 98 ft (30 m), from topographic map.

REMARKS.--Records fair. Controlled by Lago Patillas dam.

EXTREMES OBSERVED FOR CURRENT PERIOD.--Maximum discharge, undetermined October 10, gage height, 3.26 ft (0.994 m); minimum daily discharge 1.1 ft^3/s (0.031 m^3/s) November 13, 2003.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	11	8.9	8.7	10	10	9.8	9.4	11	11	11	7.3
2	8.1	11	9.3	8.1	10	9.5	10	9.7	11	12	11	10
3	8.2	11	9.3	8.7	9.7	10	10	9.5	11	12	11	11
4	8.9	11	9.3	12	10	9.9	9.8	9.8	11	11	11	13
5	9.0	10	9.1	12	11	9.3	9.9	11	13	11	11	13
6	8.0	8.7	>12	12	14	9.7	9.7	10	13	12	12	13
7	7.3	11	10	12	10	9.7	9.3	11	13	11	12	13
8	7.0	14	13	12	9.9	9.6	9.5	11	15	12	10	13
9	7.6	12	12	12	9.1	9.5	9.9	11	13	12	11	13
10	>17	10	10	12	8.6	11	9.7	11	14	11	11	12
11	12	>18	9.3	12	7.9	9.4	9.9	11	14	10	11	12.6
12	11	>6.1	8.4	12	6.6	9.5	9.9	11	14	12	11	13.1
13	11	1.1	8.5	12	6.5	9.8	9.6	11	14	12	12	14.5
14	10	4.7	8.5	12	6.4	9.8	9.1	11	14	11	12	11.0
15	8.2	13	8.4	10	6.8	9.1	9.2	11	12	12	12	6.15
16	7.0	11	8.2	9.3	7.4	8.1	9.6	11	11	12	12	6.04
17	7.0	9.2	8.2	8.7	8.5	9.5	11	12	8.8	12	12	4.41
18	7.1	8.5	8.4	8.7	7.6	11	10	11	8.9	12	12	14.1
19	7.0	3.3	8.6	9.2	7.0	12	9.8	10	10	12	12	4.88
20	6.7	11	8.6	9.3	7.1	11	9.6	11	9.6	13	12	4.67
21	6.7	10	8.8	8.8	7.4	12	10	13	9.9	12	12	4.62
22	6.5	>16	7.5	9.2	7.4	12	9.6	11	11	10	12	4.60
23	6.4	12	9.1	12	8.1	11	10	14	10	10	12	5.22
24	8.2	12	9.3	12	5.9	9.1	10	13	10	11	11	5.23
25	6.9	11	9.8	12	7.8	8.9	11	11	11	10	11	5.86
26	7.2	9.0	9.2	13	9.7	8.4	10	10	10	11	11	9.49
27	7.4	9.3	9.2	12	8.3	8.7	9.8	9.6	11	9.1	12	9.98
28	7.8	9.6	9.1	10	11	8.6	9.8	9.8	9.7	11	12	6.63
29	9.0	9.9	10	10	11	8.5	9.4	10	9.5	12	12	6.70
30	14	10	9.4	10	---	9.1	10	10	9.4	12	13	8.50
31	11	---	8.1	10	---	9.2	---	10	---	12	9.9	---
TOTAL	267.4	304.4	287.5	331.7	250.7	302.9	294.9	334.8	342.8	353.1	356.9	276.58
MEAN	8.63	10.1	9.27	10.7	8.64	9.77	9.83	10.8	11.4	11.4	11.5	9.22
MAX	17	18	13	13	14	12	11	14	15	13	13	14
MIN	6.4	1.1	7.5	8.1	5.9	8.1	9.1	9.4	8.8	9.1	9.9	4.4
MED	8.0	10	9.1	12	8.3	9.5	9.8	11	11	12	12	9.7
AC-FT	530	604	570	658	497	601	585	664	680	700	708	549

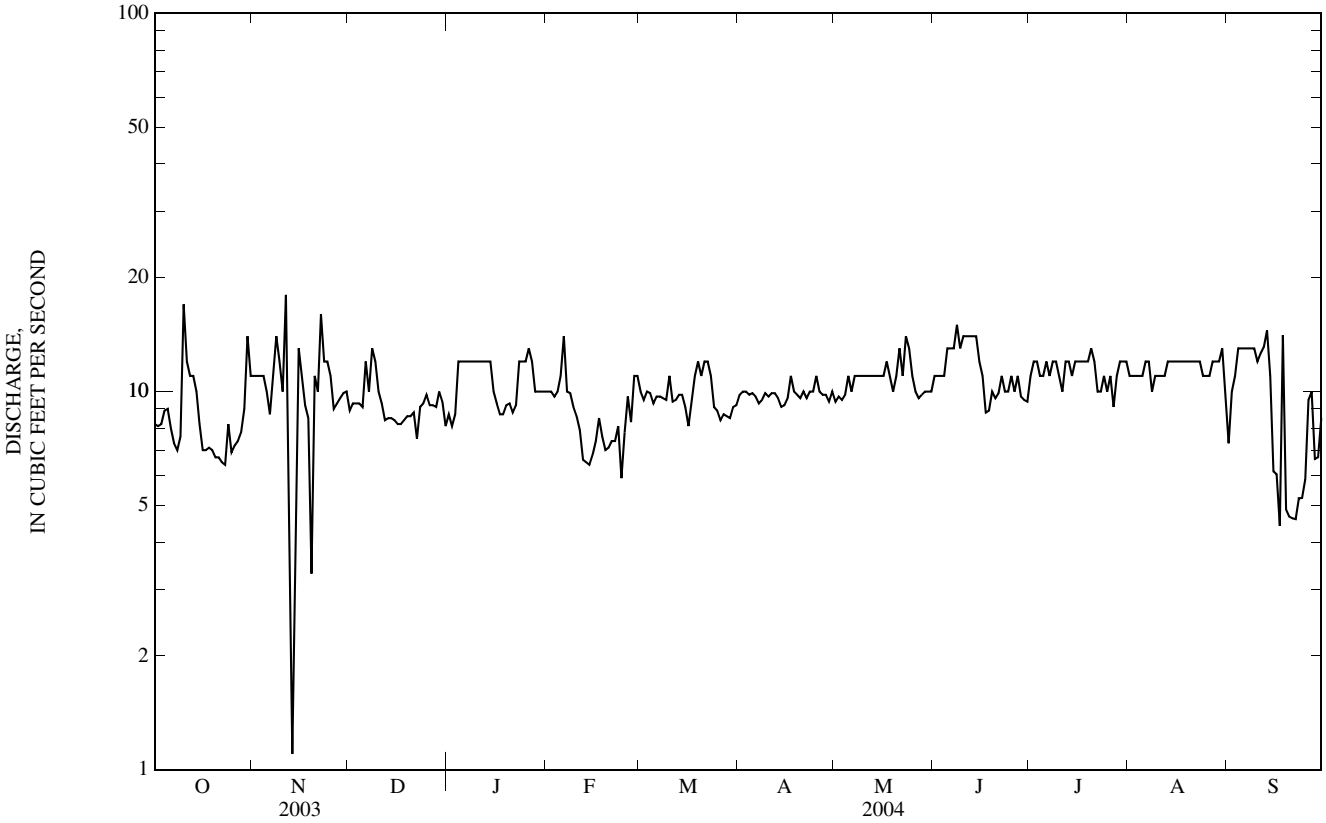
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2003 - 2004, BY WATER YEAR (WY)

MEAN	8.63	10.1	9.27	10.7	8.64	8.81	9.83	8.93	9.20	9.03	9.62	9.12
MAX	8.63	10.1	9.27	10.7	8.64	9.77	9.83	10.8	11.4	11.4	11.5	9.22
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)
MIN	8.63	10.1	9.27	10.7	8.64	7.84	9.83	7.06	6.97	6.66	7.73	9.02
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)

SUMMARY STATISTICS	FOR 2004 WATER YEAR		WATER YEARS 2003 - 2004	
ANNUAL TOTAL	3,703.68			
ANNUAL MEAN	10.1		10.1	
HIGHEST ANNUAL MEAN			10.1	2004
LOWEST ANNUAL MEAN			10.1	2004
HIGHEST DAILY MEAN	18	Nov 11	18	Nov 11, 2003
LOWEST DAILY MEAN	1.1	Nov 13	1.1	Nov 13, 2003
ANNUAL SEVEN-DAY MINIMUM	5.0	Sep 19	5.0	Sep 19, 2004
MAXIMUM PEAK STAGE	3.26	Oct 10	3.26	Oct 10, 2003
ANNUAL RUNOFF (AC-FT)	7,350		7,330	
10 PERCENT EXCEEDS	12		12	
50 PERCENT EXCEEDS	10		10	
90 PERCENT EXCEEDS	7.4		7.4	

> Actual value is known to be greater than the value shown

50093078 CANAL DE RIEGO DE PATILLAS BELOW GUAYAMA FILTRATION PLANT, PR—Continued



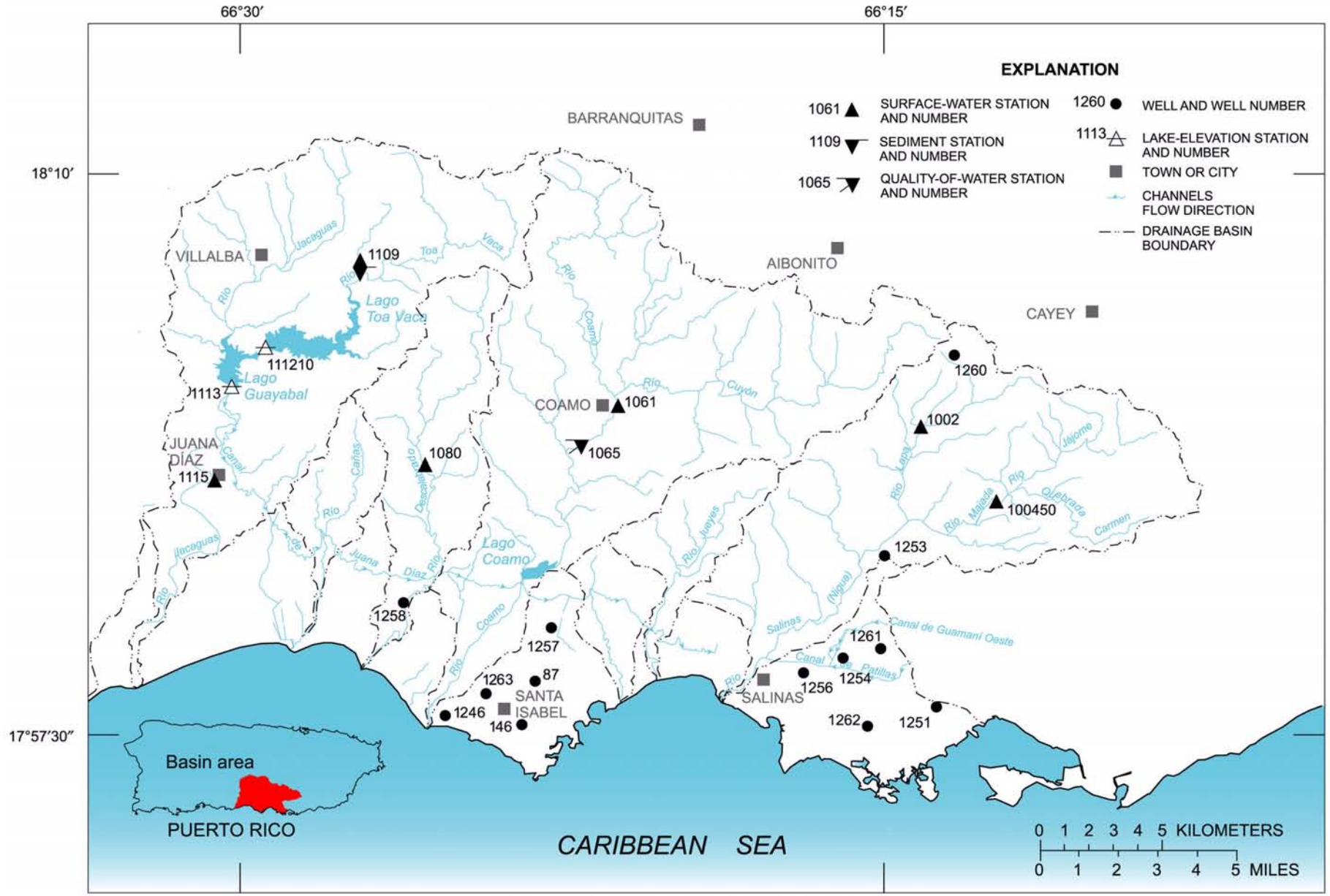


Figure 20. South coast river basins -- Río Salinas to Río Jacaguas basins.

50100200 RIO LAPA NEAR RABO DEL BUEY, PR

LOCATION.--Lat 18°03'36", long 66°14'28", Hydrologic Unit 21010004, on left bank, at bridge on Highway 1, km 9.7, 1.5 mi (2.4 km) north of Rabo del Buey, and 4.4 mi (7.1 km) northeast of Salinas Plaza.

DRAINAGE AREA.--9.92 mi^2 (25.7 km^2).

PERIOD OF RECORD.--1953-63 (annual low-flow measurements only), September 1988 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 394 ft (120 m), from topographic map.

REMARKS.--Records poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.67	27	e22	e12	e8.7	5.7	3.3	1.5	3.8	1.6	1.9	2.2
2	41	5.0	e21	e12	e8.6	5.2	3.3	1.6	3.6	1.7	1.5	1.1
3	2.3	3.0	e20	e11	e8.3	5.0	3.1	1.5	3.3	2.0	1.3	0.83
4	2.2	2.3	e19	e11	e7.8	4.6	5.5	2.7	3.2	2.0	1.3	3.5
5	1.4	1.5	e17	e13	e8.2	4.4	4.5	5.1	3.0	2.5	2.1	2.1
6	12	2.4	109	e15	e7.7	4.2	9.9	3.0	2.8	1.8	2.2	1.2
7	2.9	2.9	e101	e13	e8.8	4.1	9.3	2.5	2.7	1.5	1.3	0.94
8	e2.8	2.7	e82	e12	e7.4	4.0	5.5	11	2.6	1.4	1.3	1.1
9	e2.8	15	e65	e11	e7.8	4.0	5.5	7.2	3.0	1.2	1.1	1.2
10	e100	9.6	e52	e11	e8.3	4.0	7.5	4.0	5.7	1.2	1.0	0.94
11	e30	260	e48	e11	e7.3	3.9	4.9	8.3	4.3	1.1	0.94	0.83
12	e11	656	e43	e13	e7.0	3.7	4.0	12	3.0	1.7	0.89	1.0
13	7.2	471	e38	e12	e6.5	3.6	3.6	11	2.7	1.5	1.2	1.8
14	4.5	163	e35	e11	e6.3	3.6	3.4	6.9	2.5	1.2	1.4	4.7
15	8.3	126	e33	e11	e6.8	3.6	2.8	5.5	2.4	1.1	1.0	309
16	3.3	119	e31	e11	e7.2	3.8	2.5	4.9	2.3	1.3	0.95	254
17	2.3	110	e27	e12	e8.2	3.7	2.4	3.6	2.1	1.2	0.83	73
18	1.8	95	e27	e10	e6.9	3.9	2.3	3.1	2.0	0.93	0.75	41
19	1.5	74	e24	e9.8	e10	4.0	2.5	2.8	1.9	0.82	0.72	32
20	1.4	e65	e23	e12	e9.0	4.1	3.1	2.8	1.8	0.86	0.66	24
21	1.3	e60	e22	e13	e7.9	4.0	2.6	9.7	1.7	0.90	0.63	16
22	1.4	e58	e21	e15	e7.2	3.7	2.4	14	1.7	0.77	0.57	17
23	1.3	e85	e19	e11	e6.9	3.5	2.3	36	1.6	0.68	0.56	39
24	55	e52	e19	e9.2	e6.5	3.5	2.4	33	1.5	0.69	0.56	24
25	2.4	e42	e18	e9.4	e6.2	3.5	2.5	23	1.5	3.0	0.51	17
26	1.6	e33	e17	e9.2	e9.5	3.4	2.2	12	1.5	2.0	0.50	14
27	1.5	e29	e16	e8.9	e6.2	4.0	2.0	8.2	1.4	1.2	0.60	12
28	1.5	e27	e15	e8.7	e5.1	3.7	1.8	6.4	1.4	1.0	0.59	11
29	1.3	e25	e14	e8.4	e6.6	4.3	1.8	5.3	1.4	18	0.70	10
30	2.1	e23	e13	e8.2	---	3.6	1.6	4.5	1.4	6.1	0.64	9.3
31	70	---	e12	e8.5	---	3.4	---	4.1	---	2.8	3.1	---
TOTAL	378.77	2,644.4	1,023	343.3	218.9	123.7	110.5	257.2	73.8	65.75	33.30	925.74
MEAN	12.2	88.1	33.0	11.1	7.55	3.99	3.68	8.30	2.46	2.12	1.07	30.9
MAX	100	656	109	15	10	5.7	9.9	36	5.7	18	3.1	309
MIN	0.67	1.5	12	8.2	5.1	3.4	1.6	1.5	1.4	0.68	0.50	0.83
AC-FT	751	5,250	2,030	681	434	245	219	510	146	130	66	1,840
CFSM	1.23	8.89	3.33	1.12	0.76	0.40	0.37	0.84	0.25	0.21	0.11	3.11
IN.	1.42	9.92	3.84	1.29	0.82	0.46	0.41	0.96	0.28	0.25	0.12	3.47

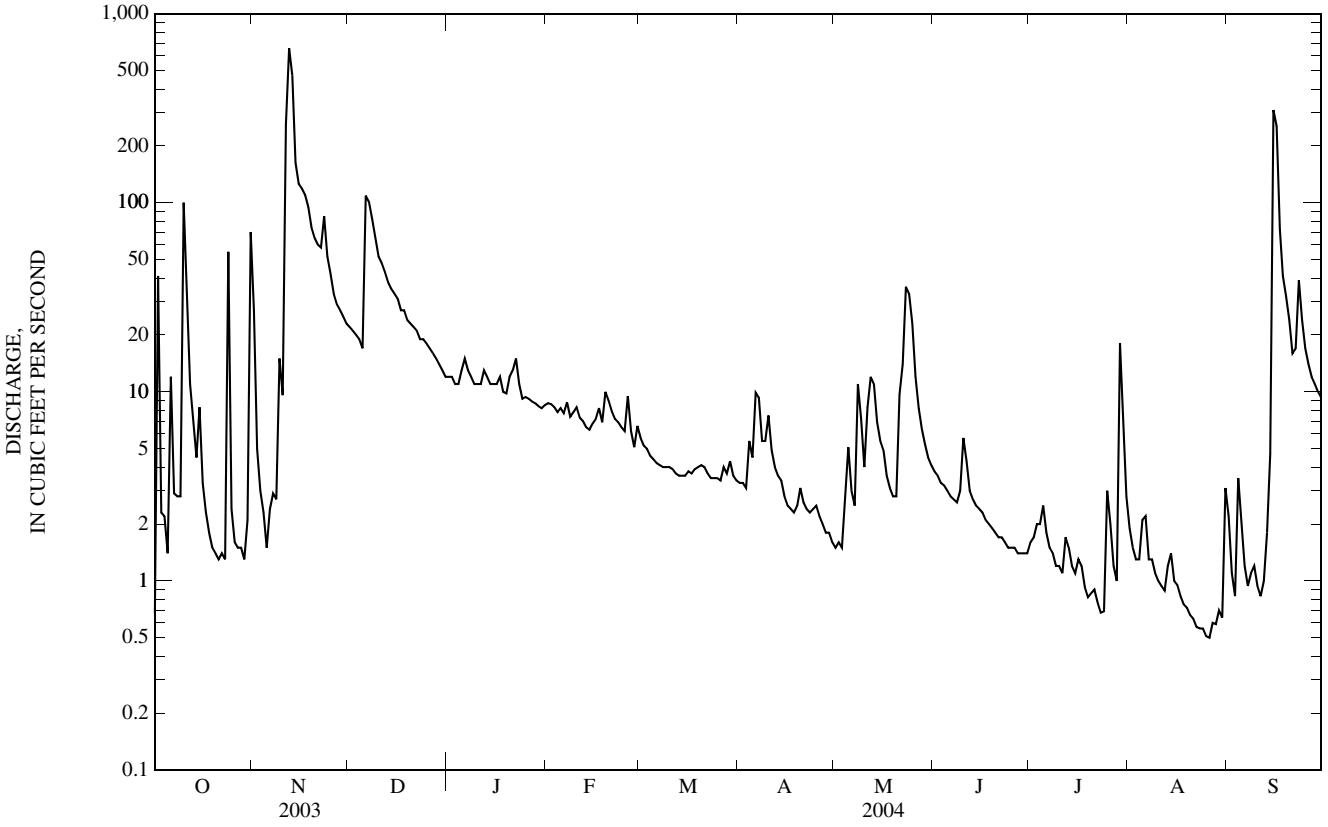
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2004, BY WATER YEAR (WY)

MEAN	14.9	13.8	5.46	6.91	3.33	1.46	3.41	4.37	2.36	1.52	4.23	17.9
MAX	76.1	88.1	33.0	68.8	12.4	3.99	20.7	36.6	10.4	7.80	17.9	81.2
(WY)	(1991)	(2004)	(2004)	(1992)	(1991)	(2004)	(2003)	(1992)	(1993)	(1993)	(2000)	(1996)
MIN	0.93	0.18	0.31	0.31	0.23	0.27	0.28	0.09	0.04	0.01	0.00	0.05
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(1990)	(1994)	(1994)	(1994)	(1994)	(1997)

50100200 RIO LAPA NEAR RABO DEL BUEY, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1988 - 2004	
ANNUAL TOTAL	5,043.71		6,198.36			
ANNUAL MEAN	13.8		16.9		6.63	
HIGHEST ANNUAL MEAN					16.9	2004
LOWEST ANNUAL MEAN					0.57	1994
HIGHEST DAILY MEAN	656	Nov 12	656	Nov 12	1,900	Sep 10, 1996
LOWEST DAILY MEAN	0.11	Mar 13	0.50	Aug 26	0.00	Jun 24, 1994
ANNUAL SEVEN-DAY MINIMUM	0.12	Mar 11	0.56	Aug 22	0.00	Jul 21, 1994
MAXIMUM PEAK FLOW			3,460	Nov 12	18,100	Sep 10, 1996
MAXIMUM PEAK STAGE			11.92	Nov 12	18.65	Sep 10, 1996
INSTANTANEOUS LOW FLOW					0.00	Jun 24, 1994
ANNUAL RUNOFF (AC-FT)	10,000		12,290		4,810	
ANNUAL RUNOFF (CFSM)	1.39		1.71		0.669	
ANNUAL RUNOFF (INCHES)	18.91		23.24		9.08	
10 PERCENT EXCEEDS	32		33		9.6	
50 PERCENT EXCEEDS	0.59		4.1		1.3	
90 PERCENT EXCEEDS	0.17		1.1		0.19	

e Estimated



50100450 RIO MAJADA AT LA PLENA, PR

LOCATION.--Lat 18°02'40", long 66°12'27", Hydrologic Unit 21010004, on right bank, upstream side of bridge on Highway 712, about 0.3 mi (0.5 km) southwest of La Plena.

DRAINAGE AREA.--16.7 mi^2 (43.3 km^2).

PERIOD OF RECORD.--January 1973 to April 1979 (monthly measurements only), September 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 410 ft (125 m), from topographic map.

REMARKS.-Records poor. Some regulation at low flow upstream from station by local residents for agricultural purposes.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	9.5	31	17	9.7	13	6.1	3.4	6.3	5.7	3.6	14
2	2.6	5.9	30	17	9.7	9.8	5.4	3.6	5.5	4.7	2.8	8.4
3	2.7	4.8	28	17	9.6	8.8	5.2	3.9	5.2	7.2	2.6	3.6
4	2.8	4.3	27	15	9.1	8.3	7.4	7.7	6.0	7.9	2.2	11
5	5.4	3.6	27	17	9.2	7.8	6.8	13	5.8	13	4.2	5.4
6	3.5	3.8	476	19	8.9	7.4	7.8	6.4	5.3	6.6	3.0	3.4
7	4.6	10	220	17	10	7.5	8.3	3.6	5.6	5.0	2.3	1.9
8	4.0	7.0	131	14	9.6	8.0	6.9	3.4	6.0	4.9	2.5	1.8
9	4.3	12	88	14	9.7	7.7	7.0	2.9	6.0	4.4	2.1	9.1
10	303	7.0	73	13	10	7.8	10	2.8	15	4.1	2.2	2.0
11	71	414	64	13	9.0	8.0	6.4	2.7	23	4.5	2.1	1.4
12	23	1,110	59	16	8.5	8.5	5.2	3.3	9.6	6.3	2.0	1.3
13	12	456	53	13	8.2	9.5	4.5	4.1	7.5	7.2	4.6	2.3
14	8.4	302	49	13	7.8	8.2	5.0	3.2	6.7	5.1	7.0	5.4
15	6.8	151	45	13	8.4	8.1	6.4	5.0	6.3	4.5	5.0	e661
16	5.7	177	43	14	8.7	9.3	4.5	6.9	6.0	7.4	7.1	515
17	4.7	117	41	16	9.9	8.7	4.2	3.8	5.2	6.0	4.6	176
18	3.9	123	38	12	9.4	8.9	5.0	3.3	4.8	3.7	4.0	128
19	3.5	92	36	12	17	9.6	11	3.1	4.5	2.5	3.6	80
20	3.2	75	34	15	13	9.3	12	3.4	4.4	2.8	3.1	55
21	4.1	64	33	16	10	10	6.3	16	4.5	3.3	2.6	42
22	3.2	60	31	18	10	10	5.1	e16	4.7	2.3	2.3	36
23	3.2	77	29	16	9.1	10	4.5	e351	4.5	1.8	2.1	38
24	28	61	28	12	8.8	9.9	4.8	e90	4.2	1.6	1.8	29
25	8.3	48	27	11	8.4	8.8	4.6	e19	4.4	6.4	1.5	25
26	5.6	43	26	11	18	7.2	4.3	17	5.1	8.0	1.4	23
27	4.3	39	25	11	13	7.7	4.2	8.4	4.3	3.0	1.4	21
28	5.8	36	24	11	9.5	6.5	4.1	6.2	5.0	2.8	1.3	19
29	4.4	35	22	10	13	7.1	4.0	5.6	4.5	30	1.3	18
30	6.3	33	21	9.7	---	6.2	3.8	5.2	4.5	11	1.4	17
31	13	---	18	9.7	---	6.5	---	7.1	---	5.3	43	---
TOTAL	564.5	3,580.9	1,877	432.4	295.2	264.1	180.8	631.0	190.4	189.0	130.7	1,954.0
MEAN	18.2	119	60.5	13.9	10.2	8.52	6.03	20.4	6.35	6.10	4.22	65.1
MAX	303	1,110	476	19	18	13	12	351	23	30	43	661
MIN	2.6	3.6	18	9.7	7.8	6.2	3.8	2.7	4.2	1.6	1.3	1.3
AC-FT	1,120	7,100	3,720	858	586	524	359	1,250	378	375	259	3,880
CFSM	1.09	7.15	3.63	0.84	0.61	0.51	0.36	1.22	0.38	0.37	0.25	3.90
IN.	1.26	7.98	4.18	0.96	0.66	0.59	0.40	1.41	0.42	0.42	0.29	4.35

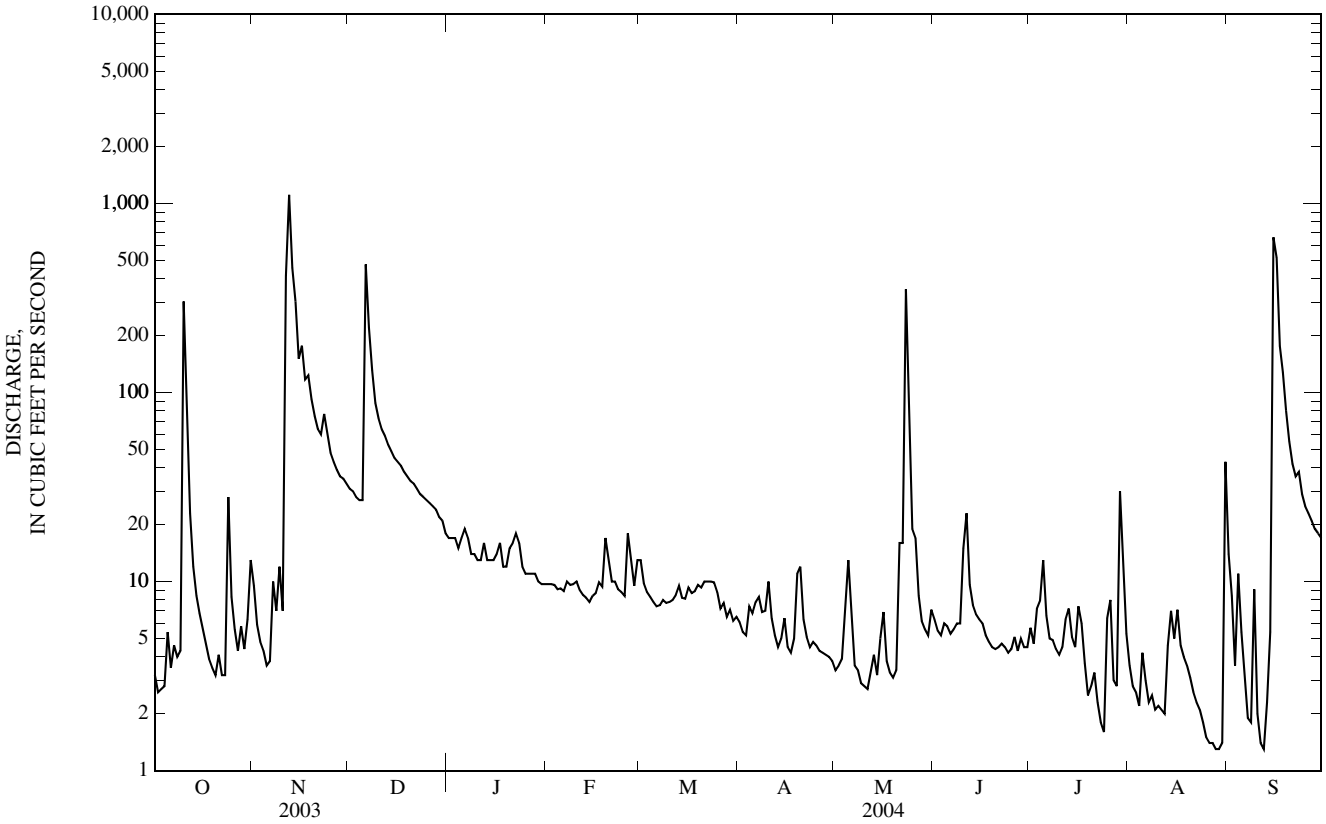
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 2004, BY WATER YEAR (WY)

MEAN	15.1	21.5	9.28	8.56	3.84	2.58	3.30	5.48	3.55	3.00	4.76	24.6
MAX	76.4	119	60.5	68.8	12.1	8.52	12.5	25.5	12.1	12.9	23.4	109
(WY)	(1991)	(2004)	(2004)	(1992)	(1991)	(2004)	(2003)	(1992)	(1992)	(1993)	(1998)	(1996)
MIN	0.88	0.38	0.62	0.37	0.36	0.59	0.30	0.21	0.04	0.01	0.01	0.01
(WY)	(2003)	(2003)	(1995)	(1995)	(2003)	(1990)	(1995)	(1994)	(1994)	(1997)	(1994)	(1997)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1973 - 2004	
ANNUAL TOTAL	7,027.55		10,290.0			
ANNUAL MEAN	19.3		28.1		8.78	
HIGHEST ANNUAL MEAN					28.1	2004
LOWEST ANNUAL MEAN					0.81	1994
HIGHEST DAILY MEAN	1,110	Nov 12	1,110	Nov 12	2,270	Sep 10, 1996
LOWEST DAILY MEAN	0.01	Jun 30	1.3	Aug 28	0.00	Oct 3, 1994
ANNUAL SEVEN-DAY MINIMUM	0.06	Jun 25	1.4	Aug 24	0.00	Oct 8, 1994
MAXIMUM PEAK FLOW			8,830	Nov 12	17,700	Sep 10, 1996
MAXIMUM PEAK STAGE			13.19	Nov 12	19.69	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	13,940		20,410		6,360	
ANNUAL RUNOFF (CFSM)	1.15		1.68		0.526	
ANNUAL RUNOFF (INCHES)	15.65		22.92		7.15	
10 PERCENT EXCEEDS	40		43		13	
50 PERCENT EXCEEDS	1.3		7.8		2.1	
90 PERCENT EXCEEDS	0.33		2.9		0.32	

e Estimated

50100450 RIO MAJADA AT LA PLENA, PR—Continued



50106100 RIO COAMO AT HWY 14 AT COAMO, PR

LOCATION.--Lat 18°05'00", long 66°21'16", Hydrologic Unit 21010004, on Highway 14 bridge, 0.8 mi (1.3 km) northeast from Parque Atlético, 1.2 mi (1.9 km) southeast from (WCPR) Antena de Radio.

DRAINAGE AREA.--43.5 mi^2 (113 km^2).

PERIOD OF RECORD.--January 1987 to current year. Prior to September 2000, published as Río Coamo at Coamo, PR.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 335 ft (110 m), from topographic map.

REMARKS.--Records poor. Low flow is affected by domestic discharges about 200 ft (65.6 m), upstream from gaging station. Gage-height and precipitation satellite telemetry at station. The gage height recovered for the instantaneous peak stage produced by Hurricane Georges was affected by backwater caused by the Highway 14 old bridge which is about 100 ft (30.40 m) downstream from gage.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3.1	30	137	39	17	10	6.5	11	9.5	5.2	4.2	9.0
2	e19	26	132	40	16	9.1	6.5	11	9.4	5.0	4.1	8.7
3	11	18	126	37	16	8.8	5.9	11	8.9	4.8	3.8	8.0
4	42	16	120	36	15	8.4	31	16	9.4	4.5	4.1	9.2
5	16	15	115	37	15	8.4	8.8	19	9.4	4.9	5.4	15
6	12	19	286	37	14	8.4	10	14	8.8	4.4	6.0	11
7	12	22	210	37	14	8.2	30	17	8.3	4.2	4.8	9.2
8	15	18	137	34	14	8.0	20	26	8.3	4.2	4.5	8.6
9	12	26	107	33	14	7.8	43	20	7.8	3.9	4.0	8.2
10	491	48	94	32	13	8.0	66	14	9.1	3.8	4.3	7.9
11	86	150	86	46	13	7.9	31	16	9.4	3.5	4.6	7.7
12	39	501	81	38	12	7.6	21	20	7.9	3.8	4.8	7.7
13	29	1,440	74	35	12	7.2	17	17	7.8	3.9	5.1	9.6
14	23	482	68	33	12	7.4	17	17	7.9	3.7	5.7	9.2
15	22	487	64	32	12	7.7	16	15	7.9	3.5	5.4	136
16	25	489	61	29	10	7.7	15	14	7.4	3.8	4.5	240
17	18	472	59	29	10	7.4	16	14	7.1	4.0	4.4	164
18	15	442	56	28	11	8.5	16	12	7.1	3.5	5.5	139
19	14	391	52	26	12	8.3	58	12	6.9	3.4	7.2	121
20	16	346	49	34	11	7.9	29	12	6.7	3.4	5.4	108
21	13	313	53	35	12	8.1	20	14	7.0	3.7	4.1	99
22	13	290	49	28	12	7.2	17	15	6.9	3.6	3.8	93
23	14	384	45	27	10	6.9	16	31	6.6	3.7	3.7	106
24	20	329	62	22	9.4	6.6	15	17	6.0	3.6	3.7	86
25	13	239	48	20	9.3	6.0	15	16	6.0	4.9	3.5	80
26	12	213	46	20	15	6.9	14	12	5.6	6.3	3.4	76
27	13	187	88	19	11	7.6	13	11	5.6	4.9	3.6	73
28	18	168	51	19	9.1	7.8	13	10	5.8	4.9	3.7	71
29	27	158	45	19	9.8	8.0	12	9.3	5.6	9.0	29	69
30	38	147	43	17	---	7.1	11	9.0	5.4	7.8	11	80
31	38	---	41	18	---	6.6	---	9.2	---	4.7	9.5	---
TOTAL	1,139.1	7,866	2,685	936	360.6	241.5	609.7	461.5	225.5	138.5	176.8	1,870.0
MEAN	36.7	262	86.6	30.2	12.4	7.79	20.3	14.9	7.52	4.47	5.70	62.3
MAX	491	1,440	286	46	17	10	66	31	9.5	9.0	29	240
MIN	3.1	15	41	17	9.1	6.0	5.9	9.0	5.4	3.4	3.4	7.7
AC-FT	2,260	15,600	5,330	1,860	715	479	1,210	915	447	275	351	3,710
CFSM	0.84	6.03	1.99	0.69	0.29	0.18	0.47	0.34	0.17	0.10	0.13	1.43
IN.	0.97	6.73	2.30	0.80	0.31	0.21	0.52	0.39	0.19	0.12	0.15	1.60

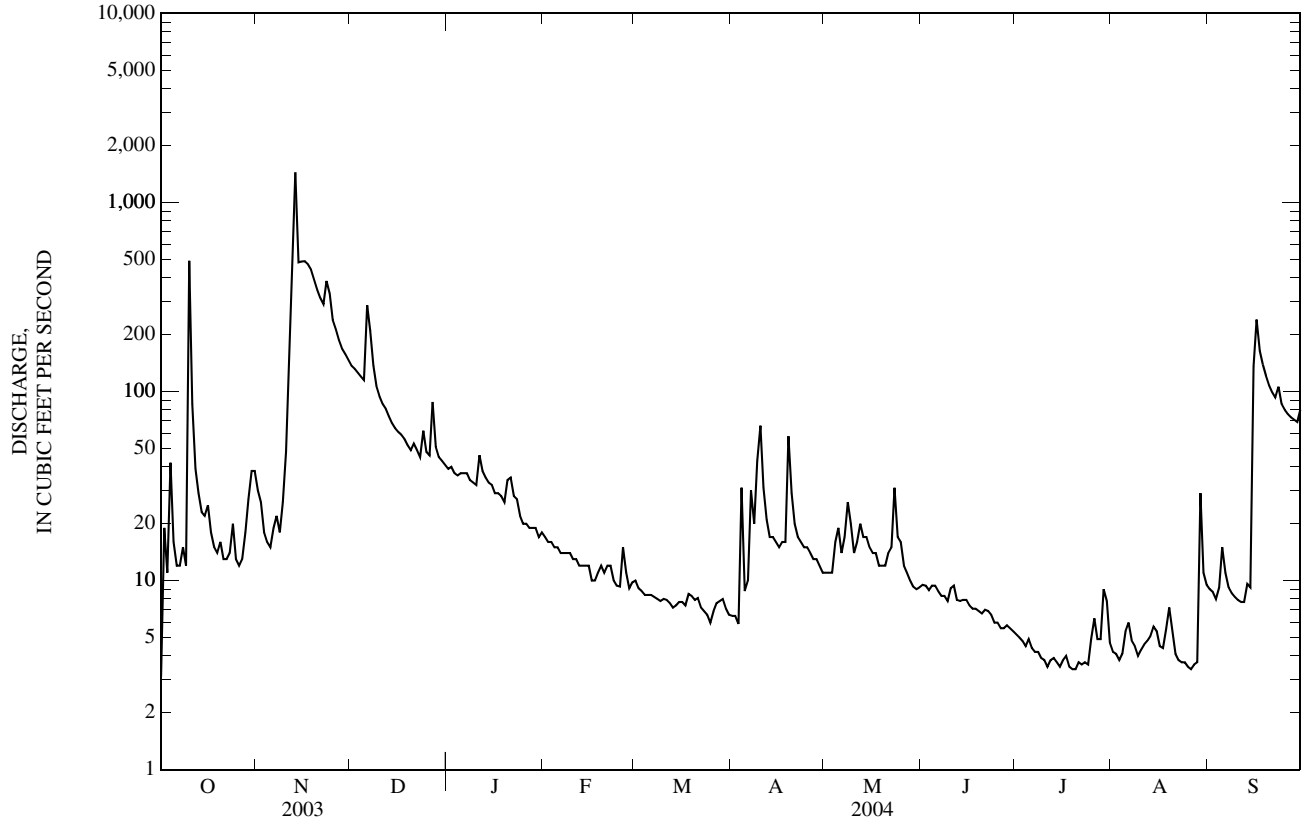
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 2004, BY WATER YEAR (WY)

MEAN	50.6	49.7	23.7	17.2	10.1	7.06	16.6	17.7	14.0	6.40	10.1	46.6
MAX	274	262	86.6	79.0	25.5	16.1	72.0	69.6	76.1	15.5	29.7	291
(WY)	(1991)	(2004)	(2004)	(1992)	(1998)	(2000)	(2003)	(1992)	(1987)	(1988)	(1998)	(1998)
MIN	10.3	4.91	3.22	2.62	3.06	3.09	2.49	1.66	1.99	0.78	1.28	1.61
(WY)	(1989)	(1995)	(2003)	(2003)	(2003)	(1987)	(1995)	(1989)	(1989)	(1989)	(1994)	(1994)

50106100 RIO COAMO AT HWY 14 AT COAMO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1987 - 2004	
ANNUAL TOTAL	15,195.5		16,710.2			
ANNUAL MEAN	41.6		45.7		22.3	
HIGHEST ANNUAL MEAN					45.7	2004
LOWEST ANNUAL MEAN					4.52	1994
HIGHEST DAILY MEAN	1,440	Nov 13	1,440	Nov 13	4,530	Sep 22, 1998
LOWEST DAILY MEAN	1.1	Aug 4	3.1	Oct 1	0.67	Aug 2, 1989
ANNUAL SEVEN-DAY MINIMUM	1.3	Jul 29	3.6	Jul 18	0.70	Jul 27, 1989
MAXIMUM PEAK FLOW			13,500	Nov 13	52,700	Sep 21, 1998
MAXIMUM PEAK STAGE			15.34	Nov 13	25.94	Sep 21, 1998
ANNUAL RUNOFF (AC-FT)	30,140		33,140		16,140	
ANNUAL RUNOFF (CFSM)	0.957		1.05		0.512	
ANNUAL RUNOFF (INCHES)	12.99		14.29		6.96	
10 PERCENT EXCEEDS	117		106		44	
50 PERCENT EXCEEDS	4.1		13		7.5	
90 PERCENT EXCEEDS	1.9		4.5		2.4	

e Estimated



50106500 RIO COAMO NEAR COAMO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°03'52", long 66°22'10", Hydrologic Unit 21010004, on Highway 153 bridge, 0.4 mi (0.6 km) above Río de la Mina, and 1.8 mi (2.9 km) south of Coamo Plaza.

DRAINAGE AREA.--46.0 mi^2 (119.1 km^2).

PERIOD OF RECORD.--Water years 1978 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV													
19...	1650	207	97	7.5	8.1	593	25.4	260	72.2	20.4	3.47	.7	27.6
MAR													
22...	1400	12	2.2	11.9	8.4	642	30.4	270	70.7	22.8	2.66	1	36.9
JUN													
22...	1530	6.7	2.3	12.2	8.6	561	30.5	--	--	--	--	--	--
AUG													
18...	1434	5.3	<2.0	11.4	8.3	547	33.4	190	48.3	16.7	1.84	.9	27.7

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
NOV													
19...	215	37.2	.2	30.9	31.4	--	352	197	136	.60	.04	5.29	5.30
MAR													
22...	232	42.6	.2	31.7	37.4	<.1	384	--	<10	.20	.01	2.58	2.60
JUN													
22...	198	--	--	--	--	--	--	--	<10	<.20	.01	1.49	1.50
AUG													
18...	200	38.2	.2	32.3	32.6	--	322	4.59	<10	--	.04	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
NOV													
19...	.01	.56	5.9	26.1	.52	10	24,000	84,000	--	--	--	--	--
MAR													
22...	.02	.19	2.8	12.4	.17	<10	--	--	<2	33.4	E68	<.2	<.8
JUN													
22...	.01	--	--	--	.12	<10	E40	E14,000	--	--	--	--	--
AUG													
18...	--	--	--	--	.12	<10	220	4,500	<2	28.4	72	<.2	<.8

50106500 RIO COAMO NEAR COAMO, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
NOV 19...	--	--	--	--	--	--	--	--	--	--	--
MAR 22...	M	<.01	160	<1.0	11.9	<.02	<3	<.3	<4	<.10	<16
JUN 22...	--	--	--	--	--	--	--	--	--	--	--
AUG 18...	M	<.01	140	<1.0	15.3	<.02	<3	.8	<4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50108000 RIO DESCALABRADO NEAR LOS LLANOS, PR

LOCATION.--Lat 18°03'08", long 66°25'34", Hydrologic Unit 21010004, at bridge on Highway 14, 1.5 mi (2.4 km) west of Los Llanos, and 5.3 mi (8.5 km) east of Juana Díaz.

DRAINAGE AREA.--12.9 mi^2 (33.4 km^2).

PERIOD OF RECORD.--1959-65 (annual low-flow measurements only), 1965 (annual maximum discharge), January 1966 to June 1969, July to December 1969 (maximum discharge only), February 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 220 ft (67 m), from topographic map.

REMARKS.--Records poor. Some regulation at low flow by local resident upstream from station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	4.6	35	e15	6.8	3.1	1.4	3.5	2.4	1.2	e1.8	e2.8
2	5.1	1.4	34	e14	7.1	3.0	1.5	3.5	2.0	1.8	e1.6	e2.6
3	0.28	2.4	33	e14	6.7	3.0	1.4	3.7	2.0	1.5	e1.4	e2.4
4	63	0.87	33	e13	6.0	2.9	63	4.8	2.3	1.4	e1.3	e3.0
5	8.4	0.85	32	e13	5.5	2.9	7.2	6.3	1.8	1.5	e1.2	e6.2
6	8.4	2.4	146	e12	5.5	2.9	2.6	4.2	1.7	1.4	e1.2	e4.4
7	4.7	2.3	378	e12	5.7	2.8	4.1	5.7	2.2	1.4	e1.2	e3.0
8	21	7.0	83	e12	5.6	2.7	4.3	14	1.9	1.4	e1.2	e2.7
9	8.5	3.4	48	e11	5.2	2.9	5.2	6.9	1.7	1.3	e1.1	e2.6
10	319	0.95	41	e11	5.5	2.9	17	3.8	2.1	1.2	e1.1	e2.5
11	96	92	48	e13	5.7	3.3	10	3.8	1.5	1.2	e1.1	e2.4
12	18	398	47	e12	5.7	3.4	9.8	4.3	1.7	1.7	e1.1	e2.4
13	10	1,050	40	e11	5.5	3.0	16	3.8	1.5	1.6	e1.0	e3.6
14	8.1	341	37	e11	5.9	3.0	10	9.7	1.6	1.4	e1.0	e2.8
15	31	265	33	e9.7	5.8	2.9	8.4	5.3	1.7	1.3	e1.0	e45
16	7.5	255	34	e9.2	5.0	2.8	10	2.5	1.9	1.3	e1.0	e70
17	5.3	142	32	e8.3	6.0	2.7	10	1.9	e1.9	1.4	e1.0	e50
18	2.9	130	32	e11	6.3	3.9	8.9	2.4	1.9	1.3	e2.0	e42
19	2.4	172	28	e9.3	5.3	3.4	39	2.1	2.1	1.2	e2.3	e37
20	2.9	76	e26	e14	4.6	3.0	13	2.1	e2.4	e1.2	e1.7	e34
21	68	53	e26	e11	4.3	2.7	6.9	2.7	2.3	e1.2	e1.4	e32
22	3.3	100	e24	13	4.6	2.5	5.4	2.6	e2.2	e1.2	e1.2	e31
23	5.9	94	e23	e12	7.7	2.4	4.3	14	1.4	e1.1	e1.1	e30
24	e2.9	44	e22	e10	7.9	2.6	4.7	7.2	1.3	e1.1	e1.1	e30
25	e1.6	41	e21	7.9	5.4	2.2	4.3	10	1.2	e1.3	e1.1	e29
26	e1.2	41	e20	e7.5	8.4	2.0	3.4	3.3	1.2	e2.0	e1.0	e29
27	e1.1	40	e34	7.5	4.0	2.1	3.0	3.2	1.1	e1.7	e1.0	e28
28	e5.0	44	e19	7.6	3.4	e2.0	2.4	3.3	1.3	e1.7	e1.0	e27
29	2.4	41	e18	9.4	4.0	e6.3	2.6	3.0	1.5	e3.3	e16	e26
30	38	36	e17	7.4	---	e2.7	3.9	2.5	1.3	e2.4	e4.2	e25
31	16	---	e16	6.9	---	e1.7	---	2.5	---	e2.1	e3.0	---
TOTAL	791.88	3,481.17	1,460	335.7	165.1	89.7	283.7	148.6	53.1	46.8	58.4	608.4
MEAN	25.5	116	47.1	10.8	5.69	2.89	9.46	4.79	1.77	1.51	1.88	20.3
MAX	319	1,050	378	15	8.4	6.3	63	14	2.4	3.3	16	70
MIN	0.28	0.85	16	6.9	3.4	1.7	1.4	1.9	1.1	1.1	1.0	2.4
AC-FT	1,570	6,900	2,900	666	327	178	563	295	105	93	116	1,210
CFSM	1.98	9.00	3.65	0.84	0.44	0.22	0.73	0.37	0.14	0.12	0.15	1.57
IN.	2.28	10.04	4.21	0.97	0.48	0.26	0.82	0.43	0.15	0.13	0.17	1.75

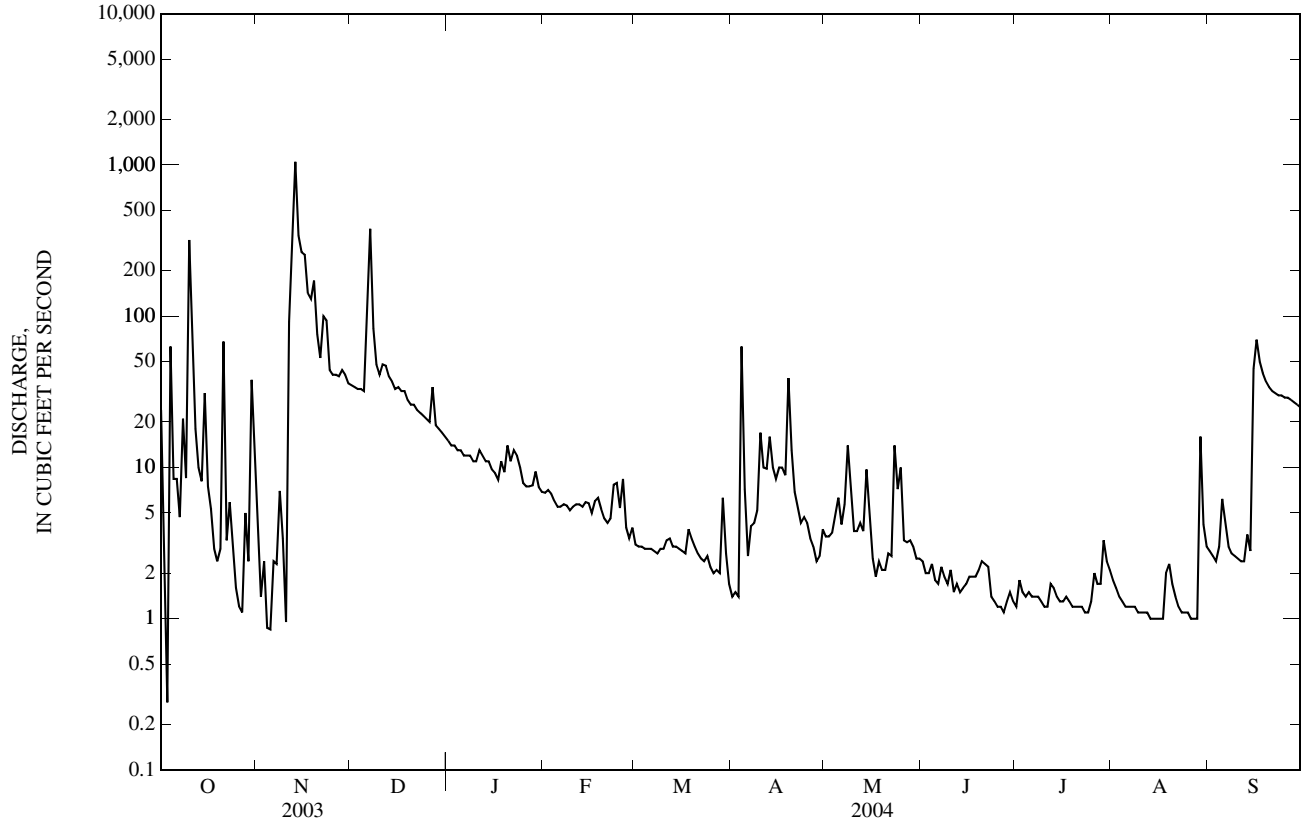
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2004, BY WATER YEAR (WY)

MEAN	25.3	19.3	7.35	4.72	3.36	2.01	6.16	12.2	4.54	2.27	3.86	32.5
MAX	117	116	47.1	36.4	23.9	8.93	29.5	62.2	25.2	10.5	13.1	395
(WY)	(1986)	(2004)	(2004)	(1992)	(1995)	(1996)	(2003)	(1985)	(1987)	(1991)	(1996)	(1996)
MIN	2.02	1.04	0.17	0.06	0.02	0.01	0.00	0.03	0.00	0.00	0.19	0.06
(WY)	(1968)	(1995)	(2003)	(1968)	(1968)	(1968)	(1968)	(1968)	(1967)	(1967)	(1990)	(1967)

50108000 RIO DESCALABRADO NEAR LOS LLANOS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1966 - 2004	
ANNUAL TOTAL	7,168.67		7,522.55			
ANNUAL MEAN	19.6		20.6		10.7	
HIGHEST ANNUAL MEAN					41.7	1996
LOWEST ANNUAL MEAN					1.69	1994
HIGHEST DAILY MEAN	1,050	Nov 13	1,050	Nov 13	10,000	Sep 10, 1996
LOWEST DAILY MEAN	0.06	Mar 27	0.28	Oct 3	0.00	Jun 22, 1966
ANNUAL SEVEN-DAY MINIMUM	0.08	Mar 31	1.0	Aug 11	0.00	Jun 22, 1966
MAXIMUM PEAK FLOW			5,920	Nov 13	30,000	Oct 7, 1985
MAXIMUM PEAK STAGE			13.38	Nov 13	24.37	Oct 7, 1985
INSTANTANEOUS LOW FLOW					0.00	Jun 22, 1966
ANNUAL RUNOFF (AC-FT)	14,220		14,920		7,740	
ANNUAL RUNOFF (CFSM)	1.52		1.59		0.828	
ANNUAL RUNOFF (INCHES)	20.67		21.69		11.25	
10 PERCENT EXCEEDS	40		39		17	
50 PERCENT EXCEEDS	0.73		4.2		1.8	
90 PERCENT EXCEEDS	0.10		1.2		0.14	

e Estimated



50110900 RIO TOA VACA ABOVE LAGO TOA VACA, PR

LOCATION.--Lat 18°07'37", long 66°27'24", Hydrologic Unit 21010004, on right bank, off a dirt road about 0.3 mi (0.5 km) from Road 553, 2.4 mi (3.9 km) southeast from Villalba Plaza, and 0.2 mi (0.3 km) downstream from confluence with Quebrada Limón.

DRAINAGE AREA.--14.2 mi^2 (36.8 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 525 ft (160 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	7.0	23	12	6.7	5.5	4.3	4.0	5.3	2.4	3.9	17
2	12	5.4	22	12	6.7	5.0	4.2	4.2	4.7	2.3	12	13
3	7.9	4.5	21	11	6.6	4.7	4.0	4.3	4.0	2.5	4.1	7.4
4	27	3.9	20	11	6.3	4.6	17	6.1	4.3	2.4	4.0	7.4
5	14	3.4	19	10	6.1	4.7	12	7.8	4.6	2.4	4.4	5.7
6	26	3.8	69	10	5.9	4.5	13	5.2	3.7	2.2	4.3	27
7	19	5.5	94	9.8	5.8	4.4	33	6.9	3.6	2.3	3.6	20
8	30	6.5	68	9.2	5.7	4.4	24	16	3.6	2.4	3.5	11
9	17	4.6	38	9.2	5.8	4.4	24	13	3.3	2.3	3.5	7.7
10	e145	4.4	29	9.2	5.9	4.5	26	7.2	3.9	2.4	3.6	6.1
11	e92	19	25	9.1	5.5	4.8	14	5.6	3.5	2.4	4.0	14
12	e33	e300	23	8.8	5.5	4.6	8.6	5.7	3.2	2.6	4.2	15
13	e25	e1,000	21	12	5.3	4.3	6.6	6.1	3.1	2.8	5.2	12
14	e25	e250	20	9.5	5.2	4.7	5.8	8.1	7.7	2.7	6.1	8.3
15	20	e130	20	8.4	5.1	4.4	5.3	6.7	7.7	2.4	5.5	548
16	12	e130	19	8.2	5.1	4.3	5.5	5.4	4.4	2.4	4.5	1,440
17	10	e80	18	8.4	5.1	4.3	4.9	4.4	3.5	2.4	4.5	152
18	7.2	e121	17	13	5.1	5.2	4.9	4.0	3.2	2.1	11	104
19	6.2	59	17	9.1	5.2	5.7	28	3.9	3.0	2.0	93	71
20	5.9	44	16	13	5.1	4.9	16	4.0	2.9	1.8	26	55
21	5.5	38	20	15	6.3	4.6	9.6	4.4	2.8	1.8	9.5	40
22	4.7	39	16	9.4	7.1	4.3	7.5	4.8	3.0	1.6	6.2	35
23	7.2	67	15	8.9	11	4.4	6.4	22	2.7	1.8	6.4	60
24	5.4	57	40	8.3	10	4.5	5.9	18	2.4	2.2	4.9	41
25	4.3	45	e25	7.6	6.1	4.2	5.5	36	2.3	3.6	4.2	29
26	3.8	36	e20	7.4	7.2	4.2	5.1	15	2.4	4.1	3.7	23
27	7.2	31	e17	7.5	6.3	4.9	4.8	12	2.2	3.5	3.5	19
28	7.0	28	e15	7.5	5.4	5.1	4.4	13	2.1	4.4	4.2	16
29	11	26	e14	8.3	5.5	7.5	4.3	8.8	2.1	14	28	14
30	14	24	e13	7.0	---	6.4	4.2	7.0	2.2	7.1	7.4	22
31	10	---	12	6.8	---	4.6	---	5.7	---	4.5	4.4	---
TOTAL	629.3	2,573.0	806	296.6	178.6	148.6	318.8	275.3	107.4	95.8	293.3	2,840.6
MEAN	20.3	85.8	26.0	9.57	6.16	4.79	10.6	8.88	3.58	3.09	9.46	94.7
MAX	145	1,000	94	15	11	7.5	33	36	7.7	14	93	1,440
MIN	3.8	3.4	12	6.8	5.1	4.2	4.0	3.9	2.1	1.6	3.5	5.7
AC-FT	1,250	5,100	1,600	588	354	295	632	546	213	190	582	5,630
CFSM	1.43	6.04	1.83	0.67	0.43	0.34	0.75	0.63	0.25	0.22	0.67	6.67
IN.	1.65	6.74	2.11	0.78	0.47	0.39	0.84	0.72	0.28	0.25	0.77	7.44

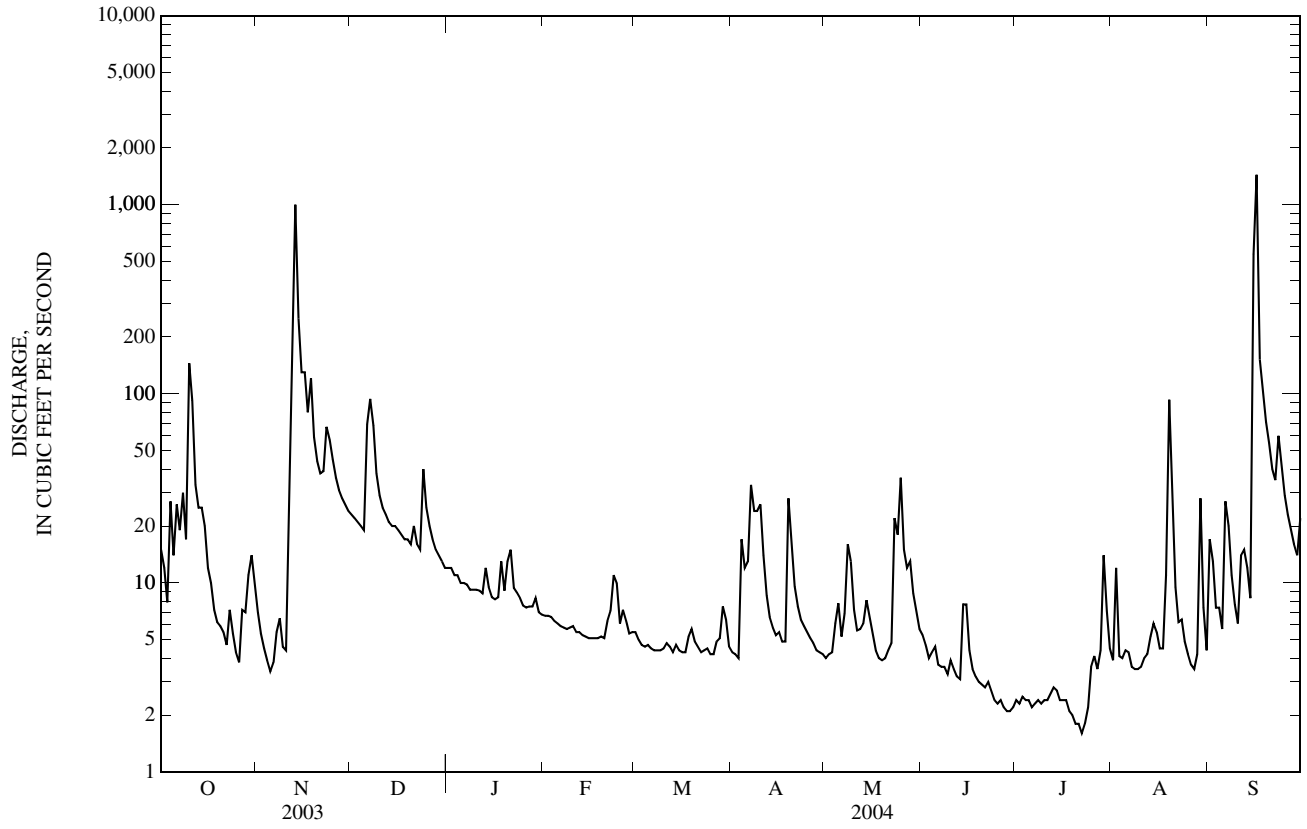
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 2004, BY WATER YEAR (WY)

MEAN	36.3	24.7	9.90	8.03	5.22	4.12	12.7	18.5	11.7	5.74	8.92	41.5
MAX	109	85.8	26.0	43.1	12.6	8.93	37.0	76.1	35.4	14.4	36.4	152
(WY)	(1991)	(2004)	(2004)	(1992)	(1996)	(2002)	(2002)	(1995)	(1992)	(1992)	(1998)	(1998)
MIN	4.61	2.19	1.42	1.79	2.31	1.67	1.46	1.42	1.23	0.71	2.74	3.21
(WY)	(1992)	(1992)	(1992)	(1995)	(2003)	(1990)	(1990)	(1997)	(1990)	(1990)	(1990)	(1994)

50110900 RIO TOA VACA ABOVE LAGO TOA VACA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1989 - 2004	
ANNUAL TOTAL	6,185.2		8,563.3			
ANNUAL MEAN	16.9		23.4		15.7	
HIGHEST ANNUAL MEAN					29.3	1998
LOWEST ANNUAL MEAN					4.02	1994
HIGHEST DAILY MEAN	1,000	Nov 13	1,440	Sep 16	2,050	Sep 10, 1996
LOWEST DAILY MEAN	1.1	Mar 6	1.6	Jul 22	0.45	Aug 7, 1990
ANNUAL SEVEN-DAY MINIMUM	1.2	Mar 12	1.9	Jul 18	0.61	Jul 9, 1990
MAXIMUM PEAK FLOW			7,270	Sep 16	unknown	Sep 21, 1998
MAXIMUM PEAK STAGE			12.32	Sep 16	unknown	Sep 21, 1998
INSTANTANEOUS LOW FLOW			1.2	Jul 22	0.42	Jul 14, 1997
ANNUAL RUNOFF (AC-FT)	12,270		16,990		11,380	
ANNUAL RUNOFF (CFSM)	1.19		1.65		1.11	
ANNUAL RUNOFF (INCHES)	16.20		22.43		15.04	
10 PERCENT EXCEEDS	31		32		32	
50 PERCENT EXCEEDS	3.8		6.6		5.3	
90 PERCENT EXCEEDS	1.9		3.1		1.8	

e Estimated



50110900 RIO TOA VACA ABOVE LAGO TOA VACA, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORDS.--Water years 1988 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: April 1988 to current year.

INSTRUMENTATION.--USDH-48 and automatic sediment samplers since 1988.

REMARKS.--Sediment samples were collected by a local observer on a weekly basis. During high flow events sediment samples were collected with automatic sediment sampler.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 11,800 mg/L September 22, 1998; Minimum daily mean, 1 mg/L several days during several years.
SEDIMENT LOADS: Maximum daily mean, e93,300 tons (e84,600 tonnes) September 12, 1998; Minimum daily mean, <0.01 ton (<0.01 tonne) several years.

EXTREMES FOR CURRENT YEAR 2003.--
SEDIMENT CONCENTRATION: Maximum daily mean, 1,330 mg/L April 18, 2003; Minimum daily mean, 1 mg/L several days.
SEDIMENT LOADS: Maximum daily mean, 2,200 tons (1,996 tonnes) April 18, 2003; Minimum daily mean, <0.01 ton (<0.01 tonne) several days.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER			NOVEMBER			DECEMBER		
1	15	46	10	e3.7	---	e0.17	e4.3	---	e0.10
2	9.3	16	0.41	e13	---	e1.2	e4.2	---	e0.10
3	10	14	0.39	e5.8	---	e0.15	e4.5	---	e0.10
4	12	39	1.2	e5.1	---	e0.15	e4.7	---	e0.18
5	8.4	81	1.8	e8.5	---	e0.16	e4.1	---	e0.10
6	7.0	57	1.1	e5.1	---	e0.20	e3.9	---	e0.10
7	e6.2	e33	e0.57	e5.9	---	e0.15	e4.2	---	e0.10
8	12	48	3.0	e4.7	---	e0.20	e3.6	---	e0.10
9	18	48	2.8	e4.2	---	e0.20	e3.3	---	e0.10
10	14	34	1.8	e4.3	---	e0.20	e3.0	---	e0.04
11	9.2	6	0.16	e8.5	---	e0.16	e2.8	---	e0.04
12	7.0	5	0.10	e8.5	---	e0.16	e2.8	---	e0.04
13	28	197	66	e4.8	---	e0.15	e2.8	---	e0.04
14	13	42	1.5	e5.3	---	e0.15	e2.7	---	e0.04
15	15	35	1.4	e8.5	---	e0.16	e2.4	---	e0.04
16	22	66	6.8	e8.3	---	e0.16	e2.4	---	e0.04
17	20	89	5.3	e9.0	---	e0.16	e2.2	---	e0.04
18	12	9	0.30	e5.9	---	e0.15	e2.2	---	e0.04
19	8.8	7	0.16	e5.3	---	e0.18	e5.1	---	e0.18
20	7.6	7	0.15	e4.8	---	e0.18	e5.1	---	e0.18
21	7.5	8	0.17	e4.5	---	e0.18	e4.5	---	e0.10
22	5.9	10	0.15	e4.5	---	e0.18	e8.1	---	e0.16
23	25	214	86	e3.9	---	e0.10	e8.4	---	e0.16
24	e11	e32	e0.52	e3.9	---	e0.10	e16	---	e1.4
25	e6.2	e27	e0.36	e3.6	---	e0.10	e9.6	---	e0.39
26	e5.3	e25	e0.41	e3.5	---	e0.10	e3.9	---	e0.10
27	e5.3	e21	e0.27	e3.4	---	e0.10	e2.8	---	e0.04
28	e4.5	e16	e0.20	e10	---	e0.39	e2.4	---	e0.04
29	e4.1	e12	e0.17	e6.1	---	e0.16	e7.7	---	e0.18
30	e3.7	---	e0.17	e4.6	---	e0.15	e3.5	---	e0.10
31	e4.5	---	e0.20	---	---	---	e2.8	---	e0.04
TOTAL	337.5	---	193.56	177.2	---	5.95	140.0	---	4.41

50110900 RIO TOA VACA ABOVE LAGO TOA VACA, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	e2.6	---	e0.04	e6.6	---	e1.8	e1.7	---	e0.05
2	e2.3	---	e0.04	e6.5	---	e1.8	e1.4	---	e0.05
3	e2.4	---	e0.04	e2.6	---	e0.04	e1.4	---	e0.05
4	e2.2	---	e0.04	e2.6	---	e0.04	e1.3	---	e0.05
5	e2.1	---	e0.04	e2.4	---	e0.04	e1.4	---	e0.05
6	e2.2	---	e0.04	e2.4	e13	e0.39	e1.1	---	e0.05
7	e2.3	---	e0.04	e2.6	e7	e0.14	e1.3	---	e0.05
8	e2.3	---	e0.04	2.4	9	0.06	e1.2	---	e0.05
9	e2.6	---	e0.04	2.2	12	0.07	e1.3	---	e0.05
10	e2.3	---	e0.04	2.3	15	0.09	e1.2	---	e0.05
11	e2.3	---	e0.04	2.2	18	0.11	e1.3	---	e0.05
12	e2.3	---	e0.04	2.1	21	0.12	e1.3	---	e0.05
13	e2.3	---	e0.04	2.0	24	0.13	e1.1	---	e0.05
14	e2.0	---	e0.04	2.0	27	0.14	e1.2	---	e0.05
15	e2.1	---	e0.04	1.9	29	0.15	e1.2	---	e0.05
16	e2.0	---	e0.04	1.9	28	0.14	e1.3	---	e0.05
17	e2.3	---	e0.04	1.9	26	0.13	e1.2	---	e0.05
18	e2.3	---	e0.04	1.9	24	0.12	e1.2	---	e0.05
19	e2.0	---	e0.04	1.8	22	0.11	e1.9	e4	e0.02
20	e2.0	---	e0.04	1.7	20	0.09	4.1	5	0.06
21	e1.9	---	e0.04	1.7	18	0.08	2.0	7	0.04
22	e2.0	---	e0.04	1.6	17	0.07	1.9	8	0.04
23	e1.9	---	e0.04	1.6	18	0.08	1.9	9	0.05
24	e1.8	---	e0.04	e1.7	e21	e0.09	1.5	11	0.04
25	e1.8	---	e0.04	e1.7	---	e0.09	1.5	12	0.05
26	e2.3	---	e0.04	e1.4	---	e0.09	6.6	28	1.8
27	e2.0	---	e0.04	e1.5	---	e0.09	14	35	1.6
28	e1.9	---	e0.04	e1.5	---	e0.09	9.8	7	0.19
29	e1.9	---	e0.04	---	---	---	4.3	8	0.10
30	e1.8	---	e0.04	---	---	---	5.1	13	0.18
31	e3.5	---	e0.10	---	---	---	e3.0	e18	e0.15
TOTAL	67.7	---	1.30	64.7	---	6.39	80.7	---	5.22
		APRIL			MAY			JUNE	
1	e2.8	e23	e0.15	15	32	1.3	e4.3	---	e0.11
2	2.3	21	0.13	13	31	1.1	e3.7	---	e0.11
3	2.0	17	0.09	12	30	1.0	e13	---	e1.1
4	2.0	13	0.07	12	29	0.93	e11	---	e0.84
5	2.2	11	0.07	11	28	0.84	e8.8	---	e0.84
6	5.0	10	0.13	10	28	0.79	e6.3	---	e0.62
7	3.0	8	0.07	10	38	1.0	e4.5	---	e0.11
8	2.8	7	0.05	9.8	51	1.3	e4.0	---	e0.11
9	2.7	7	0.05	9.3	63	1.6	e3.5	---	e0.28
10	2.1	7	0.04	9.1	59	1.5	e3.2	e33	e0.28
11	4.8	7	0.09	8.7	51	1.2	3.0	30	0.25
12	6.0	7	0.11	8.0	42	0.91	3.0	24	0.20
13	3.8	7	0.07	7.8	34	0.73	3.0	17	0.14
14	2.9	6	0.05	9.0	33	0.80	2.9	15	0.12
15	2.5	6	0.04	8.3	32	0.73	3.0	14	0.11
16	2.3	6	0.04	7.5	32	0.65	3.0	13	0.10
17	205	1,270	2,040	7.3	32	0.62	3.1	11	0.10
18	237	1,330	2,200	7.5	31	0.63	3.3	10	0.09
19	65	307	74	7.7	31	0.64	4.0	10	0.11
20	34	50	6.2	7.5	30	0.61	3.4	22	0.20
21	40	101	12	41	306	114	3.2	35	0.31
22	39	91	15	25	93	7.0	3.8	30	0.30
23	75	266	101	12	54	1.7	3.4	19	0.17
24	120	588	383	8.0	48	1.0	3.1	10	0.08
25	84	166	48	e7.8	e45	e0.79	3.0	8	0.06
26	51	43	6.0	e6.8	e42	e0.62	2.9	8	0.06
27	32	40	3.4	e5.8	e39	e0.51	2.7	7	0.05
28	24	37	2.4	e5.3	e30	e0.36	2.7	5	0.03
29	19	35	1.8	e4.8	e24	e0.27	2.5	2	0.02
30	17	33	1.5	e4.5	---	e0.11	2.6	4	0.02
31	---	---	---	e6.0	---	e0.11	---	---	---
TOTAL	1,091.2	---	4,895.55	317.5	---	145.35	123.9	---	6.92

50110900 RIO TOA VACA ABOVE LAGO TOA VACA, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	2.6	5	0.03	2.7	1	0.00	18	39	3.1
2	2.8	5	0.03	2.5	1	0.00	6.3	19	0.33
3	2.9	4	0.03	2.6	3	0.02	7.3	28	1.0
4	2.8	4	0.03	2.3	26	0.17	8.6	22	0.57
5	2.8	3	0.02	2.3	55	0.33	4.6	14	0.17
6	3.2	3	0.02	2.5	54	0.37	3.6	13	0.12
7	2.9	3	0.02	3.0	44	0.35	3.4	14	0.13
8	2.7	2	0.02	2.5	33	0.22	2.9	17	0.14
9	2.9	2	0.02	2.2	23	0.14	2.7	20	0.15
10	2.5	2	0.01	2.2	21	0.12	2.5	23	0.16
11	2.4	2	0.02	26	101	32	2.8	25	0.19
12	2.3	3	0.02	7.9	7	0.18	3.1	24	0.20
13	3.2	8	0.08	3.3	4	0.03	4.0	22	0.24
14	3.8	15	0.15	2.8	2	0.02	3.5	21	0.20
15	3.2	21	0.18	2.6	4	0.03	11	21	0.59
16	3.3	27	0.24	2.6	5	0.04	26	91	8.1
17	3.1	32	0.26	2.5	5	0.04	13	12	0.46
18	2.7	19	0.14	2.7	4	0.03	6.8	6	0.12
19	2.6	3	0.02	e3.6	e4	e0.02	4.9	6	0.08
20	2.5	1	0.01	e2.7	e8	e0.04	4.2	6	0.06
21	2.4	2	0.01	e2.1	---	e0.04	6.4	6	0.10
22	2.4	2	0.02	e2.7	---	e0.04	6.4	5	0.09
23	2.5	3	0.02	e2.2	---	e0.04	4.7	5	0.07
24	2.4	7	0.05	2.7	13	0.09	4.4	5	0.06
25	2.3	12	0.08	2.2	11	0.06	7.3	21	1.1
26	2.3	17	0.10	11	24	0.95	5.1	6	0.08
27	3.0	16	0.12	5.6	16	0.26	4.8	6	0.07
28	3.4	13	0.12	3.1	8	0.07	4.4	6	0.07
29	4.4	10	0.12	3.1	7	0.06	4.0	5	0.06
30	2.8	6	0.05	3.7	5	0.06	4.0	5	0.05
31	2.5	1	0.00	33	159	40	---	---	---
TOTAL	87.6	---	2.04	152.9	---	75.82	190.7	---	17.86
YEAR	2,831.6	5,360.37							

e Estimated

50111210 LAGO TOA VACA AT DAMSITE NEAR VILLALBA, PR

LOCATION.--Lat 18°06'07", long 66°29'23", Hydrologic Unit 21010004, in a concrete gate tower at Damsite on Río Toa Vaca, 0.45 mi (0.7 km) northwest from Escuela Higüero, 2.0 mi (3.2 km) south from Villalba Plaza.

DRAINAGE AREA.--22.0 mi^2 (57.9 km^2).

PERIOD OF RECORD.--August 1997 to current year.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago Toa Vaca was completed in 1972. The dam is located in the Río Toa Vaca just upstream from Guayabal reservoir. The Toa Vaca dam is a zoned earth and rockfill embankment structure. At crest elevation 555.00 ft (169.2 m) (top of dam), the dam is approximately 1,740 ft (530.3 m) long, about 215 ft (65.53 m) height, and has a maximum storage capacity of about 67,759 acre-feet (83.55 hm^3) at top of dam elevation. The Toa Vaca dam is owned by the Puerto Rico Aqueduct and Sewer Authority and its primary purpose is to provide water for municipal and industrial use, and for irrigation of some of the lands served by the South Coast irrigation district through the Juana Díaz canal. Gage-height and precipitation satellite telemetry at station.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation, 535.24 ft (163.14 m) November 13, 1998; minimum elevation, 463.63 ft (141.31 m), August 19, 2001.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 526.52 ft (160.48 m), September 27; minimum elevation, 471.08 ft (143.58 m), October 1 and 4.

Capacity Table
(based on data from Puerto Rico Electric Power Authority)
(Elevation in ft, capacity in acre-ft)

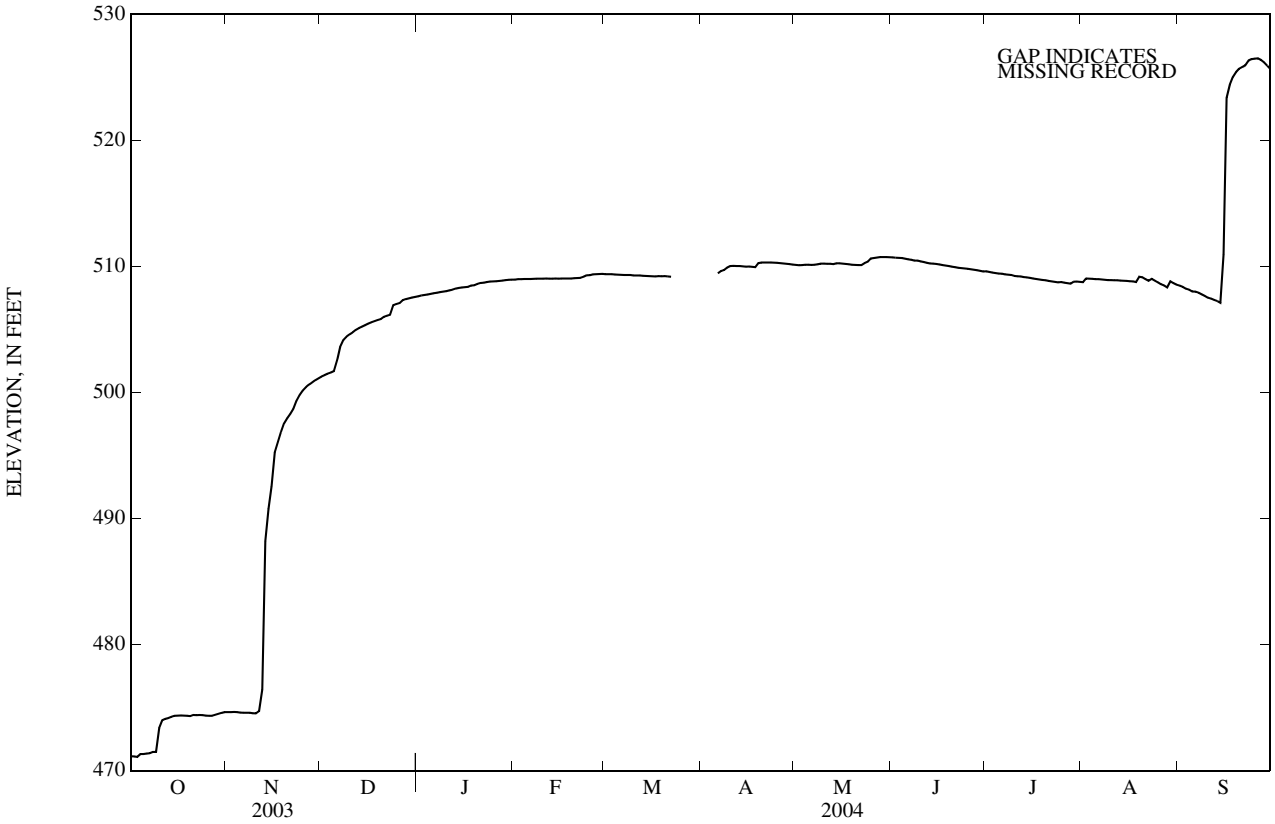
Elevation	Contents	Elevation	Contents
345.00	0	489.80	23,756
488.70	23,259	531.20	48,362
		570.00	81,991

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	471.14	474.64	501.26	507.63	508.96	509.39	A	510.12	510.72	509.61	508.75	508.47
2	471.13	474.64	501.38	507.70	508.99	509.39	A	510.10	510.70	509.56	509.05	508.37
3	471.09	474.66	501.49	507.74	509.00	509.39	A	510.11	510.68	509.51	509.03	508.23
4	471.32	474.64	501.58	507.78	509.01	509.36	A	510.13	510.67	509.48	509.02	508.15
5	471.32	474.61	501.69	507.83	509.01	509.35	A	510.13	510.62	509.44	509.00	508.02
6	471.36	474.59	502.56	507.88	509.01	509.34	509.45	510.12	510.57	509.42	508.99	508.00
7	471.38	474.59	503.62	507.91	509.02	509.32	509.63	510.13	510.53	509.38	508.97	507.92
8	471.48	474.59	504.17	507.96	509.03	509.32	509.72	510.18	510.47	509.35	508.94	507.79
9	471.49	474.56	504.42	508.00	509.03	509.32	509.91	510.22	510.46	509.32	508.92	507.66
10	473.39	474.55	504.61	508.04	509.03	509.29	510.04	510.22	510.40	509.25	508.92	507.52
11	474.00	474.72	504.77	508.11	509.04	509.29	510.05	510.21	510.35	509.22	508.90	507.44
12	474.11	476.44	504.97	508.16	509.03	509.28	510.04	510.21	510.29	509.21	508.90	507.34
13	474.18	488.22	505.11	508.24	509.03	509.26	510.03	510.19	510.24	509.16	508.88	507.25
14	474.28	490.76	505.23	508.30	509.04	509.25	510.01	510.25	510.22	509.13	508.87	507.11
15	474.35	492.56	505.34	508.33	509.03	509.24	509.99	510.25	510.20	509.10	508.85	510.95
16	474.37	495.23	505.46	508.36	509.04	509.22	510.00	510.23	510.16	509.05	508.83	523.37
17	474.38	496.05	505.57	508.39	509.05	509.21	509.97	510.20	510.11	509.01	508.82	524.42
18	474.37	496.86	505.66	508.49	509.04	509.23	509.95	510.17	510.07	508.97	508.76	525.02
19	474.35	497.55	505.74	508.51	509.05	509.22	510.26	510.14	510.03	508.93	509.18	525.42
20	474.33	497.96	505.82	508.61	509.07	509.23	510.31	510.12	509.98	508.90	509.14	525.68
21	474.42	498.30	506.00	508.69	509.08	509.21	510.32	510.11	509.94	508.85	509.00	525.82
22	474.40	498.73	506.09	508.72	509.10	509.19	510.31	510.11	509.90	508.81	508.87	525.96
23	474.42	499.35	506.16	508.77	509.18	A	510.31	510.26	509.87	508.78	509.02	526.33
24	474.40	499.82	506.92	508.80	509.30	A	510.30	510.38	509.84	508.74	508.88	526.45
25	474.37	500.16	507.02	508.81	509.31	A	510.29	510.63	509.82	508.76	508.74	526.49
26	474.35	500.42	507.09	508.83	509.38	A	510.26	510.67	509.78	508.72	508.59	526.51
27	474.35	500.63	507.32	508.86	509.39	A	510.24	510.71	509.74	508.68	508.48	526.39
28	474.43	500.80	507.41	508.88	509.40	A	510.21	510.75	509.71	508.64	508.34	526.19
29	474.50	500.97	507.47	508.92	509.41	A	510.19	510.75	509.65	508.79	508.81	525.93
30	474.58	501.12	507.53	508.94	---	A	510.15	510.74	509.60	508.80	508.68	525.67
31	474.64	---	507.58	508.95	---	A	---	510.73	---	508.78	508.55	---
MAX	474.64	501.12	507.58	508.95	509.41	---	---	510.75	510.72	509.61	509.18	526.51
MIN	471.09	474.55	501.26	507.63	508.96	---	---	510.10	509.60	508.64	508.34	507.11

A No gage-height record

50111210 LAGO TOA VACA AT DAMSITE NEAR VILLALBA, PR—Continued



50111300 LAGO GUAYABAL AT DAMSITE NEAR JUANA DIAZ, PR

LOCATION.--Lat 18°05'17", long 66°30'09", Hydrologic Unit 21010004, at Damsite, 2.30 mi (3.70 km) northeast from Juana Díaz Plaza, 0.70 mi (1.13 km) northeast from Escuela Salvador Bousquets and 2.45 mi (3.94 km) southeast from Escuela Zoilo Gracia.

DRAINAGE AREA.--43.3 mi^2 (42.1 km^2).

PERIOD OF RECORD.--April 1995 to current year.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago Guayabal was completed in 1913. The dam is a reinforced concrete, flatslab and buttress-type structure about 130 ft (40 m) height, a net crest length at the right side of the dam of 693 ft (211 m) and a crest elevation of 331 ft (101 m). It has a maximum storage capacity of 7,600 acre-feet (9.37 hm^3). The Guayabal dam is owned by the Puerto Rico Electric Power Authority (PREPA) and its primary purpose is for irrigation of lands served by the Juana Díaz Canal. Gage-height and precipitation satellite telemetry at station.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation, 342.89 ft (104.51 m), April 26, 2002; minimum elevation, 325.99 ft (99.36 m), September 29, 1997.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 341.55 ft (104.10 m), November 13; minimum elevation, 338.70 ft (103.24 m), March 28 and 29.

Capacity Table
(based on data from Puerto Rico Electric Power Authority)
(Elevation in ft, capacity in acre-ft)

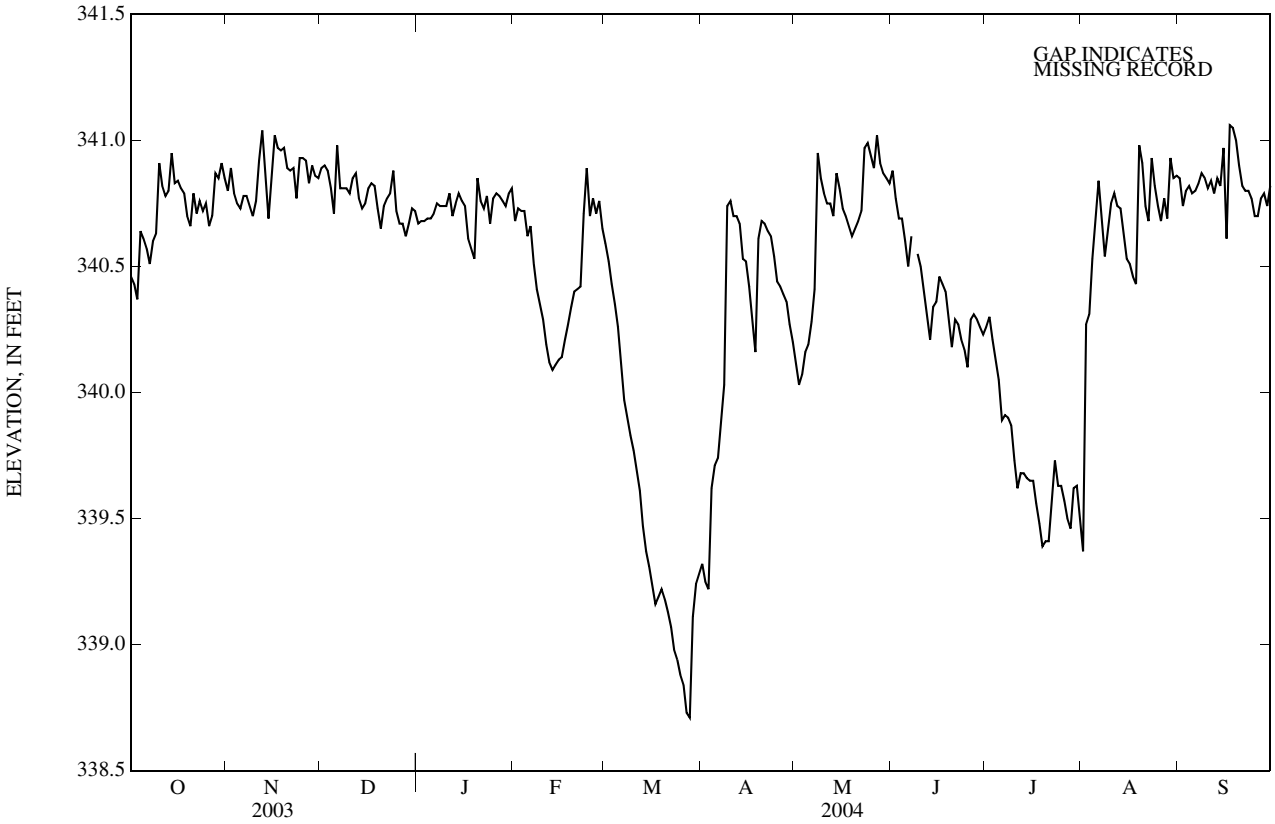
Elevation	Contents	Elevation	Contents
305	366	330	3,885
321	2,010	341	7,360

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	340.46	340.80	340.89	340.67	340.68	340.59	339.32	340.12	340.88	340.26	339.37	340.85
2	340.43	340.89	340.90	340.68	340.73	340.52	339.25	340.03	340.77	340.30	340.27	340.74
3	340.37	340.79	340.88	340.68	340.72	340.43	339.22	340.07	340.69	340.21	340.31	340.80
4	340.64	340.75	340.81	340.69	340.72	340.35	339.62	340.16	340.69	340.13	340.53	340.82
5	340.61	340.73	340.71	340.69	340.62	340.26	339.71	340.19	340.60	340.05	340.68	340.79
6	340.57	340.78	340.98	340.71	340.66	340.11	339.74	340.28	340.50	339.89	340.84	340.80
7	340.51	340.78	340.81	340.75	340.51	339.97	339.89	340.41	340.62	339.91	340.68	340.83
8	340.60	340.74	340.81	340.74	340.41	339.90	340.03	340.95	A	339.90	340.54	340.87
9	340.63	340.70	340.81	340.74	340.35	339.83	340.74	340.85	340.55	339.87	340.64	340.85
10	340.91	340.76	340.79	340.74	340.29	339.77	340.76	340.79	340.50	339.73	340.75	340.81
11	340.82	340.92	340.85	340.79	340.19	339.69	340.70	340.75	340.40	339.62	340.79	340.84
12	340.78	341.04	340.87	340.70	340.12	339.61	340.70	340.75	340.31	339.68	340.74	340.79
13	340.80	340.85	340.77	340.75	340.09	339.47	340.67	340.70	340.21	339.68	340.73	340.85
14	340.95	340.69	340.73	340.79	340.11	339.37	340.53	340.87	340.34	339.66	340.63	340.82
15	340.83	340.87	340.75	340.76	340.13	339.31	340.52	340.81	340.36	339.65	340.53	340.97
16	340.84	341.02	340.81	340.74	340.14	339.23	340.42	340.73	340.46	339.65	340.51	340.61
17	340.81	340.97	340.83	340.61	340.21	339.16	340.29	340.70	340.43	339.56	340.46	341.06
18	340.79	340.96	340.82	340.57	340.27	339.19	340.16	340.66	340.40	339.48	340.43	341.05
19	340.70	340.97	340.73	340.53	340.34	339.22	340.61	340.62	340.29	339.39	340.98	341.00
20	340.66	340.89	340.65	340.85	340.40	339.18	340.68	340.65	340.18	339.41	340.91	340.90
21	340.79	340.88	340.74	340.76	340.41	339.13	340.67	340.68	340.29	339.41	340.74	340.82
22	340.71	340.89	340.77	340.73	340.42	339.07	340.64	340.72	340.27	339.57	340.68	340.80
23	340.76	340.77	340.79	340.78	340.71	338.98	340.62	340.97	340.21	339.73	340.93	340.80
24	340.72	340.93	340.88	340.67	340.89	338.94	340.54	340.99	340.17	339.63	340.82	340.77
25	340.75	340.93	340.72	340.77	340.70	338.88	340.44	340.94	340.10	339.63	340.74	340.70
26	340.66	340.92	340.67	340.79	340.77	338.84	340.42	340.89	340.29	339.57	340.68	340.70
27	340.70	340.83	340.67	340.78	340.71	338.73	340.39	341.02	340.31	339.50	340.77	340.77
28	340.87	340.90	340.62	340.76	340.76	338.71	340.36	340.91	340.29	339.46	340.69	340.79
29	340.85	340.86	340.67	340.74	340.65	339.11	340.27	340.87	340.26	339.62	340.93	340.74
30	340.91	340.85	340.73	340.79	---	339.24	340.20	340.85	340.23	339.63	340.85	340.82
31	340.85	---	340.72	340.81	---	339.28	---	340.83	---	339.50	340.86	---
MAX	340.95	341.04	340.98	340.85	340.89	340.59	340.76	341.02	---	340.30	340.98	341.06
MIN	340.37	340.69	340.62	340.53	340.09	338.71	339.22	340.03	---	339.39	339.37	340.61

A No gage-height record

50111300 LAGO GUAYABAL AT DAMSITE NEAR JUANA DIAZ, PR—Continued



50111500 RIO JACAGUAS AT JUANA DIAZ, PR

LOCATION.--Lat 18°03'16", long 66°30'40", Hydrologic Unit 21010004, on Highway 14 bridge, 0.4 mi (0.6 km) west of Juana Díaz Plaza, and 4.0 mi (6.4 km) downstream from Lago Guayabal.

DRAINAGE AREA.--49.8 mi^2 (129 km^2).

PERIOD OF RECORD.--March 1984 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 131 ft (40 m), from topographic map.

REMARKS.--Records poor. Flow regulation from Lago Guayabal. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

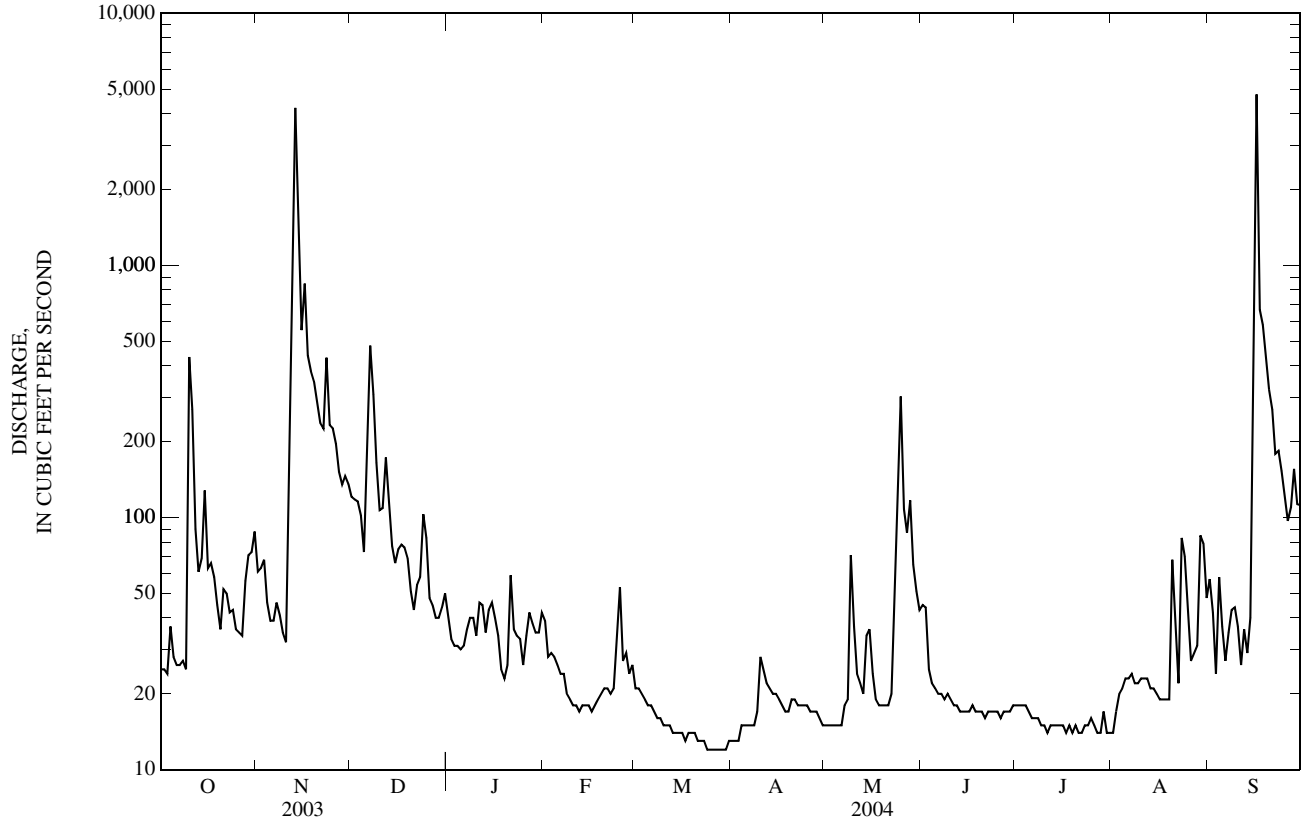
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	61	121	40	39	21	13	15	45	18	14	57
2	25	63	118	33	28	21	13	15	44	18	17	42
3	24	68	116	31	29	20	13	15	25	18	20	24
4	37	46	102	31	28	19	15	15	22	18	21	58
5	28	39	73	30	26	18	15	15	21	17	23	37
6	26	39	205	31	24	18	15	15	20	16	23	27
7	26	46	481	36	24	17	15	18	20	16	24	35
8	27	41	308	40	20	16	15	19	19	16	22	43
9	25	35	165	40	19	16	17	71	20	15	22	44
10	433	32	107	34	18	15	28	37	19	15	23	37
11	269	94	109	46	18	15	25	24	18	14	23	26
12	90	519	173	45	17	15	22	22	18	15	23	36
13	61	4,210	117	35	18	14	21	20	17	15	21	29
14	69	1,160	77	43	18	14	20	34	17	15	21	40
15	128	554	66	46	18	14	20	36	17	15	20	1,010
16	63	848	75	40	17	14	19	24	17	15	19	4,770
17	66	440	78	34	18	13	18	19	18	14	19	668
18	58	380	76	25	19	14	17	18	17	15	19	581
19	45	346	69	23	20	14	17	18	17	14	19	437
20	36	286	51	26	21	14	19	18	17	15	68	321
21	52	237	43	59	21	13	19	18	16	14	41	268
22	50	225	54	36	20	13	18	20	17	14	22	179
23	42	431	58	34	21	13	18	40	17	15	83	184
24	43	233	103	33	33	12	18	107	17	15	70	153
25	36	226	83	26	53	12	18	302	17	16	41	120
26	35	196	48	34	27	12	17	108	16	15	27	97
27	34	152	45	42	29	12	17	87	17	14	29	110
28	56	135	40	38	24	12	17	117	17	14	31	156
29	71	146	40	35	26	12	16	65	17	17	85	113
30	73	136	44	35	---	12	15	51	18	14	79	112
31	88	---	50	42	---	13	---	43	---	14	48	---
TOTAL	2,141	11,424	3,295	1,123	693	458	530	1,426	597	476	1,017	9,814
MEAN	69.1	381	106	36.2	23.9	14.8	17.7	46.0	19.9	15.4	32.8	327
MAX	433	4,210	481	59	53	21	28	302	45	18	85	4,770
MIN	24	32	40	23	17	12	13	15	16	14	14	24
AC-FT	4,250	22,660	6,540	2,230	1,370	908	1,050	2,830	1,180	944	2,020	19,470
CFSM	1.39	7.65	2.13	0.73	0.48	0.30	0.35	0.92	0.40	0.31	0.66	6.57
IN.	1.60	8.53	2.46	0.84	0.52	0.34	0.40	1.07	0.45	0.36	0.76	7.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2004, BY WATER YEAR (WY)

MEAN	117	107	37.9	22.5	9.95	6.10	20.8	61.4	40.2	20.1	27.2	94.0
MAX	445	381	151	144	23.9	14.8	96.4	215	198	82.4	136	667
(WY)	(1986)	(2004)	(1988)	(1992)	(2004)	(2004)	(2003)	(1985)	(1987)	(1987)	(1998)	(1998)
MIN	4.31	7.57	6.20	1.71	1.97	1.95	1.84	1.46	0.93	1.04	1.59	0.76
(WY)	(1995)	(1995)	(1998)	(1998)	(1994)	(1994)	(1994)	(1994)	(1994)	(1994)	(1994)	(1997)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1984 - 2004	
ANNUAL TOTAL	22,734.7		32,994			
ANNUAL MEAN	62.3		90.1		48.0	
HIGHEST ANNUAL MEAN					93.1	1998
LOWEST ANNUAL MEAN					6.23	1994
HIGHEST DAILY MEAN	4,210	Nov 13	4,770	Sep 16	8,530	Sep 22, 1998
LOWEST DAILY MEAN	2.7	Mar 11	12	Mar 24	0.24	Jan 3, 1992
ANNUAL SEVEN-DAY MINIMUM	4.2	Mar 22	12	Mar 24	0.51	Aug 31, 1997
MAXIMUM PEAK FLOW			25,200	Nov 13	40,000	Oct 7, 1985
MAXIMUM PEAK STAGE			24.65	Nov 13	29.42	Oct 7, 1985
ANNUAL RUNOFF (AC-FT)	45,090		65,440		34,750	
ANNUAL RUNOFF (CFSM)	1.25		1.81		0.963	
ANNUAL RUNOFF (INCHES)	16.98		24.65		13.09	
10 PERCENT EXCEEDS	117		139		104	
50 PERCENT EXCEEDS	13		26		13	
90 PERCENT EXCEEDS	5.8		15		3.0	

50111500 RIO JACAGUAS AT JUANA DIAZ, PR—Continued



50112500 RIO INABON AT REAL ABAJO, PR

LOCATION.--Lat 18°05'10", long 66°33'46", Hydrologic Unit 21010004, at bridge on private road, off Highway 511 at Hacienda La Concordia, 0.4 mi (0.6 km) upstream from diversion canal, 0.5 mi (0.8 km) north of Real Abajo, and 6.1 mi (9.8 km) northeast of Plaza Degetau in Ponce.

DRAINAGE AREA.--9.70 mi^2 (25.1 km^2).

PERIOD OF RECORD.--1962-63 (annual low-flow measurements only), February to June 1964 (monthly measurements only), July 1964 to July 1970, April 1971 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 410 ft (125 m), from topographic map. Prior to April 1971, non-recording gage and crest-stage gage at different datum.

REMARKS.--Records fair. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

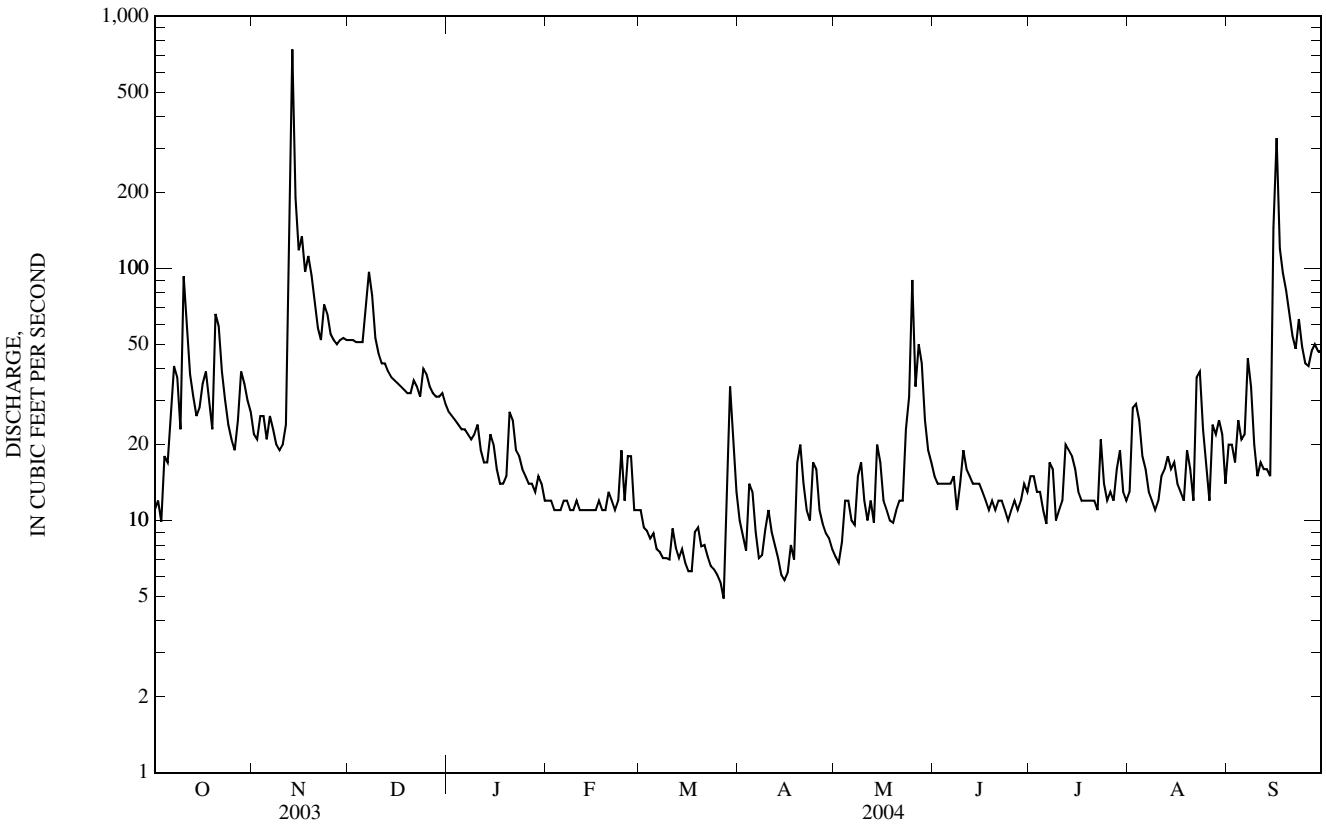
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	22	52	27	12	11	10	7.2	15	15	13	20
2	12	21	52	26	12	9.4	8.7	6.8	14	15	28	20
3	9.9	26	51	25	11	9.1	7.6	8.2	14	13	29	17
4	18	26	51	24	11	8.5	14	12	14	13	25	25
5	17	21	51	23	11	8.9	13	12	14	11	18	21
6	25	26	70	23	12	7.7	9.0	10	14	9.7	16	22
7	41	23	97	22	12	7.5	7.1	9.6	15	17	13	44
8	37	20	78	21	11	7.1	7.3	15	11	16	12	34
9	23	19	53	22	11	7.1	9.2	17	14	10	11	20
10	93	20	46	24	12	7.0	11	12	19	11	12	15
11	59	24	42	19	11	9.3	9.0	10	16	12	15	17
12	38	102	42	17	11	7.8	8.0	12	15	20	16	16
13	31	739	39	17	11	7.1	7.1	9.8	14	19	18	16
14	26	191	37	22	11	7.7	6.1	20	14	18	16	15
15	28	118	36	20	11	6.8	5.8	17	14	16	17	145
16	35	134	35	16	11	6.3	6.2	12	13	13	14	329
17	39	97	34	14	12	6.3	8.0	11	12	12	13	120
18	30	112	33	14	11	9.0	7.0	10	11	12	12	96
19	23	94	32	15	11	9.4	17	9.8	12	12	19	82
20	66	75	32	27	13	7.9	20	11	11	12	16	66
21	59	58	36	25	12	8.0	14	12	12	12	12	54
22	39	52	34	19	11	7.2	11	12	12	11	37	48
23	30	72	31	18	12	6.6	10	23	11	21	39	63
24	24	66	40	16	19	6.4	17	31	10	14	23	49
25	21	55	38	15	12	6.1	16	90	11	12	17	42
26	19	52	34	14	18	5.7	11	34	12	13	12	41
27	25	50	32	14	18	4.9	9.7	50	11	12	24	47
28	39	52	31	13	11	12	8.9	42	12	16	22	50
29	35	53	31	15	11	34	8.5	25	14	19	25	47
30	30	52	32	14	---	21	7.7	19	13	13	22	47
31	27	---	29	12	---	13	---	17	---	12	14	---
TOTAL	1,009.9	2,472	1,331	593	352	285.8	304.9	587.4	394	431.7	580	1,628
MEAN	32.6	82.4	42.9	19.1	12.1	9.22	10.2	18.9	13.1	13.9	18.7	54.3
MAX	93	739	97	27	19	34	20	90	19	21	39	329
MIN	9.9	19	29	12	11	4.9	5.8	6.8	10	9.7	11	15
AC-FT	2,000	4,900	2,640	1,180	698	567	605	1,170	781	856	1,150	3,230
CFSM	3.36	8.49	4.43	1.97	1.25	0.95	1.05	1.95	1.35	1.44	1.93	5.59
IN.	3.87	9.48	5.10	2.27	1.35	1.10	1.17	2.25	1.51	1.66	2.22	6.24

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2004, BY WATER YEAR (WY)

MEAN	44.4	33.6	13.2	8.74	6.06	6.07	9.83	19.5	16.0	11.7	17.7	35.7
MAX	148	82.4	42.9	45.5	13.1	16.4	35.9	76.7	49.8	32.7	46.1	119
(WY)	(1986)	(2004)	(2004)	(1992)	(1996)	(1972)	(1998)	(1969)	(1969)	(1979)	(1979)	(1975)
MIN	14.5	8.32	4.43	4.11	3.05	1.85	2.76	1.94	2.75	1.77	4.47	6.16
(WY)	(1994)	(1977)	(1977)	(1989)	(1977)	(1977)	(1975)	(1967)	(1967)	(1990)	(1974)	(1997)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1964 - 2004	
ANNUAL TOTAL	8,443.6		9,969.7			
ANNUAL MEAN	23.1		27.2		18.4	
HIGHEST ANNUAL MEAN					30.9	1969
LOWEST ANNUAL MEAN					7.44	1994
HIGHEST DAILY MEAN	739	Nov 13	739	Nov 13	2,500	Sep 16, 1975
LOWEST DAILY MEAN	2.0	Jul 24	4.9	Mar 27	0.80	Jul 23, 1977
ANNUAL SEVEN-DAY MINIMUM	2.3	Jul 30	6.4	Mar 21	1.1	Mar 31, 1977
MAXIMUM PEAK FLOW			1,850	Nov 13	19,000	Oct 7, 1985
MAXIMUM PEAK STAGE			14.90	Nov 13	25.30	Oct 7, 1985
ANNUAL RUNOFF (AC-FT)	16,750		19,770		13,370	
ANNUAL RUNOFF (CFSM)	2.38		2.81		1.90	
ANNUAL RUNOFF (INCHES)	32.38		38.23		25.84	
10 PERCENT EXCEEDS	51		52		40	
50 PERCENT EXCEEDS	13		16		9.5	
90 PERCENT EXCEEDS	3.8		8.8		3.3	

50112500 RIO INABON AT REAL ABAJO, PR—Continued



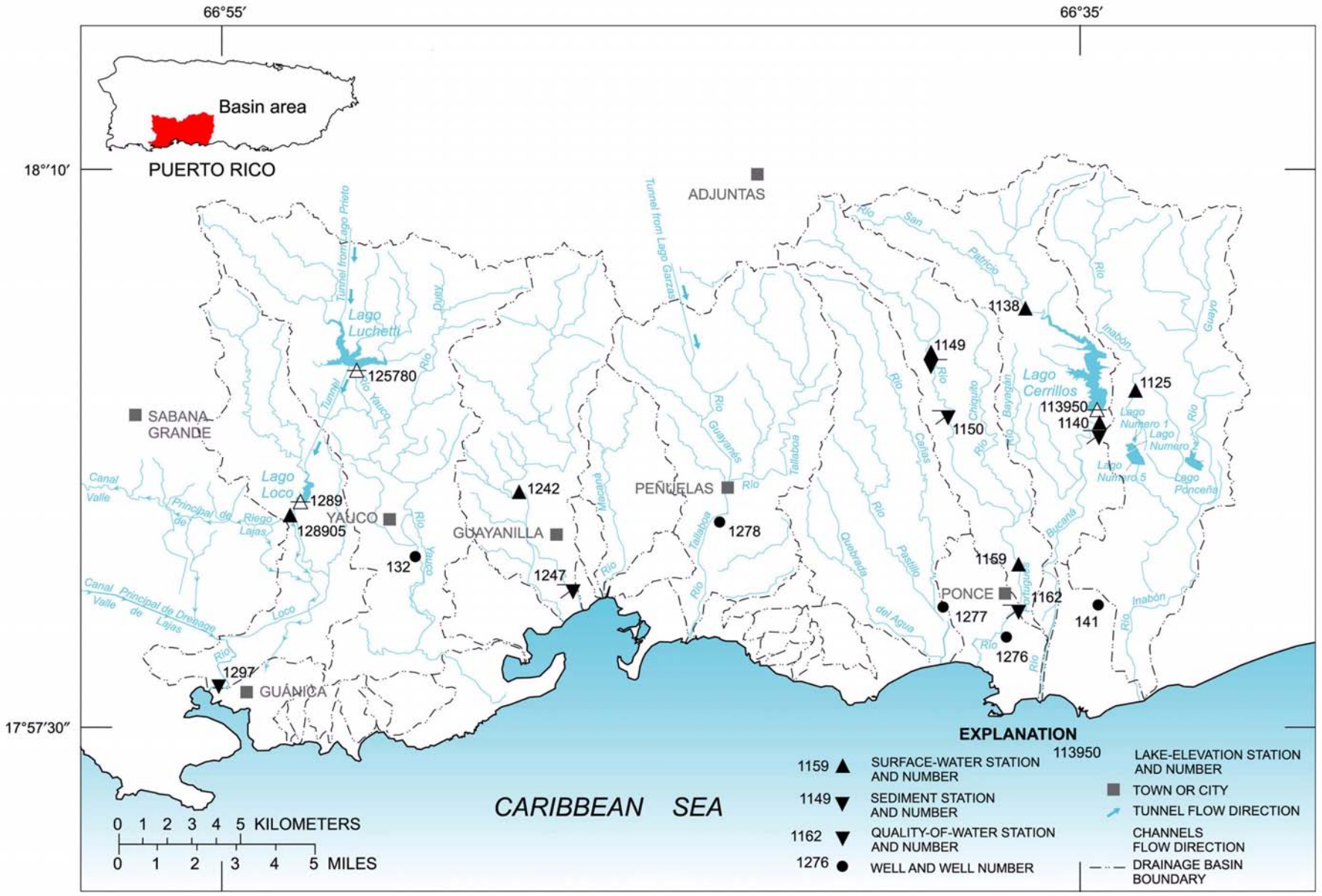


Figure 21. South coast river basins -- Río Inabón to Río Loco basins.

50113800 RIO CERRILLOS ABOVE LAGO CERRILLOS NEAR PONCE, PR

LOCATION.--Lat 18°07'01", long 66°36'17", Hydrologic Unit 21010004, on right bank, 0.3 mi (0.5 km) downstream from confluence with Río San Patricio, 0.1 mi (0.2 km) southwest of Highway 139 and 2.4 mi (3.7 km) northwest of Maragüez.

DRAINAGE AREA.-- 11.9 mi^2 (30.8 km^2).

PERIOD OF RECORD.--December 1988 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 720 ft (210 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	64	48	21	16	18	18	13	57	44	14	36
2	10	50	47	26	16	16	14	14	39	31	32	51
3	9.9	66	43	23	16	15	13	15	26	20	22	32
4	16	53	41	23	16	14	21	18	22	17	19	57
5	13	44	42	22	15	14	17	17	23	17	18	29
6	19	50	123	21	13	12	14	15	23	18	14	38
7	30	46	274	19	14	11	16	14	25	35	16	112
8	19	39	182	20	15	10	19	23	21	24	16	74
9	16	37	98	22	16	9.7	19	24	33	17	12	41
10	209	41	75	22	15	9.7	16	17	28	15	12	29
11	104	51	59	24	13	11	12	15	20	15	36	39
12	35	502	59	22	14	11	13	17	18	44	46	30
13	25	1,570	61	40	14	10	15	15	17	33	32	28
14	78	e434	54	63	15	10	13	30	22	44	24	26
15	60	298	46	32	15	9.8	13	31	20	30	20	388
16	55	295	42	22	13	9.8	17	21	18	20	16	536
17	53	201	45	18	13	11	22	17	19	17	15	190
18	45	252	39	18	14	13	14	15	18	15	16	210
19	38	182	38	17	14	11	48	20	17	14	36	162
20	63	139	36	23	13	12	e36	25	20	13	25	122
21	57	107	47	21	15	11	e19	19	20	13	18	82
22	39	81	47	19	14	11	24	18	18	16	51	66
23	32	93	35	18	22	12	19	49	19	46	74	112
24	29	76	32	18	28	11	60	49	17	43	35	78
25	27	76	38	17	20	11	39	263	17	27	60	51
26	26	69	29	16	21	12	20	73	16	35	49	45
27	43	61	30	16	19	11	18	109	16	30	107	47
28	131	59	28	17	17	17	15	94	15	23	96	43
29	65	53	29	18	19	51	15	54	37	22	48	39
30	101	52	26	18	---	23	14	41	20	20	42	48
31	85	---	24	18	---	18	---	38	---	15	33	---
TOTAL	1,543.9	5,141	1,817	694	465	426.0	613	1,183	681	773	1,054	2,841
MEAN	49.8	171	58.6	22.4	16.0	13.7	20.4	38.2	22.7	24.9	34.0	94.7
MAX	209	1,570	274	63	28	51	60	263	57	46	107	536
MIN	9.9	37	24	16	13	9.7	12	13	15	13	12	26
AC-FT	3,060	10,200	3,600	1,380	922	845	1,220	2,350	1,350	1,530	2,090	5,640
CFSM	4.19	14.4	4.93	1.88	1.35	1.15	1.72	3.21	1.91	2.10	2.86	7.96
IN.	4.83	16.07	5.68	2.17	1.45	1.33	1.92	3.70	2.13	2.42	3.29	8.88

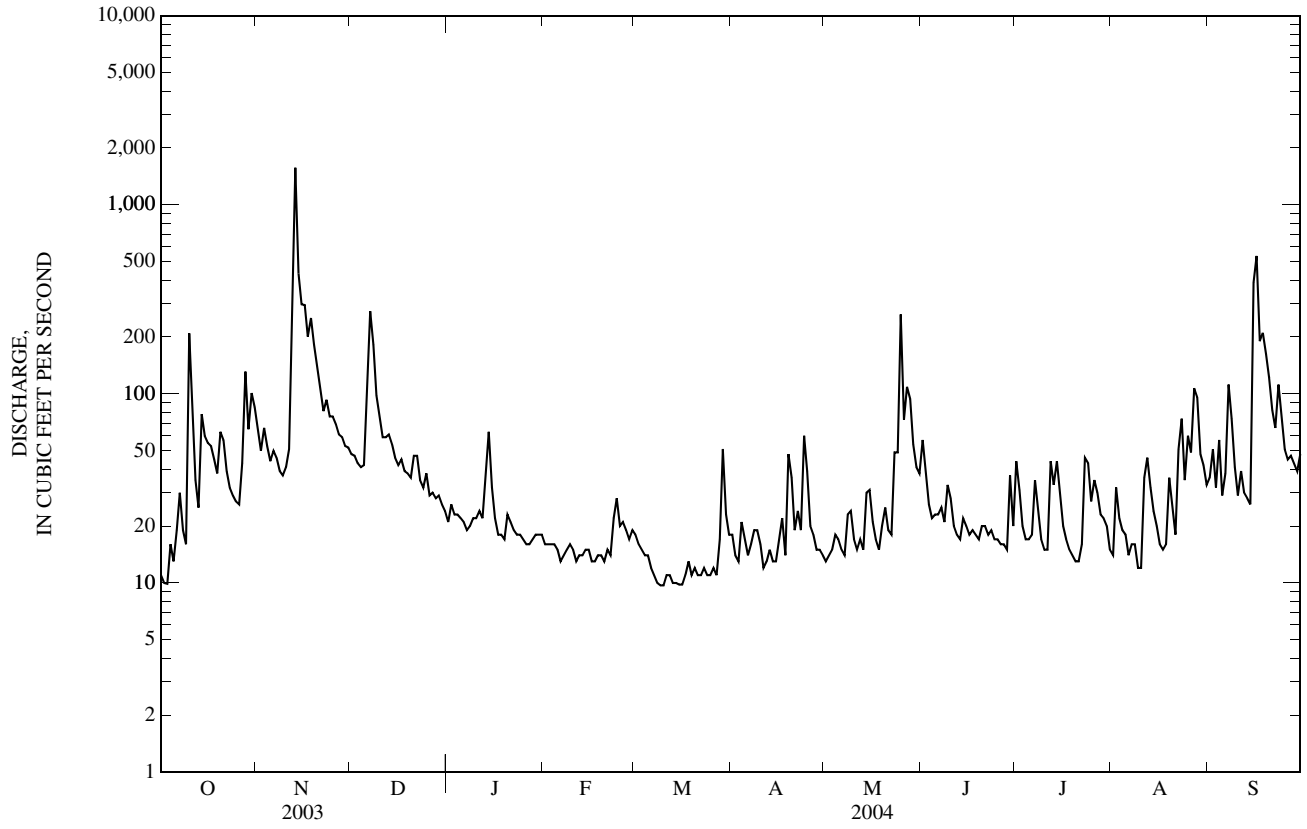
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 2004, BY WATER YEAR (WY)

MEAN	64.0	45.9	20.2	15.3	12.1	10.6	18.5	25.8	22.6	16.4	33.2	70.2
MAX	154	171	58.6	59.0	26.1	27.5	41.0	68.2	46.4	26.7	83.3	196
(WY)	(1991)	(2004)	(2004)	(1992)	(1996)	(1989)	(2003)	(1993)	(1996)	(1991)	(1998)	(1998)
MIN	24.6	9.77	8.10	6.59	6.34	4.77	5.01	4.58	4.14	3.37	10.1	13.1
(WY)	(1992)	(1994)	(1995)	(1995)	(1990)	(1990)	(1997)	(1990)	(1997)	(1994)	(2003)	(1997)

50113800 RIO CERRILLOS ABOVE LAGO CERRILLOS NEAR PONCE, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1989 - 2004	
ANNUAL TOTAL	13,556.0		17,231.9			
ANNUAL MEAN	37.1		47.1		29.5	
HIGHEST ANNUAL MEAN					47.1	2004
LOWEST ANNUAL MEAN					9.94	1994
HIGHEST DAILY MEAN	1,570	Nov 13	1,570	Nov 13	2,510	Sep 22, 1998
LOWEST DAILY MEAN	6.9	Mar 25	9.7	Mar 9	3.0	Jul 6, 1994
ANNUAL SEVEN-DAY MINIMUM	8.1	Mar 19	10	Mar 9	3.2	Jul 27, 1994
MAXIMUM PEAK FLOW			6,470	Nov 13	16,200	Sep 21, 1998
MAXIMUM PEAK STAGE			10.87	Nov 13	12.42	Sep 21, 1998
INSTANTANEOUS LOW FLOW					3.0	Jul 6, 1997
ANNUAL RUNOFF (AC-FT)	26,890		34,180		21,380	
ANNUAL RUNOFF (CFSM)	3.12		3.96		2.48	
ANNUAL RUNOFF (INCHES)	42.38		53.87		33.70	
10 PERCENT EXCEEDS	64		78		65	
50 PERCENT EXCEEDS	15		23		15	
90 PERCENT EXCEEDS	9.0		13		5.7	

e Estimated



50113950 LAGO CERRILLOS AT DAMSITE NEAR PONCE, PR

LOCATION.--Lat 18°04'41", long 66°34'38", Hydrologic Unit 21010004, on left bank west from intake house of dam, 0.7 mi (1.1 km) southwest from Iglesia San Mateo at Real Abajo, 3.2 mi (5.1 km) northeast from Hospital de Distrito de Ponce, and 2.2 mi (3.5 km) northwest from Escuela Yuca.

DRAINAGE AREA.--17.4 mi^2 (45.1 km^2).

PERIOD OF RECORD.--October 1992 to current year.

REVISED RECORDS.--WDR PR-94-1, 1993, 1994.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lake is formed by Cerrillos Dam, a rockfilled ungated structure completed in 1992. Elevation of crest is 611 ft (186 m) above mean sea level, with a structural height of 323 ft (98 m) and a length of 1,555 ft (474 m). The dam has a capacity of approximately 47,900 acre-feet (59.1 hm^3). The dam is operated by the U.S. Army Corps of Engineers and its purpose is for flood control, water supply, power generation, and recreation. Gage-height and precipitation satellite telemetry at station.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation, 602.84 ft (183.74 m), September 22, 1998; minimum elevation, 416.63 ft (126.99 m), October 1, 1992 (Revised).

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 574.12 ft (174.99 m), September 24; minimum elevation, 506.89 ft (154.50 m), October 7.

Capacity Table
(based on data from U.S. Army Corps of Engineers)
(Elevation in ft, capacity in acre-ft)

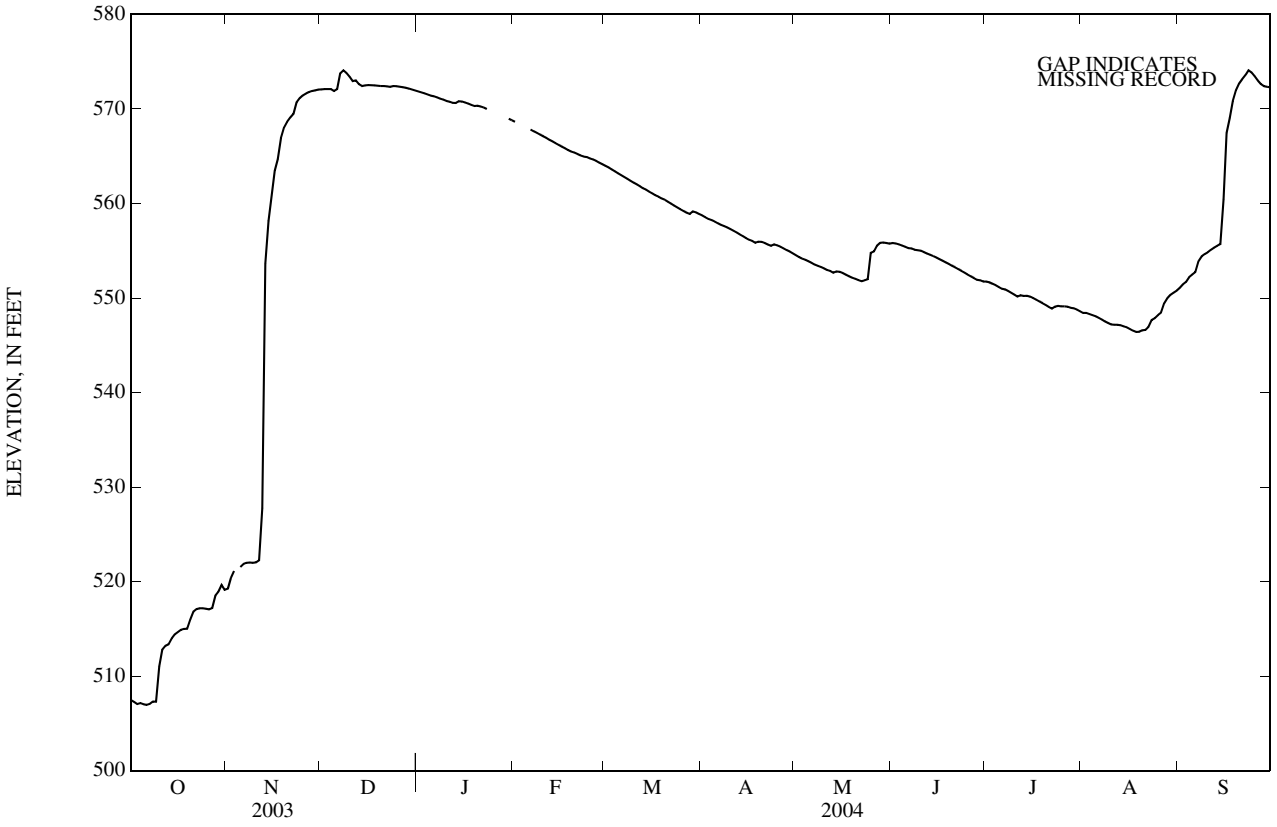
Elevation	Contents	Elevation	Contents
328	0	525	16,990
426	3,206	558	25,786
492	10,621	590	37,509

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	507.46	519.24	572.07	571.85	568.63	563.98	558.73	554.53	555.81	551.74	548.42	551.06
2	507.26	520.37	572.10	571.75	A	563.80	558.54	554.33	555.76	551.66	548.42	551.44
3	507.04	521.12	572.10	571.64	A	563.60	558.36	554.16	555.66	551.50	548.30	551.69
4	507.15	A	572.09	571.52	A	563.40	558.23	554.04	555.55	551.35	548.19	552.19
5	507.02	521.55	571.90	571.41	A	563.20	558.08	553.88	555.41	551.17	548.06	552.46
6	506.96	521.86	572.10	571.33	567.81	563.00	557.90	553.71	555.27	550.98	547.91	552.73
7	507.05	521.98	573.76	571.22	567.63	562.80	557.73	553.53	555.24	550.91	547.73	553.90
8	507.31	522.01	574.08	571.09	567.47	562.61	557.60	553.39	555.11	550.74	547.53	554.39
9	507.30	521.99	573.80	570.98	567.29	562.40	557.46	553.28	555.06	550.55	547.35	554.65
10	511.02	522.03	573.40	570.85	567.10	562.20	557.29	553.12	555.00	550.35	547.20	554.84
11	512.79	522.25	572.95	570.76	566.93	562.02	557.12	552.95	554.85	550.15	547.17	555.11
12	513.20	527.75	573.02	570.65	566.74	561.82	556.94	552.85	554.70	550.28	547.17	555.33
13	513.35	553.64	572.63	570.63	566.56	561.61	556.73	552.67	554.56	550.21	547.11	555.53
14	513.98	558.14	572.42	570.81	566.38	561.45	556.54	552.80	554.43	550.23	547.00	555.70
15	514.40	560.78	572.49	570.78	566.19	561.25	556.34	552.77	554.28	550.14	546.89	560.44
16	514.66	563.46	572.52	570.68	566.00	561.06	556.16	552.63	554.11	549.99	546.72	567.46
17	514.89	564.68	572.51	570.56	565.84	560.86	556.03	552.46	553.94	549.82	546.54	569.06
18	515.00	566.92	572.49	570.43	565.65	560.71	555.84	552.29	553.77	549.64	546.40	570.83
19	515.02	568.02	572.46	570.30	565.48	560.53	555.96	552.14	553.60	549.46	546.43	571.98
20	516.01	568.64	572.42	570.33	565.38	560.38	555.94	552.03	553.42	549.27	546.57	572.67
21	516.82	569.09	572.42	570.25	565.23	560.18	555.81	551.89	553.24	549.07	546.63	573.15
22	517.09	569.47	572.39	570.13	565.07	559.98	555.64	551.77	553.05	548.87	546.95	573.56
23	517.18	570.67	572.33	569.99	564.96	559.78	555.51	551.86	552.87	549.08	547.67	574.07
24	517.17	571.13	572.42	A	564.90	559.58	555.66	551.98	552.68	549.16	547.86	573.86
25	517.13	571.42	572.41	A	564.75	559.39	555.57	554.77	552.49	549.11	548.19	573.46
26	517.06	571.62	572.36	A	564.65	559.21	555.43	554.92	552.30	549.11	548.44	573.02
27	517.20	571.78	572.30	A	564.50	559.01	555.26	555.53	552.11	549.08	549.44	572.62
28	518.52	571.89	572.23	A	564.32	558.88	555.08	555.83	551.92	548.96	549.96	572.40
29	518.92	571.97	572.15	A	564.14	559.15	554.92	555.86	551.87	548.91	550.33	572.33
30	519.63	572.04	572.05	568.95	---	559.05	554.72	555.82	551.74	548.77	550.56	572.29
31	519.12	---	571.95	568.79	---	558.88	---	555.75	---	548.61	550.77	---
MAX	519.63	---	574.08	---	---	563.98	558.73	555.86	555.81	551.74	550.77	574.07
MIN	506.96	---	571.90	---	---	558.88	554.72	551.77	551.74	548.61	546.40	551.06

A No gage-height record

50113950 LAGO CERRILLOS AT DAMSITE NEAR PONCE, PR—Continued



50114000 RIO CERRILLOS NEAR PONCE, PR

LOCATION.--Lat 18°04'24", long 66°34'53", Hydrologic Unit 21010004, on right bank off Highway 139, 0.8 mi (1.3 km) below Lago Cerrillos Dam, 2.3 mi (3.7 km) upstream from Quebrada Ausubo, and 4.6 mi (7.4 km) northeast of Plaza Degetau in Ponce.

DRAINAGE AREA.--17.8 mi^2 (46.1 km^2), excludes 17.4 mi^2 (45.1 km^2) upstream from Lago Cerrillos Dam.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February to April 1964 (monthly measurements only), May 1964 to June 1985, July 1985 to April 1991 (semi-monthly measurements only), May 1991 to current year.

GAGE.--Water-stage recorder. Datum of gage is 253.10 ft (77.145 m), above mean sea level. Prior to March 22, 1977, at site 0.15 mi (0.24 km) upstream and datum 9.90 ft (3.018 m) higher.

REMARKS.--Records poor. Flow regulated by Lago Cerrillos Dam since May 1991. Gage-height and precipitation satellite telemetry at station. Prior to June 1985, some low-flow regulation by construction upstream. Maximum discharge prior to regulation, 22,400 ft^3/s (634 m^3/s), September 16, 1975, gage height, 11.2 ft (3.41 m), site and datum then in use from floodmarks, from rating curve extended above 150 ft^3/s (4.25 m^3/s), on basis of slope-area measurements of peak flow; minimum discharge prior to regulation, 2.2 ft^3/s (0.062 m^3/s), May 28, 1967.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	3.3	6.5	e2.3	e3.5	e3.5	2.6	4.3	2.7	2.1	7.6	10
2	2.5	3.4	7.0	e2.7	e3.3	e3.5	2.3	4.9	2.1	2.1	8.7	9.7
3	2.5	5.1	5.7	e2.5	e3.3	e3.3	2.4	5.4	2.5	2.1	7.4	9.3
4	4.9	3.2	5.9	e2.5	e3.2	e3.3	1.9	4.3	2.7	2.4	5.4	13
5	2.7	3.1	75	e2.4	e3.3	e3.2	2.2	4.2	1.7	2.5	5.3	11
6	2.6	3.4	200	e2.3	e3.1	e2.9	2.9	3.6	2.4	3.0	4.9	10
7	2.8	3.4	183	e2.3	3.2	e2.3	11	5.0	2.9	1.9	4.9	17
8	8.5	3.4	180	e2.3	3.5	e2.3	18	4.4	3.5	2.4	4.0	12
9	3.3	3.4	205	2.4	2.6	e2.4	19	3.6	3.7	2.4	4.0	12
10	7.6	3.3	275	2.4	1.4	e2.4	11	3.0	3.6	2.6	5.1	7.2
11	4.6	3.6	180	2.7	1.6	1.8	16	3.6	3.8	2.6	4.4	10
12	3.7	14	177	2.3	2.7	1.8	8.1	3.8	3.6	3.3	5.0	15
13	3.8	103	185	2.6	2.7	1.8	7.4	3.4	2.9	3.3	4.4	13
14	3.5	48	122	2.6	4.8	1.8	9.2	6.3	3.6	3.3	4.7	13
15	3.4	43	4.6	2.5	4.0	1.6	9.1	5.8	2.6	3.4	4.5	29
16	3.8	36	7.3	2.7	3.1	1.0	9.9	4.9	1.5	3.7	5.4	49
17	3.3	19	3.7	3.3	3.0	1.2	6.6	6.2	0.82	3.7	4.0	19
18	3.0	9.7	30	3.0	3.3	2.5	6.1	6.5	0.69	4.1	27	16
19	3.0	8.8	5.9	3.2	4.5	2.1	7.2	6.5	0.95	4.6	80	13
20	3.0	7.8	18	3.8	4.6	2.5	5.9	6.5	1.2	5.5	6.9	10
21	4.1	5.4	2.4	3.4	e4.3	1.7	7.4	6.6	1.6	7.0	7.7	11
22	3.3	5.9	2.3	3.6	e4.1	1.2	8.2	6.6	2.5	6.0	7.5	8.7
23	3.3	12	e3.2	3.9	e4.2	1.1	6.3	5.7	2.6	7.1	9.6	166
24	3.7	5.9	e3.0	3.8	e5.1	1.1	5.0	5.1	2.7	4.3	8.1	298
25	4.4	4.4	e3.4	2.2	e4.1	1.4	3.5	9.7	2.6	3.2	7.3	376
26	3.5	5.1	e2.8	2.8	3.0	1.7	2.8	5.7	2.9	2.1	8.3	383
27	4.7	5.8	e2.9	3.1	e4.0	1.7	2.5	5.4	2.5	2.3	8.6	332
28	4.2	5.7	e2.8	3.5	e3.7	2.5	2.3	4.0	2.0	4.3	8.2	163
29	3.3	5.7	e2.8	4.6	e3.9	3.7	3.0	3.7	1.7	7.4	8.9	84
30	7.4	6.6	e2.7	e3.5	---	3.1	4.2	3.5	2.5	7.8	9.6	80
31	3.6	---	e2.5	e3.5	---	3.5	---	3.5	---	7.1	11	---
TOTAL	120.5	390.4	1,907.4	90.7	101.1	69.9	204.0	155.7	73.06	119.6	298.4	2,199.9
MEAN	3.89	13.0	61.5	2.93	3.49	2.25	6.80	5.02	2.44	3.86	9.63	73.3
MAX	8.5	103	275	4.6	5.1	3.7	19	9.7	3.8	7.8	80	383
MIN	2.5	3.1	2.3	2.2	1.4	1.0	1.9	3.0	0.69	1.9	4.0	7.2
AC-FT	239	774	3,780	180	201	139	405	309	145	237	592	4,360
CFSM	0.22	0.73	3.46	0.16	0.20	0.13	0.38	0.28	0.14	0.22	0.54	4.12
IN.	0.25	0.82	3.99	0.19	0.21	0.15	0.43	0.33	0.15	0.25	0.62	4.60

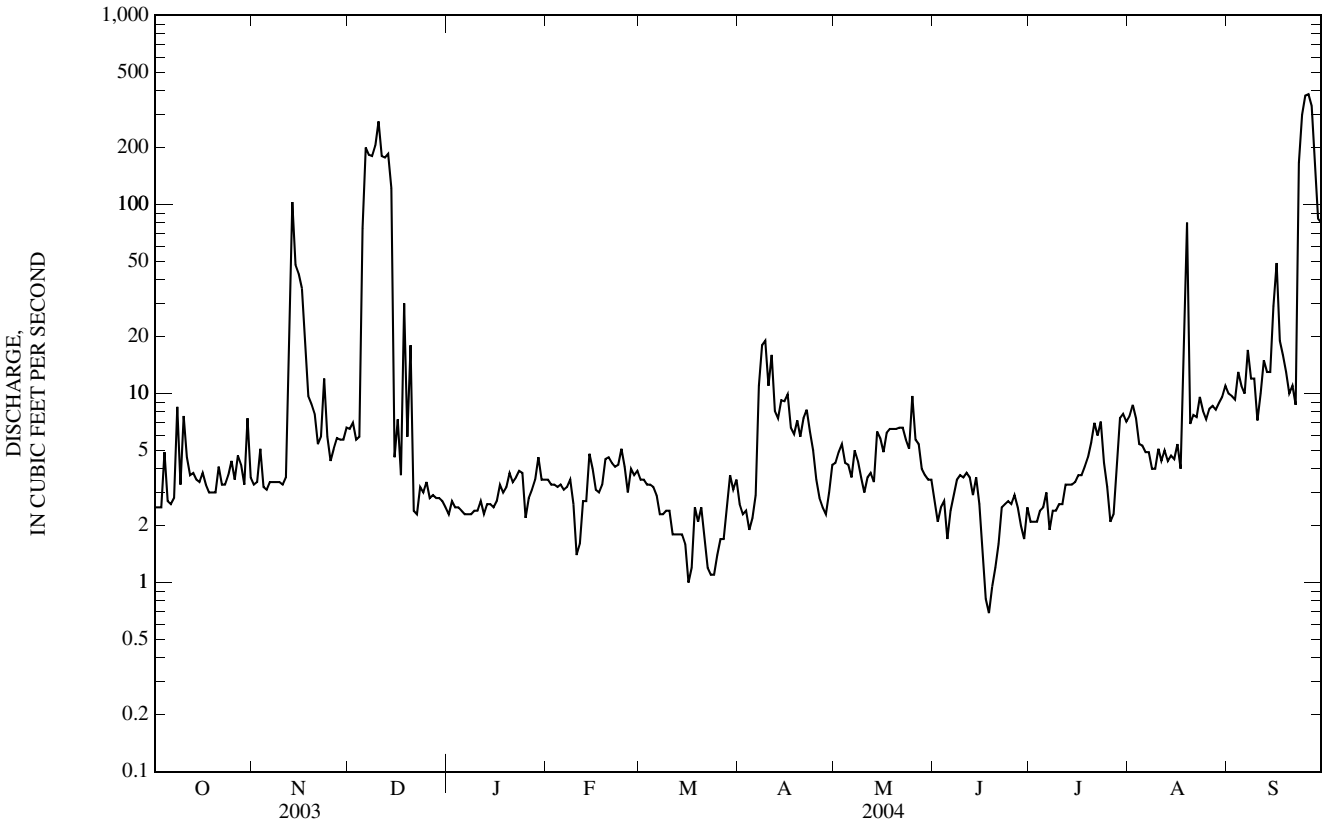
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2004, BY WATER YEAR (WY)

MEAN	53.2	34.0	13.1	11.8	6.06	6.86	9.15	31.8	22.3	17.6	38.4	80.5
MAX	221	137	61.5	74.2	14.7	17.9	31.0	127	107	94.3	195	316
(WY)	(2001)	(2000)	(2004)	(1992)	(1992)	(1997)	(1999)	(2001)	(1999)	(2001)	(2001)	(2001)
MIN	2.65	2.84	3.54	2.32	1.55	0.97	2.80	3.16	2.44	2.41	2.41	2.11
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2002)	(2004)	(2002)	(2002)	(2002)

50114000 RIO CERRILLOS NEAR PONCE, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1991 - 2004	
ANNUAL TOTAL	3,263.67		5,730.66			
ANNUAL MEAN	8.94		15.7		27.7	
HIGHEST ANNUAL MEAN					92.8	2001
LOWEST ANNUAL MEAN					3.07	2003
HIGHEST DAILY MEAN	275	Dec 10	383	Sep 26	900	Jan 6, 1992
LOWEST DAILY MEAN	0.75	Mar 20	0.69	Jun 18	0.64	Aug 19, 1992
ANNUAL SEVEN-DAY MINIMUM	0.80	Mar 19	1.3	Jun 16	0.80	Mar 19, 2003
MAXIMUM PEAK FLOW			1,190	Aug 18	1,320	Sep 10, 1996
MAXIMUM PEAK STAGE			5.62	Aug 18	7.74	Sep 10, 1996
ANNUAL RUNOFF (AC-FT)	6,470		11,370		20,100	
ANNUAL RUNOFF (CFSM)	0.502		0.880		1.56	
ANNUAL RUNOFF (INCHES)	6.82		11.98		21.18	
10 PERCENT EXCEEDS	6.3		14		74	
50 PERCENT EXCEEDS	2.8		3.7		5.4	
90 PERCENT EXCEEDS	1.4		2.3		2.8	

e Estimated



50114000 RIO CERRILLOS NEAR PONCE, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°04'15", long 66°34'51", Hydrologic unit 21010004, on right bank off Highway 139, 2.3 mi (3.7 km) upstream from Quebrada Ausubo and 4.6 mi (7.4 km) northeast of Plaza Degetau in Ponce.

DRAINAGE AREA.--17.8 mi^2 (46.1 km^2)

PERIOD OF RECORD.--Water years 1964 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
11...	1130	159	19	7.9	7.7	217	24.3	93	29.3	4.84	1.34	.3	7.44
MAR													
23...	0915	1.0	<2.0	7.5	7.8	353	24.5	150	52.2	5.77	.69	.5	14.3
JUN													
22...	1140	2.5	<2.0	7.7	7.8	363	26.1	--	--	--	--	--	--
AUG													
17...	1210	1.1	5.4	7.1	7.5	391	27.0	140	49.2	4.96	.60	.5	13.6

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
11...	83	6.00	<.2	17.7	12.2	--	129	--	<10	.20	.03	.84	.850
MAR													
23...	133	8.11	.2	22.3	34.5	<.1	218	--	<10	<.20	.01	--	.100
JUN													
22...	137	--	--	--	--	--	--	--	<10	<.20	.01	--	.060
AUG													
17...	156	9.34	.2	24.0	33.5	--	229	.69	17	--	.04	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC													
11...	.01	.17	1.1	4.6	.06	<10	E35	5,000	--	--	--	--	--
MAR													
23...	<.01	--	--	--	<.02	<10	--	--	<2	37.6	<70	<.2	<.8
JUN													
22...	<.01	--	--	--	<.02	<10	6,000	76	--	--	--	--	--
AUG													
17...	--	--	--	--	.02	<10	55	2,000	<2	40.2	27	<.2	<.8

50114000 RIO CERRILLOS NEAR PONCE, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC											
11...	--	--	--	--	--	--	--	--	--	--	--
MAR											
23...	<4	<.01	50	<1.0	9.8	<.02	<3	<.3	<4	<.10	<16
JUN											
22...	--	--	--	--	--	--	--	--	--	--	--
AUG											
17...	<4	<.01	300	<1.0	48.6	<.02	<3	<.3	E3	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

50114900 RIO PORTUGUES NEAR TIBES, PR

LOCATION.--Lat 18°06'00", long 66°38'34", Hydrologic Unit 21010004, 1.6 mi (2.6 km), north from Escuela Segunda Unidad of Corral Viejo, 0.3 mi (0.50 km) south from Hacienda Burenes and 6.0 mi (9.6 km) northeast from Peñuelas Plaza church.

DRAINAGE AREA.--7.27 mi^2 (18.8 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1997 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 918 ft (280 m), from topographic map.

REMARKS.--Records poor. Some low-flow regulation due to the Puerto Rico Aqueduct and Sewer Authority intakes (2) 0.85 mi (1.36 km) upstream from station. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	38	e31	14	7.2	6.3	6.4	6.6	23	12	16	27
2	15	28	e30	14	7.4	5.9	5.2	6.9	18	12	15	25
3	13	25	e29	14	7.3	5.7	5.1	7.5	15	10	15	22
4	19	22	e28	13	7.0	5.6	6.3	9.4	15	9.6	14	26
5	15	19	e28	13	6.7	5.4	5.7	8.5	18	9.3	15	22
6	30	27	e80	13	6.7	5.3	5.3	7.2	16	9.0	14	22
7	29	22	e100	13	6.8	5.3	8.5	6.9	19	13	12	36
8	35	21	e60	12	6.6	5.2	7.6	7.6	15	10	12	27
9	33	18	e50	12	6.6	5.2	5.6	8.1	20	9.0	11	23
10	115	20	41	12	6.6	5.7	5.3	7.1	20	8.8	13	21
11	98	31	36	12	6.4	5.5	4.9	6.9	15	9.9	25	22
12	48	281	37	13	6.4	5.2	5.0	9.9	14	14	43	20
13	34	756	35	19	6.3	5.1	4.7	8.3	13	23	41	22
14	85	200	31	33	6.2	5.6	4.6	16	13	46	39	20
15	33	178	29	17	6.2	5.4	4.6	23	12	32	30	204
16	24	150	28	11	6.1	5.2	17	15	12	19	24	206
17	24	89	26	10	6.3	5.5	13	11	11	15	22	89
18	18	121	25	9.5	6.1	6.7	7.3	9.0	11	14	21	100
19	14	78	24	9.2	6.0	6.0	9.6	23	11	13	22	77
20	15	58	23	11	6.1	6.3	12	22	11	13	20	47
21	15	50	24	9.5	8.8	6.0	8.8	17	10	12	19	34
22	13	46	22	9.1	6.8	5.3	7.9	15	10	12	21	28
23	11	45	21	8.6	15	5.2	9.8	38	9.9	28	45	26
24	11	e43	20	8.3	17	6.1	14	56	10	32	28	22
25	9.9	e41	27	7.9	9.2	6.0	10	171	9.7	25	70	20
26	9.5	e39	21	7.8	7.2	5.4	8.3	39	9.7	24	43	18
27	11	e37	18	7.7	6.6	5.2	7.5	36	9.4	23	92	19
28	45	e35	17	7.6	6.1	5.6	7.0	30	9.3	22	51	17
29	28	e33	17	7.9	6.7	14	6.7	21	26	23	33	15
30	74	e32	16	7.6	---	7.5	6.6	18	13	19	26	15
31	62	---	15	7.3	---	6.1	---	16	---	17	24	---
TOTAL	1,002.4	2,583	989	364.0	214.4	184.5	230.3	676.9	419.0	538.6	876	1,272
MEAN	32.3	86.1	31.9	11.7	7.39	5.95	7.68	21.8	14.0	17.4	28.3	42.4
MAX	115	756	100	33	17	14	17	171	26	46	92	206
MIN	9.5	18	15	7.3	6.0	5.1	4.6	6.6	9.3	8.8	11	15
AC-FT	1,990	5,120	1,960	722	425	366	457	1,340	831	1,070	1,740	2,520
CFSM	4.45	11.8	4.39	1.62	1.02	0.82	1.06	3.00	1.92	2.39	3.89	5.83
IN.	5.13	13.22	5.06	1.86	1.10	0.94	1.18	3.46	2.14	2.76	4.48	6.51

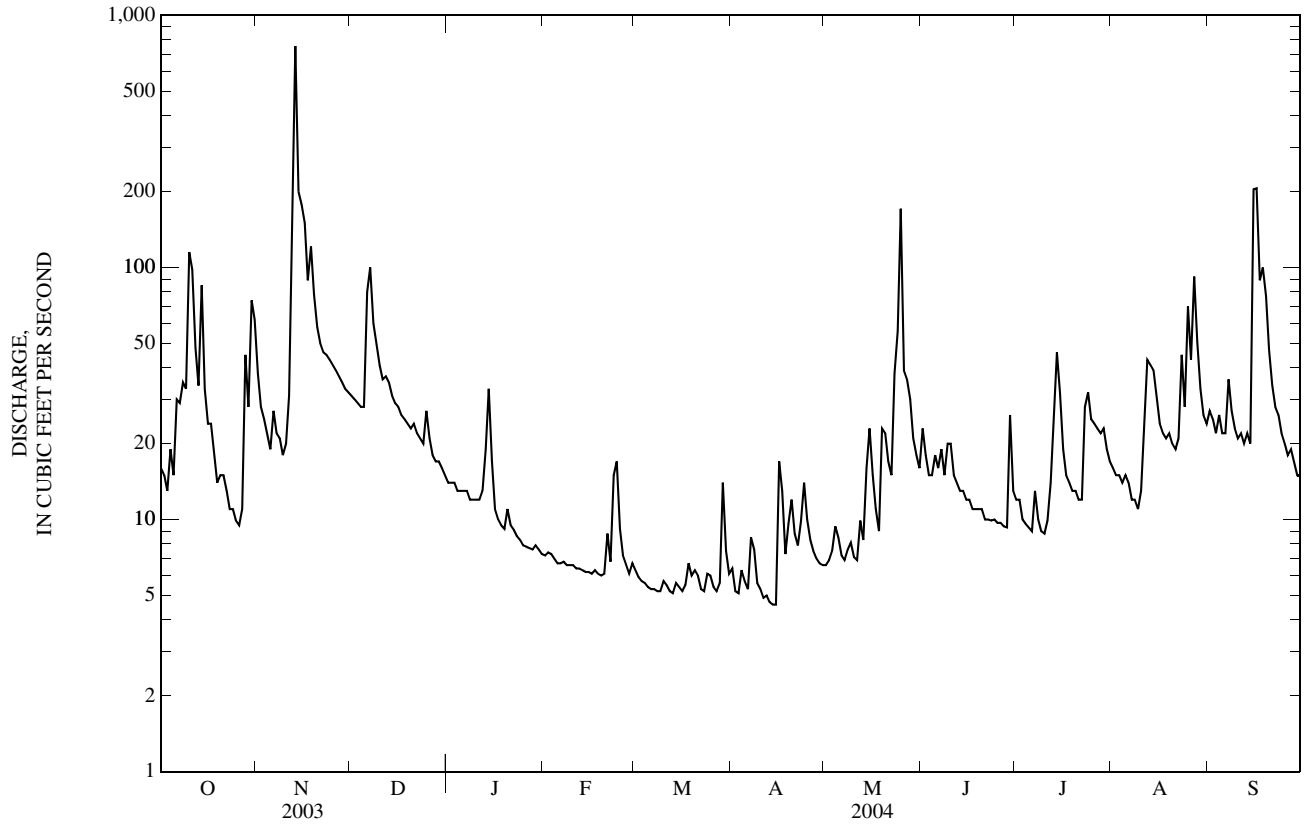
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2004, BY WATER YEAR (WY)

MEAN	31.2	30.2	13.9	7.37	6.92	5.57	12.6	14.0	10.9	10.2	20.6	51.8
MAX	46.4	86.1	31.9	11.7	15.1	9.98	21.7	21.8	17.6	17.4	34.5	147
(WY)	(2001)	(2004)	(2004)	(2004)	(2003)	(2003)	(2003)	(2004)	(1999)	(2004)	(1999)	(1998)
MIN	13.3	6.91	3.98	3.07	4.34	3.52	5.78	5.96	6.44	4.28	6.27	9.79
(WY)	(1998)	(1998)	(1998)	(1998)	(2002)	(1998)	(2001)	(1999)	(2003)	(2003)	(2003)	(2002)

50114900 RIO PORTUGUES NEAR TIBES, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1998 - 2004	
ANNUAL TOTAL	7,914.5		9,350.1			
ANNUAL MEAN	21.7		25.5		17.9	
HIGHEST ANNUAL MEAN					25.5	2004
LOWEST ANNUAL MEAN					10.0	2002
HIGHEST DAILY MEAN	756	Nov 13	756	Nov 13	3,000	Sep 22, 1998
LOWEST DAILY MEAN	3.4	Aug 10	4.6	Apr 14	1.1	Oct 6, 1997
ANNUAL SEVEN-DAY MINIMUM	3.6	Jul 30	5.0	Apr 9	1.7	Oct 1, 1997
MAXIMUM PEAK FLOW			1,920	Nov 13	10,000	Sep 21, 1998
MAXIMUM PEAK STAGE			12.57	Nov 13	22.46	Sep 21, 1998
ANNUAL RUNOFF (AC-FT)	15,700		18,550		12,980	
ANNUAL RUNOFF (CFSM)	2.98		3.51		2.46	
ANNUAL RUNOFF (INCHES)	40.50		47.84		33.49	
10 PERCENT EXCEEDS	37		44		36	
50 PERCENT EXCEEDS	11		15		9.0	
90 PERCENT EXCEEDS	4.7		6.1		4.1	

e Estimated



50114900 RIO PORTUGUES NEAR TIBES, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORDS.--October 1997 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: October 1997 to current year.

INSTRUMENTATION.--USDH-48 sediment sampler and automatic sediment sampler since 1997.

REMARKS.--Sediment samples were collected by a local observer on a weekly basis. During high flow events sediment samples were collected with automatic sediment sampler.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, e17,500 mg/L September 22, 1998; Minimum daily mean, 1 mg/L several days during Water Year 1999 and 2001.
SEDIMENT LOADS: Maximum daily mean, e143,000 tons (e130,000 tonnes) september 22, 1998; Minimum daily mean, <0.01 ton (<0.01 tonne) March 14, 15, 2001.

EXTREMES FOR CURRENT YEAR 2003.--
SEDIMENT CONCENTRATION: Maximum daily mean, 4,420 mg/L, August 26, 2003; Minimum daily mean, 2 mg/L, March 7, 8, 2003.
SEDIMENT LOADS: Maximum daily mean, 1,770 tons (1,610 tonnes), October 8, 2002; Minimum daily mean, 0.04 ton (0.04 tonne), July 13, 2003.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER			NOVEMBER			DECEMBER		
1	16	83	8.3	13	7	0.24	e9.2	---	e0.12
2	19	27	2.9	11	11	0.31	e9.4	---	e0.12
3	29	68	6.6	13	24	1.1	e9.0	---	e0.12
4	69	1,810	1,570	10	7	0.20	e8.8	---	e0.12
5	64	173	31	9.9	6	0.16	e9.4	e23	e0.58
6	53	129	22	9.7	5	0.12	8.9	28	0.68
7	44	68	8.2	9.2	3	0.08	8.6	33	0.78
8	101	1,830	1,770	8.5	4	0.10	9.1	33	0.82
9	91	941	477	16	50	4.5	8.7	31	0.74
10	49	454	213	12	58	1.9	8.1	29	0.65
11	37	81	8.2	9.8	55	1.4	8.0	27	0.60
12	31	42	3.5	13	74	3.9	8.3	25	0.57
13	28	40	3.0	15	55	2.2	8.1	23	0.51
14	26	49	3.4	13	52	1.8	8.2	21	0.47
15	26	57	4.0	11	50	1.5	7.9	19	0.41
16	23	66	4.0	13	51	2.0	8.3	17	0.39
17	23	73	4.6	11	39	1.2	44	728	387
18	30	158	27	10	24	0.66	e21	e29	e1.8
19	22	78	4.7	e11	e9	e1.2	e12	---	e1.8
20	23	88	10	e10	---	e0.66	e11	---	e1.8
21	20	18	0.96	e10	---	e0.66	e9.9	---	e1.2
22	17	10	0.44	e9.9	---	e0.66	e26	---	e3.4
23	15	9	0.39	e9.8	---	e0.66	e14	---	e2.2
24	14	9	0.33	e9.8	---	e0.66	e10	---	e1.2
25	13	9	0.30	e9.6	---	e0.66	e9.6	---	e0.82
26	13	8	0.28	e13	e7	e0.54	e9.6	---	e0.82
27	12	9	0.27	e10	e8	e0.27	e10	---	e0.82
28	11	9	0.28	e9.5	---	e0.12	e9.0	---	e0.82
29	12	10	0.33	e9.4	---	e0.12	e8.6	---	e0.82
30	10	9	0.24	e9.3	---	e0.12	e8.7	---	e0.82
31	14	5	0.18	---	---	---	e8.9	---	e0.82
TOTAL	955	---	4,185.40	329.4	---	29.70	350.3	---	413.82

50114900 RIO PORTUGUES NEAR TIBES, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	e8.9	---	e0.59	8.6	21	0.49	10	26	0.72
2	e9.7	---	e0.59	31	737	592	10	22	0.60
3	e9.1	---	e0.59	18	7	0.29	10	17	0.46
4	e9.0	---	e0.59	16	4	0.19	9.9	12	0.33
5	e8.9	---	e0.59	31	198	33	9.8	8	0.20
6	e8.9	---	e0.59	28	43	3.4	9.8	3	0.08
7	e8.3	---	e0.59	20	15	0.83	9.8	2	0.05
8	e8.3	---	e0.59	17	8	0.37	9.8	2	0.06
9	e8.5	---	e0.59	16	6	0.24	9.8	5	0.12
10	e19	---	e6.8	15	3	0.14	9.9	8	0.20
11	e13	---	e0.96	14	3	0.11	9.8	15	0.40
12	e8.1	---	e0.50	14	3	0.11	9.6	24	0.62
13	e7.9	---	e0.50	13	3	0.12	9.5	33	0.84
14	e7.9	---	e0.50	13	10	0.35	9.3	42	1.1
15	e7.8	---	e0.50	13	18	0.62	9.4	50	1.3
16	e7.7	---	e0.50	12	26	0.88	9.3	46	1.2
17	e7.6	---	e0.50	13	28	0.97	9.2	39	0.97
18	e7.5	---	e0.50	12	28	0.93	9.4	31	0.79
19	e8.9	---	e0.50	12	28	0.91	10	26	0.70
20	e7.3	---	e0.50	12	27	0.89	9.9	28	0.76
21	7.4	---	e0.50	12	17	0.56	9.4	22	0.57
22	e8.8	---	e0.50	12	4	0.13	9.2	13	0.33
23	e10	---	e0.67	12	6	0.18	9.1	11	0.26
24	16	58	6.8	12	11	0.36	8.9	11	0.25
25	16	28	1.2	12	16	0.52	8.7	10	0.24
26	14	25	0.96	11	22	0.67	16	34	3.0
27	10	25	0.67	11	27	0.82	16	34	2.0
28	9.1	24	0.59	11	27	0.79	10	43	1.2
29	8.8	23	0.55	---	---	---	9.9	39	1.0
30	8.6	22	0.52	---	---	---	9.1	37	0.90
31	8.5	22	0.50	---	---	---	8.8	35	0.76
TOTAL	299.5	---	31.03	421.6	---	640.87	309.3	---	22.01
		APRIL			MAY			JUNE	
1	8.8	33	0.77	12	51	1.7	6.9	9	0.16
2	8.6	32	0.74	11	35	1.1	7.6	11	0.23
3	46	679	561	11	13	0.39	6.8	13	0.24
4	28	19	2.1	10	9	0.24	6.6	15	0.27
5	32	198	42	12	9	0.27	9.3	33	1.6
6	24	6	0.39	11	8	0.24	10	21	0.58
7	12	6	0.19	19	123	14	8.6	10	0.23
8	9.6	6	0.16	18	121	6.1	7.6	17	0.34
9	e9.5	e6	e0.17	14	11	0.46	7.3	26	0.51
10	e9.9	---	e0.17	12	6	0.18	6.9	35	0.66
11	e10	---	e0.17	11	5	0.14	6.7	54	0.98
12	e14	---	e1.3	10	5	0.12	7.2	74	1.4
13	e13	---	e1.3	10	4	0.12	6.8	74	1.4
14	e11	---	e1.3	14	28	1.6	6.5	69	1.2
15	e11	---	e1.3	11	27	0.85	6.4	63	1.1
16	e11	---	e1.3	10	17	0.47	6.4	57	0.98
17	e37	---	e18	13	20	1.3	6.3	51	0.87
18	e88	---	e477	14	14	0.59	6.2	45	0.76
19	e21	---	e0.38	11	5	0.16	6.1	40	0.66
20	e17	---	e0.38	11	4	0.13	5.8	49	0.76
21	e15	---	e0.38	60	978	602	5.6	62	0.95
22	e25	e3	e0.19	24	19	1.4	5.5	68	1.0
23	22	3	0.15	13	7	0.26	5.4	72	1.1
24	46	546	179	11	4	0.10	5.4	76	1.1
25	37	151	18	9.6	11	0.27	5.2	80	1.1
26	23	6	0.38	9.0	20	0.49	5.1	83	1.1
27	18	13	0.64	8.3	30	0.68	4.9	72	0.96
28	16	23	0.98	7.8	40	0.84	4.8	57	0.75
29	14	33	1.3	7.5	48	0.96	4.7	52	0.66
30	13	42	1.5	7.2	32	0.63	4.7	49	0.62
31	---	---	---	7.0	12	0.23	---	---	---
TOTAL	650.4	---	1,312.64	409.4	---	638.02	193.3	---	24.27

50114900 RIO PORTUGUES NEAR TIBES, PR—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concentration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	5.2	46	0.64	3.6	14	0.14	21	338	82
2	4.7	43	0.54	3.6	9	0.09	22	277	27
3	4.6	39	0.48	3.6	8	0.07	16	36	1.8
4	4.5	24	0.30	3.5	8	0.07	11	10	0.32
5	5.9	6	0.08	3.5	7	0.07	9.1	7	0.18
6	4.9	6	0.08	4.7	7	0.09	11	4	0.12
7	4.3	12	0.14	4.3	12	0.14	21	79	12
8	4.5	18	0.22	3.8	18	0.18	15	23	0.98
9	4.4	25	0.29	3.6	28	0.27	10	13	0.36
10	4.2	30	0.34	3.4	75	0.68	9.4	8	0.21
11	4.2	20	0.23	5.5	84	1.2	18	51	5.5
12	4.2	5	0.06	4.4	83	0.99	30	153	28
13	4.6	3	0.04	7.4	81	1.6	32	71	7.9
14	4.4	11	0.13	6.1	80	1.3	18	29	1.4
15	4.5	74	0.91	5.1	79	1.1	73	639	150
16	4.6	81	1.0	16	272	57	45	58	7.7
17	4.5	72	0.86	8.2	59	1.4	29	14	1.1
18	4.2	62	0.70	7.0	39	0.73	31	6	0.49
19	4.1	52	0.58	6.3	36	0.62	56	579	248
20	3.8	43	0.44	5.7	33	0.51	43	41	5.1
21	3.8	33	0.34	6.3	30	0.51	31	23	2.0
22	3.8	23	0.24	6.7	27	0.48	25	22	1.5
23	3.7	14	0.14	6.6	24	0.42	21	21	1.2
24	3.6	5	0.05	6.3	22	0.38	23	28	2.0
25	3.6	13	0.13	6.8	22	0.40	24	7	0.45
26	3.7	26	0.26	15	4,420	326	20	19	1.0
27	4.1	23	0.26	7.9	62	1.4	17	36	1.7
28	4.7	17	0.21	8.0	48	1.0	16	30	1.3
29	4.2	10	0.12	8.1	47	1.0	16	18	0.79
30	3.7	5	0.05	6.9	47	0.88	16	7	0.32
31	3.6	15	0.15	6.4	46	0.80	---	---	---
TOTAL	132.8	---	10.01	194.3	---	401.52	729.5	---	592.42
YEAR	4,974.8	8,301.71							

e Estimated

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
SILT AND CLAY PERCENT OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
MAY					
21...	1510	535	97	7,640	11,000

50114900 RIO PORTUGUES NEAR TIBES, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

Date	Time	Instantaneous discharge, cfs (00061)	Suspnd. sediment, falldia nat wat percent <.002mm (70326)	Suspnd. sediment, falldia nat wat percent <.004mm (70327)	Suspnd. sediment, falldia nat wat percent <.008mm (70328)	Suspnd. sediment, falldia nat wat percent <.016mm (70329)	Suspnd. sediment, falldia nat wat percent <.031mm (70330)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspnd. sediment, sieve diametr percent <.125mm (70332)	Suspnd. sediment, sieve diametr percent <.25mm (70333)	Suspnd. sediment, sieve diametr percent <.5 mm (70334)	Suspnd. sediment, sieve diametr percent <1 mm (70335)	Suspended sediment concentration mg/L (80154)
AUG 26...	0845	26	35	42	46	60	77	90	99	100	100	100	10,600

Date	Suspended sediment discharge, tons/d (80155)
AUG 26...	748

50115000 RIO PORTUGUES NEAR PONCE, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°04'45", long 66°38'01", Hydrologic Unit 21010004, on right bank 30 ft (9 m) upstream from bridge on Highway 504, 0.2 mi (0.3 km) upstream from small unnamed tributary, 4.4 mi (7.1 km) upstream from Río Chiquito, and 4.7 mi (7.6 km) north of Plaza Degetau in Ponce.

DRAINAGE AREA.--8.82 mi^2 (22.84 km^2).

PERIOD OF RECORD.--Water years 1964 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
11...	0910	37	<2.0	8.3	8.1	373	21.6	180	55.4	9.13	1.27	.4	11.1
MAR													
23...	1336	5.2	<2.0	8.7	8.3	364	26.1	180	54.9	9.47	1.18	.4	12.8
JUN													
23...	0930	9.3	<2.0	8.2	8.5	343	25.0	--	--	--	--	--	--
AUG													
11...	0902	9.2	2.0	9.1	8.5	335	24.9	120	38.7	6.05	.89	.3	8.23

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
DEC													
11...	161	9.34	<.2	21.5	16.2	--	220	--	<10	<.20	<.01	1.30	<.01
MAR													
23...	162	10.3	<.2	21.4	15.0	<.1	222	--	<10	<.20	<.01	.690	<.01
JUN													
23...	158	--	--	--	--	--	--	--	<10	<.20	<.01	.730	<.01
AUG													
11...	156	8.32	<.2	17.8	12.0	--	188	4.70	<10	--	.01	--	--

Date	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)
DEC													
11...	.06	<10	200	6,400	--	--	--	--	--	--	--	--	--
MAR													
23...	.04	<10	--	--	<2	39.4	<70	<.2	<.8	<4	<.01	20	<1.0
JUN													
23...	.04	<10	60	4,500	--	--	--	--	--	--	--	--	--
AUG													
11...	.03	<10	64	1,000	<2	39.3	16	<.2	<.8	<4	<.01	10	<1.0

50115000 RIO PORTUGUES NEAR PONCE, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
DEC							
11...	--	--	--	--	--	--	--
MAR							
23...	1.4	<.02	<3	<.3	<4	<.10	<16
JUN							
23...	--	--	--	--	--	--	--
AUG							
11...	E.6	<.02	<3	<.3	<4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

50115900 RIO PORTUGUES AT HIGHWAY 14 AT PONCE, PR

LOCATION.--Lat 18°01'09", long 66°36'26", Hydrologic Unit 21010004, on right bank upstream from bridge on Highway 14, 1.70 mi (2.74 km) downstream from Río Chiquito, and 0.6 mi (0.96 km) northeast of Plaza Degetau in Ponce.

DRAINAGE AREA.--18.6 mi^2 (48.17 km^2).

PERIOD OF RECORD.--Occasional measurements 1963, annual maximum discharge and peaks above base at different datum, from 1965 to 1972. June 1997 to current year.

REVISED RECORDS.--WRD PR-02-1, 2001.

GAGE.--Water-stage recorder. Elevation of gage is 67.2 ft (20.48 m), from topographic map. Prior to June 18, 1997, non-recording gage crested-stage gage at same site and different datum.

REMARKS.--Records poor. Some low-flow regulation due to Río Portugués dam construction activity upstream. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	76	e60	e29	e17	17	15	12	30	22	17	37
2	35	55	e52	e29	e17	15	13	12	42	22	17	37
3	22	46	e45	e28	e17	15	12	12	26	20	16	33
4	49	51	e40	e27	e17	14	16	14	24	17	15	56
5	64	33	e37	e26	16	14	15	21	22	15	17	37
6	39	39	e162	e26	16	14	13	14	29	14	18	26
7	88	56	303	e25	16	13	13	23	23	20	14	50
8	80	36	156	e24	15	13	19	13	34	18	14	80
9	248	30	90	e24	15	13	17	15	22	14	13	33
10	518	27	62	e23	15	13	15	15	36	13	16	28
11	440	82	52	e70	15	15	13	13	27	13	28	28
12	165	991	49	e23	15	14	12	16	21	26	44	34
13	80	3,100	51	e22	15	14	11	23	20	48	76	28
14	61	765	46	e120	15	13	11	20	19	50	34	28
15	194	531	e40	e260	15	16	10	51	18	94	38	367
16	54	473	e40	e55	15	14	12	59	17	24	23	782
17	37	e261	e38	e35	16	15	45	23	17	19	19	296
18	50	e319	e37	e28	15	14	15	17	16	15	18	303
19	21	e241	e36	e25	15	17	13	16	16	14	17	229
20	21	e188	e36	e28	16	14	23	51	15	14	19	161
21	78	e168	e36	e24	16	18	24	32	16	13	15	89
22	85	e150	e35	e22	20	14	15	23	15	12	16	66
23	26	e152	e34	e21	16	12	15	48	15	36	55	83
24	17	e155	e34	e20	30	14	24	130	14	54	81	57
25	15	e124	e46	e20	31	18	30	418	14	58	98	45
26	14	e110	e100	e19	21	17	18	117	14	32	120	38
27	15	e98	e40	e19	17	14	15	52	14	46	176	50
28	54	e88	e36	e19	15	19	14	77	14	30	157	72
29	119	e78	e34	e18	15	18	13	41	38	38	50	52
30	169	e69	e32	e18	---	30	13	32	33	25	38	33
31	233	---	e30	e18	---	17	---	29	---	20	30	---
TOTAL	3,125	8,592	1,889	1,145	494	478	494	1,439	661	856	1,309	3,258
MEAN	101	286	60.9	36.9	17.0	15.4	16.5	46.4	22.0	27.6	42.2	109
MAX	518	3,100	303	260	31	30	45	418	42	94	176	782
MIN	14	27	30	18	15	12	10	12	14	12	13	26
AC-FT	6,200	17,040	3,750	2,270	980	948	980	2,850	1,310	1,700	2,600	6,460
CFSM	5.42	15.4	3.28	1.99	0.92	0.83	0.89	2.50	1.18	1.48	2.27	5.84
IN.	6.25	17.18	3.78	2.29	0.99	0.96	0.99	2.88	1.32	1.71	2.62	6.52

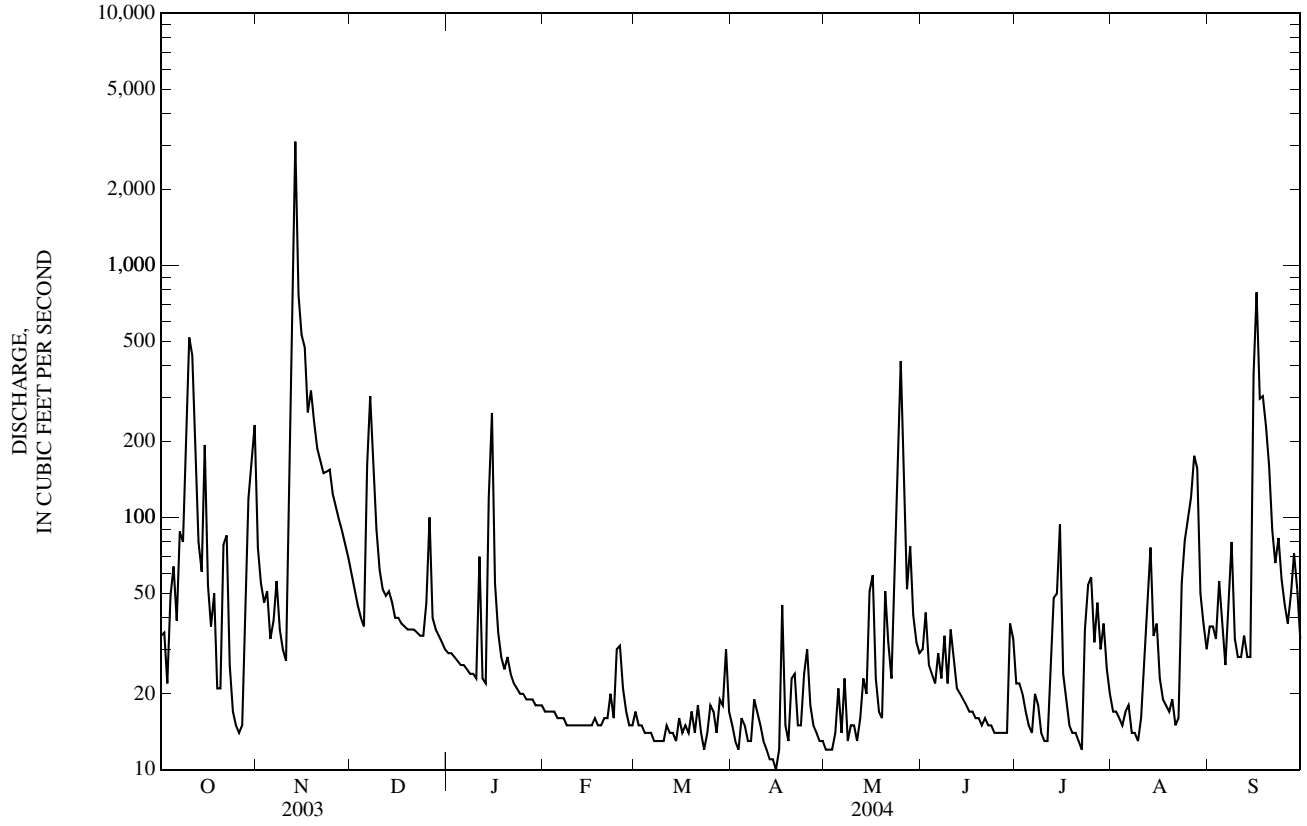
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2004, BY WATER YEAR (WY)

MEAN	83.7	85.1	28.2	17.4	13.8	10.5	41.6	32.5	28.1	18.2	47.4	113
MAX	128	286	60.9	36.9	21.1	17.4	122	46.4	60.4	36.8	112	314
(WY)	(2001)	(2004)	(2004)	(2004)	(2003)	(1999)	(2003)	(2004)	(1999)	(1999)	(1998)	(1998)
MIN	31.8	15.1	6.00	6.09	7.60	5.33	12.1	15.9	17.7	3.90	6.79	12.5
(WY)	(2002)	(1998)	(1998)	(1998)	(2002)	(1998)	(2001)	(1999)	(2000)	(2000)	(1997)	(1997)

50115900 RIO PORTUGUES AT HIGHWAY 14 AT PONCE, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1997 - 2004	
ANNUAL TOTAL	25,228.3		23,740			
ANNUAL MEAN	69.1		64.9		45.1	
HIGHEST ANNUAL MEAN					64.9	2004
LOWEST ANNUAL MEAN					24.9	2002
HIGHEST DAILY MEAN	3,100	Nov 13	3,100	Nov 13	5,580	Sep 22, 1998
LOWEST DAILY MEAN	2.7	Mar 25	10	Apr 15	0.97	Jun 18, 1997
ANNUAL SEVEN-DAY MINIMUM	3.5	Mar 13	12	Apr 10	1.6	Jul 27, 1997
MAXIMUM PEAK FLOW			11,000	Nov 13	16,300	Sep 22, 1998
MAXIMUM PEAK STAGE			17.34	Nov 13	19.73	Sep 22, 1998
ANNUAL RUNOFF (AC-FT)	50,040		47,090		32,650	
ANNUAL RUNOFF (CFSM)	3.72		3.49		2.42	
ANNUAL RUNOFF (INCHES)	50.46		47.48		32.92	
10 PERCENT EXCEEDS	151		120		89	
50 PERCENT EXCEEDS	26		24		18	
90 PERCENT EXCEEDS	6.5		14		6.6	

e Estimated



50116200 RIO PORTUGUES AT PONCE, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°00'20", long 66°36'28", 1,300 ft (400 m) south of Las Americas Avenue bridge, 0.8 mi (1.3 km) west of Highways 1 and 2 junction, and 0.7 mi (1.1 km) southeast of Ponce.

DRAINAGE AREA.--18.9 mi^2 (49.0 km^2).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
DEC													
11...	1500	75	84	7.2	7.8	620	28.3	250	75.1	15.7	3.18	1	39.7
MAR													
24...	0800	13	10	5.5	7.5	570	23.8	220	63.9	14.2	1.79	1	39.1
JUN													
22...	0840	14	7.1	6.3	7.8	463	25.6	--	--	--	--	--	--
AUG													
17...	0804	21	10	6.1	7.8	449	25.3	140	42.9	7.82	1.13	.7	18.5

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
DEC													
11...	203	39.4	<.2	23.2	52.8	--	371	--	<10	5.5	4.30	1.37	1.40
MAR													
24...	175	34.7	<.2	22.2	64.2	<.1	345	--	15	.50	.18	.75	.800
JUN													
22...	154	--	--	--	--	--	--	--	10	.20	.05	.17	.180
AUG													
17...	158	19.4	<.2	19.6	37.7	--	244	13.6	15	--	.22	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
DEC													
11...	.03	1.2	6.9	30.5	.73	<10	E120,000	E160,000	--	--	--	--	--
MAR													
24...	.05	.32	1.3	5.8	.10	<10	--	--	<2	54.2	91	<.2	<.8
JUN													
22...	.01	.15	.38	1.7	.04	<10	E1,700	40,000	--	--	--	--	--
AUG													
17...	--	--	--	--	.08	<10	58,000	320,000	<2	44.4	56	<.2	E.5

50116200 RIO PORTUGUES AT PONCE, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
DEC 11...	--	--	--	--	--	--	--	--	--	--	--
MAR 24...	M	<.01	560	<1.0	91.7	<.02	<3	<.3	E4	<.10	<16
JUN 22...	--	--	--	--	--	--	--	--	--	--	--
AUG 17...	M	<.01	410	<1.0	68.6	<.02	<3	<.3	5	E.06	<16

PESTICIDE ANALYSES

Date	Time	2,4,5-T water unfltrd ug/L (39740)	2,4-D water unfltrd ug/L (39730)	Aldrin, water, unfltrd ug/L (39330)	alpha- Endo- sulfan, water, unfltrd ug/L (39388)	Carbo- pheno- thion, water, unfltrd ug/L (39786)	Chlor- dane, tech- nical, water, unfltrd ug/L (39350)	Chlor- pyrifos water unfltrd ug/L (38932)	Diazi- non, water, unfltrd ug/L (39570)	Di- chlor- prop, water, unfltrd ug/L (82183)	Diel- drin, water, unfltrd ug/L (39380)	Disul- foton, water, unfltrd ug/L (39011)	Endrin, water, unfltrd ug/L (39390)
AUG 17...	0804	<.01	<.01	<.01	<.03	<.02	<.1	<.01	<.02	<.02	<.016	<.10	<.01

Date	Ethion, water, unfltrd ug/L (39398)	Fonofos water unfltrd ug/L (82614)	Hepta- chlor epoxide water unfltrd ug/L (39420)	Hepta- chlor, water, unfltrd ug/L (39410)	Lindane water, unfltrd ug/L (39340)	Mala- thion, water, unfltrd ug/L (39530)	Methyl para- thion, water, unfltrd ug/L (39600)	Mirex, water, unfltrd ug/L (39755)	p,p'- DDD, water, unfltrd ug/L (39360)	p,p'- DDE, water, unfltrd ug/L (39365)	p,p'- DDT, water, unfltrd ug/L (39370)	p,p'- Meth- oxy- chlor, water, unfltrd ug/L (39480)	Para- thion, water, unfltrd ug/L (39540)
AUG 17...	<.01	<.01	<.009	<.01	<.014	<.10	<.01	<.006	<.016	<.014	<.010	<.006	<.01

Date	PCBs, water, unfltrd ug/L (39516)	Phorate water unfltrd ug/L (39023)	Silvex, water, unfltrd ug/L (39760)	Toxa- phene, water, unfltrd ug/L (39400)	Tribu- phos, water, unfltrd ug/L (39040)
AUG 17...	<.1	<.02	<.02	<1	<.02

< Actual value is known to be less than the value shown
E Estimated value
M Presence verified, not quantified

50124200 RIO GUAYANILLA NEAR GUAYANILLA, PR

LOCATION.--Lat 18°02'40", long 66°47'53", Hydrologic Unit 21010004, on left bank, 0.7 mi (1.1 km) north of junction of Highways 2 and 132, 0.6 mi (1.0 km) downstream from Quebrada Consejo, 1.8 mi (2.9 km) north-northwest from Plaza de Guayanilla.

DRAINAGE AREA.--18.9 mi^2 (49.0 km^2).

PERIOD OF RECORD.--March 1981 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 80 ft (24 m), from topographic map.

REMARKS.--Records fair. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

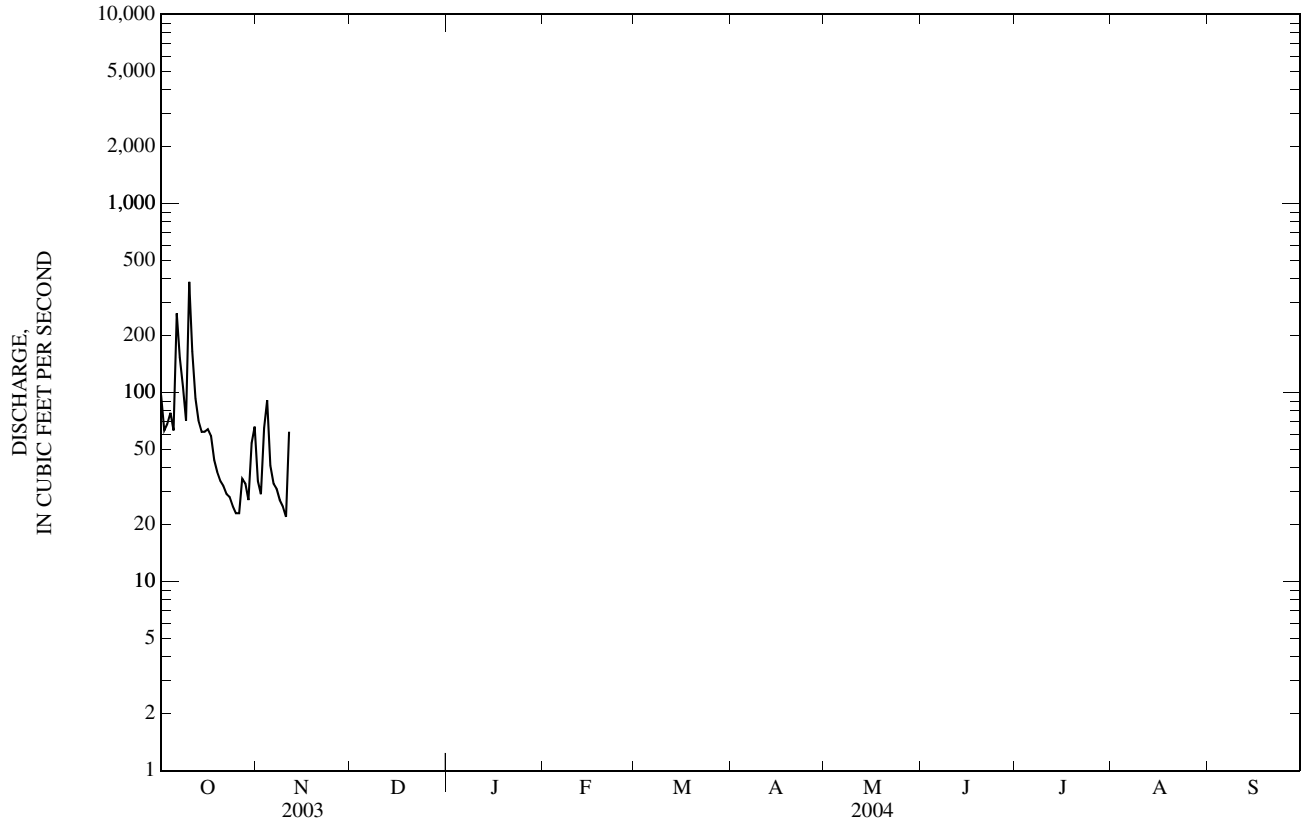
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	34	23	16	15	11	13	15	27	34	24	74
2	63	29	22	15	14	10	8.4	90	33	38	22	61
3	68	65	18	14	14	10	8.2	36	36	33	21	49
4	78	91	17	13	14	10	12	23	35	26	21	51
5	63	41	17	13	13	10	11	15	47	29	23	50
6	262	33	117	13	12	11	9.4	12	42	26	21	39
7	153	31	227	13	12	11	10	11	42	30	19	114
8	107	27	118	14	12	11	11	12	37	25	19	75
9	71	25	53	12	12	11	14	14	31	22	18	51
10	385	22	40	12	12	11	12	11	34	21	19	38
11	165	62	34	13	11	11	9.5	9.3	29	20	19	34
12	93	603	59	13	11	13	9.6	26	27	32	51	92
13	71	1,670	53	51	11	11	10	20	25	109	45	62
14	62	420	37	53	10	13	9.2	28	25	76	33	93
15	62	316	28	23	10	14	9.3	21	25	61	35	103
16	64	279	24	14	10	8.5	15	74	22	37	26	187
17	59	114	22	12	10	8.3	14	31	22	28	25	168
18	44	86	19	10	10	9.2	8.6	16	21	23	27	446
19	38	64	18	9.7	10	9.7	16	127	21	21	30	127
20	34	50	17	9.5	11	9.3	16	60	20	21	22	86
21	32	42	18	125	12	11	10	27	19	21	20	72
22	29	140	16	64	12	8.7	8.0	12	19	19	26	64
23	28	105	14	38	22	8.9	8.5	35	18	32	59	65
24	25	63	50	29	23	12	56	35	18	76	43	56
25	23	43	76	21	15	12	27	158	19	78	101	51
26	23	35	55	18	12	9.7	13	34	19	134	109	47
27	35	29	47	17	12	9.1	9.6	106	18	88	181	51
28	33	25	26	16	11	9.4	9.3	35	19	48	112	41
29	27	22	19	16	12	8.7	8.5	24	51	41	74	39
30	54	21	16	16	---	12	8.3	25	41	32	63	37
31	66	---	15	15	---	8.5	---	25	---	27	52	---
TOTAL	2,414	4,587	1,315	718.2	365	323.0	384.4	1,167.3	842	1,308	1,360	2,523
MEAN	77.9	153	42.4	23.2	12.6	10.4	12.8	37.7	28.1	42.2	43.9	84.1
MAX	385	1,670	227	125	23	14	56	158	51	134	181	446
MIN	23	21	14	9.5	10	8.3	8.0	9.3	18	19	18	34
AC-FT	4,790	9,100	2,610	1,420	724	641	762	2,320	1,670	2,590	2,700	5,000
CFSM	4.12	8.09	2.24	1.23	0.67	0.55	0.68	1.99	1.49	2.23	2.32	4.45
IN.	4.75	9.03	2.59	1.41	0.72	0.64	0.76	2.30	1.66	2.57	2.68	4.97

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 2004, BY WATER YEAR (WY)

MEAN	59.1	49.8	18.9	10.8	7.77	6.46	12.7	26.7	14.6	12.7	21.0	47.3
MAX	167	153	42.4	27.5	12.6	13.2	34.8	80.4	41.0	42.2	50.5	124
(WY)	(1986)	(2004)	(2004)	(1992)	(2004)	(1989)	(2003)	(1985)	(1987)	(2004)	(2000)	(1998)
MIN	12.7	15.2	4.78	4.06	3.10	2.85	2.76	2.33	2.35	2.45	5.14	3.62
(WY)	(2002)	(1998)	(1998)	(1998)	(1990)	(1981)	(1995)	(1994)	(1997)	(1994)	(1997)	(1997)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1981 - 2004	
ANNUAL TOTAL	12,159.3		17,306.9			
ANNUAL MEAN	33.3		47.3		23.8	
HIGHEST ANNUAL MEAN					47.3	2004
LOWEST ANNUAL MEAN					8.94	1994
HIGHEST DAILY MEAN	1,670	Nov 13	1,670	Nov 13	1,670	Nov 13, 2003
LOWEST DAILY MEAN	3.2	Aug 23	8.0	Apr 22	0.77	Jul 30, 1994
ANNUAL SEVEN-DAY MINIMUM	4.1	Aug 14	9.2	Mar 16	1.1	Sep 4, 1994
MAXIMUM PEAK FLOW			4,890	Nov 13	18,700	May 6, 2001
MAXIMUM PEAK STAGE			14.67	Nov 13	21.89	May 6, 2001
INSTANTANEOUS LOW FLOW					0.70	Apr 19, 1995
ANNUAL RUNOFF (AC-FT)	24,120		34,330		17,250	
ANNUAL RUNOFF (CFSM)	1.76		2.50		1.26	
ANNUAL RUNOFF (INCHES)	23.93		34.06		17.12	
10 PERCENT EXCEEDS	63		91		52	
50 PERCENT EXCEEDS	10		25		10	
90 PERCENT EXCEEDS	5.3		10		3.6	

50124200 RIO GUAYANILLA NEAR GUAYANILLA, PR—Continued



50125780 LAGO LUCCHETTI AT DAMSITE NEAR YAUCO, PR

LOCATION.--Lat 18°05'37", long 66°51'54", Hydrologic Unit 21010004, at Antonio Lucchetti Dam on Río Yauco, 3.9 mi (6.3 km) north of Yauco.

DRAINAGE AREA.--17.4 mi^2 (45.1 km^2).

PERIOD OF RECORD.--December 1989 to current year. Prior to October 1994, published as Lago Lucchetti at Damsite.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago Lucchetti was completed in 1952. The dam is on Río Yauco and is a unit of the Southwestern Puerto Rico Project. It provides 16,500 acre-feet (20.3 hm^3) of usable storage for power generation and irrigation. The dam is a concrete gravity structure with a total length of 591 ft (180 m), a maximum height of 178 ft (54 m), and a maximum width at the base of 150 ft (46 m). An ungated, overflow tupe spillway with a clear length of 171 ft (52 m), and a maximum capacity of 62,800 ft^3/s (1,778 m^3/s) at a design head of 20 ft (6 m). The dam is owned by the Puerto Rico Electric Power Authority. Gage-height and precipitation satellite telemetry at station.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation, 577.56 ft (176.04 m), September 22, 1998; minimum elevation, 512.09 ft (156.08 m), September 9, 1994.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 573.75 ft (174.88 m), November 13; minimum elevation, 539.74 ft (164.51 m), September 15.

Capacity Table
(based on data from Puerto Rico Water Resources Authority)
(Elevation in ft, capacity in acre-ft)

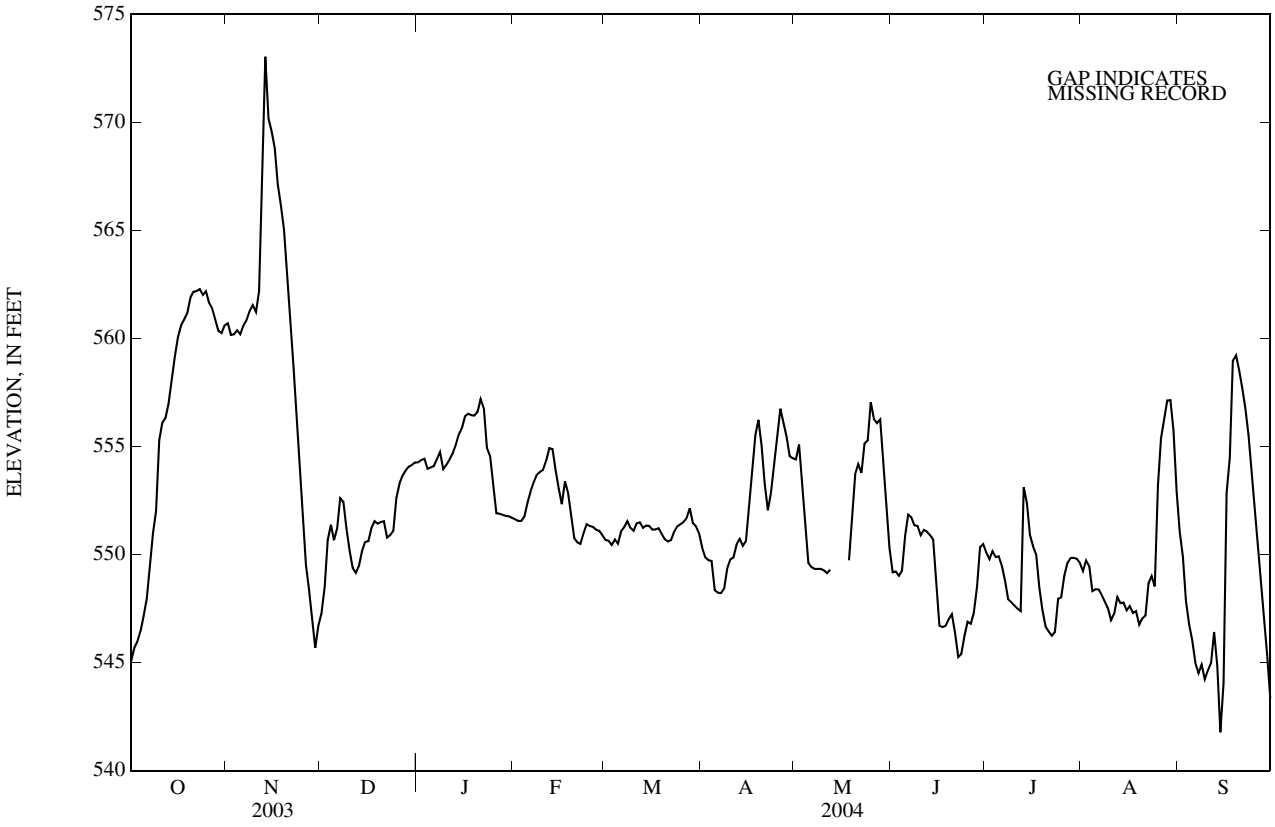
Elevation	Contents	Elevation	Contents
512	1,505	540	5,165
520	2,385	550	7,020
525	2,965	561	9,600
527	3,255	563	10,125
530	3,695	571	12,125
532	3,975	573	12,645
		578	14,061

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	545.06	560.70	547.28	554.27	551.63	550.68	550.31	554.40	549.18	550.10	549.23	551.05
2	545.67	560.17	548.50	554.37	551.56	550.63	549.87	555.09	549.22	549.79	549.72	549.89
3	545.96	560.19	550.67	554.43	551.56	550.45	549.74	553.59	549.02	550.15	549.45	547.84
4	546.45	560.38	551.38	553.97	551.76	550.70	549.71	551.64	549.25	549.88	548.31	546.76
5	547.14	560.19	550.66	554.03	552.41	550.51	548.35	549.61	550.88	549.92	548.40	546.04
6	547.95	560.61	551.22	554.09	552.92	551.08	548.23	549.42	551.85	549.47	548.39	544.98
7	549.49	560.85	552.61	554.42	553.35	551.26	548.22	549.34	551.72	548.80	548.12	544.51
8	550.99	561.28	552.44	554.74	553.69	551.54	548.43	549.34	551.36	547.93	547.82	544.90
9	552.00	561.55	551.21	553.95	553.83	551.24	549.35	549.34	551.32	547.80	547.51	544.22
10	555.29	561.23	550.17	554.14	553.92	551.10	549.78	549.26	550.90	547.64	546.96	544.63
11	556.10	562.19	549.38	554.39	554.36	551.44	549.87	549.14	551.14	547.50	547.27	544.98
12	556.32	568.42	549.15	554.66	554.92	551.49	550.48	549.30	551.06	547.38	548.03	546.42
13	556.98	573.04	549.47	555.06	554.88	551.24	550.73	A	550.90	553.11	547.75	544.83
14	558.09	570.17	550.17	555.54	553.91	551.34	550.41	A	550.70	552.38	547.78	541.78
15	559.13	569.60	550.57	555.86	553.05	551.33	550.63	A	548.71	550.91	547.42	544.05
16	560.06	568.80	550.62	556.39	552.33	551.16	552.37	A	546.71	550.37	547.61	552.85
17	560.59	567.12	551.22	556.51	553.39	551.16	554.01	A	546.64	550.00	547.30	554.48
18	560.87	566.12	551.54	556.45	552.86	551.22	555.54	549.74	546.70	548.44	547.38	558.97
19	561.16	565.01	551.43	556.43	551.73	550.96	556.23	551.74	547.02	547.43	546.75	559.22
20	561.89	562.76	551.50	556.59	550.76	550.71	555.02	553.72	547.24	546.66	547.04	558.55
21	562.16	560.63	551.54	557.20	550.56	550.60	553.29	554.19	546.36	546.44	547.18	557.70
22	562.20	558.72	550.78	556.76	550.49	550.67	552.05	553.79	545.26	546.24	548.67	556.78
23	562.29	556.10	550.89	554.95	551.00	551.05	552.85	555.14	545.40	546.41	549.00	555.53
24	562.01	553.58	551.09	554.56	551.40	551.31	554.30	555.28	546.24	547.95	548.52	554.01
25	562.18	551.54	552.62	553.27	551.32	551.40	555.52	557.05	546.89	548.01	553.22	552.41
26	561.64	549.51	553.29	551.91	551.28	551.51	556.75	556.27	546.80	549.03	555.37	550.70
27	561.39	548.39	553.66	551.89	551.14	551.68	556.12	556.08	547.30	549.60	556.25	548.93
28	560.87	546.97	553.90	551.84	551.10	552.14	555.45	556.25	548.49	549.84	557.13	547.12
29	560.35	545.68	554.07	551.79	550.89	551.47	554.56	554.43	550.34	549.85	557.15	545.30
30	560.25	546.73	554.15	551.77	---	551.31	554.45	552.45	550.49	549.80	555.75	543.35
31	560.61	---	554.26	551.70	---	550.99	---	550.30	---	549.62	552.90	---
MAX	562.29	573.04	554.26	557.20	554.92	552.14	556.75	---	551.85	553.11	557.15	559.22
MIN	545.06	545.68	547.28	551.70	550.49	550.45	548.22	---	545.26	546.24	546.75	541.78

A No gage-height record

50125780 LAGO LUCCHETTI AT DAMSITE NEAR YAUCO, PR—Continued



50126150 RIO YAUCO ABOVE DIVERSION MONSERRATE NEAR YAUCO, PR

LOCATION.--Lat 18°02'58", long 66°50'30", Hydrologic Unit 21010004, on right bank off Highway 375, about 300 ft (91 m) upstream from diversion Monserrate, 0.1 mi (0.2 km) downstream from Quebrada de las Quebradas, 0.9 mi (1.4 km) downstream from Río Duey, and 1.0 mi (1.6 km) northeast of Yauco Plaza.

DRAINAGE AREA.--27.2 mi^2 (70.4 km^2).

PERIOD OF RECORD.--November 1976 to January 1985, October 2002 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 115 ft (35 m), from topographic map. Previous to October 2002, gage was at a different datum.

REMARKS.--Records poor. Flow affected by numerous diversions into and out of the basin.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	12	26	21	12	6.5	19	22	45	17	13	33
2	56	8.0	24	21	12	5.3	10	163	42	22	12	26
3	40	32	23	20	12	5.5	7.6	32	39	18	12	21
4	61	54	22	19	15	5.3	6.4	22	37	33	12	20
5	52	17	22	e19	11	3.7	8.1	16	38	23	12	20
6	87	9.5	48	e18	11	3.7	4.5	13	34	13	11	18
7	116	8.2	180	17	11	3.8	4.2	13	31	13	10	85
8	92	8.4	88	18	10	4.9	3.6	17	29	11	9.8	45
9	52	8.8	49	16	10	4.5	2.7	15	25	8.9	9.8	25
10	280	6.2	43	16	11	4.0	5.6	11	35	7.9	9.6	20
11	100	25	40	16	9.9	4.3	4.9	9.5	25	11	11	19
12	47	403	42	16	8.8	9.9	3.8	13	23	21	38	46
13	31	2,900	47	34	8.8	3.6	3.3	15	21	179	25	32
14	35	716	40	39	8.3	6.5	2.6	22	27	60	17	74
15	45	159	35	29	8.9	15	2.0	16	28	34	18	87
16	30	127	33	19	9.1	5.9	8.1	32	20	22	14	187
17	29	67	32	17	8.5	4.1	12	18	20	18	13	116
18	20	60	31	15	8.7	4.5	11	11	19	16	11	492
19	15	52	30	14	7.5	5.1	21	103	18	14	12	90
20	12	47	29	13	7.1	3.9	20	69	18	14	10	55
21	11	40	28	42	10	7.2	11	36	17	14	9.0	45
22	9.7	61	29	34	11	3.7	6.0	18	25	12	29	41
23	9.4	39	28	22	10	3.2	8.9	96	36	15	33	40
24	8.3	34	33	21	18	9.5	33	43	32	52	18	37
25	7.1	31	39	17	11	9.1	17	143	24	42	202	34
26	7.3	30	47	16	8.6	6.3	6.7	41	26	71	127	32
27	9.0	27	45	16	8.1	4.9	3.8	167	20	43	89	31
28	9.3	25	30	15	6.5	5.8	2.8	86	22	21	55	42
29	9.5	25	25	14	6.7	5.1	1.7	65	65	18	38	30
30	16	26	23	13	---	9.5	3.5	55	25	16	28	30
31	23	---	22	12	---	10	---	49	---	14	22	---
TOTAL	1,431.6	5,058.1	1,233	619	290.5	184.3	254.8	1,431.5	866	873.8	930.2	1,873
MEAN	46.2	169	39.8	20.0	10.0	5.95	8.49	46.2	28.9	28.2	30.0	62.4
MAX	280	2,900	180	42	18	15	33	167	65	179	202	492
MIN	7.1	6.2	22	12	6.5	3.2	1.7	9.5	17	7.9	9.0	18
AC-FT	2,840	10,030	2,450	1,230	576	366	505	2,840	1,720	1,730	1,850	3,720
CFSM	1.70	6.20	1.46	0.73	0.37	0.22	0.31	1.70	1.06	1.04	1.10	2.30
IN.	1.96	6.92	1.69	0.85	0.40	0.25	0.35	1.96	1.18	1.20	1.27	2.56

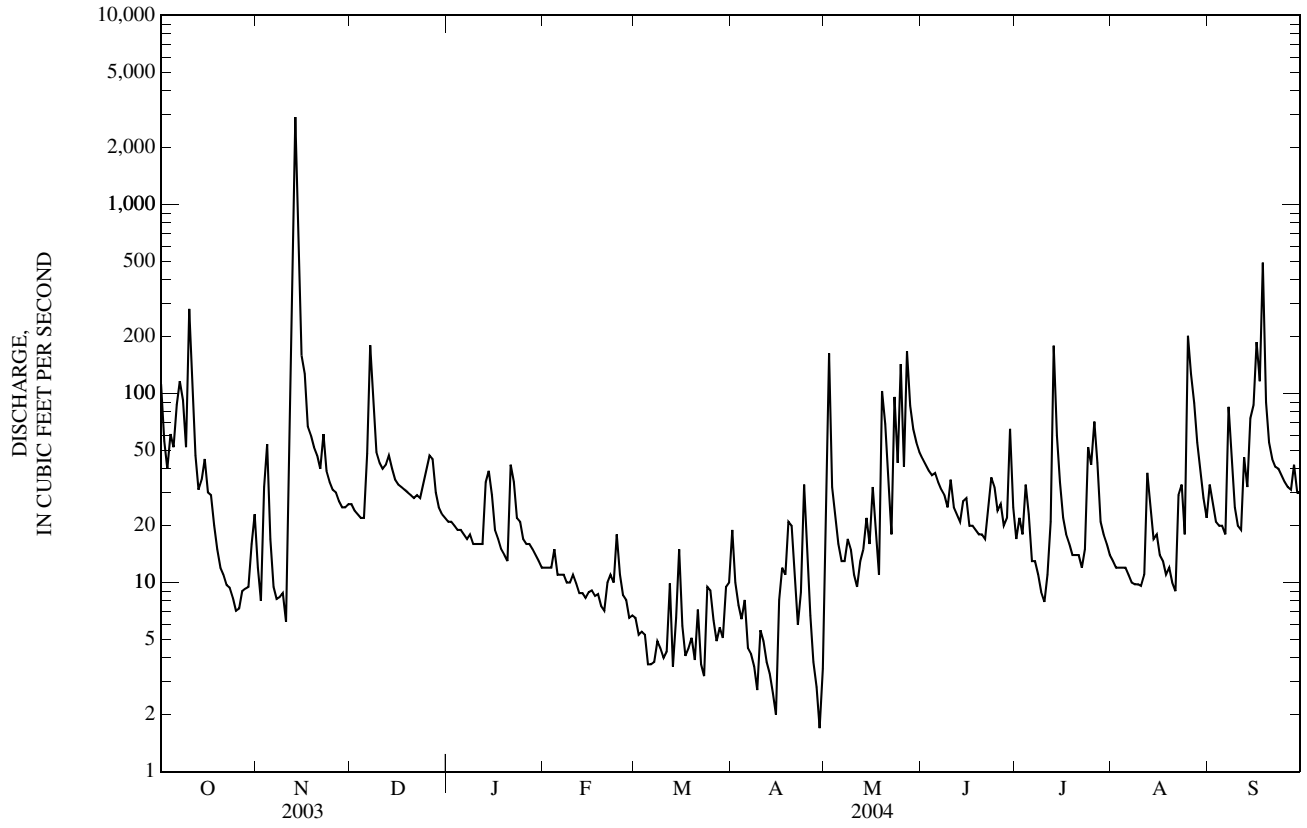
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2004, BY WATER YEAR (WY)

MEAN	33.9	51.7	14.6	8.72	6.89	4.84	11.4	25.9	16.6	14.0	23.9	46.7
MAX	62.9	169	39.8	20.0	11.4	8.64	46.0	66.1	95.1	54.1	131	133
(WY)	(1979)	(2004)	(2004)	(2004)	(1984)	(1979)	(1983)	(1980)	(1979)	(1979)	(1979)	(1979)
MIN	13.5	5.64	3.11	1.39	1.59	1.00	3.06	4.10	0.50	0.39	1.72	5.97
(WY)	(2003)	(1981)	(2003)	(2003)	(1983)	(2003)	(1977)	(1977)	(2003)	(2003)	(2003)	(1978)

50126150 RIO YAUCO ABOVE DIVERSION MONSERRATE NEAR YAUCO, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1977 - 2004	
ANNUAL TOTAL	9,269.43		15,045.8			
ANNUAL MEAN	25.4		41.1		22.3	
HIGHEST ANNUAL MEAN					50.9	1979
LOWEST ANNUAL MEAN					6.45	2003
HIGHEST DAILY MEAN	2,900	Nov 13	2,900	Nov 13	2,900	Nov 13, 2003
LOWEST DAILY MEAN	0.00	Jun 24	1.7	Apr 29	0.00	Sep 30, 1977
ANNUAL SEVEN-DAY MINIMUM	0.00	Jun 24	3.6	Apr 9	0.00	Jun 24, 2003
MAXIMUM PEAK FLOW			6,700	Nov 13	10,500	Aug 31, 1979
MAXIMUM PEAK STAGE			11.18	Nov 13	9.83	Aug 31, 1979
ANNUAL RUNOFF (AC-FT)	18,390		29,840		16,120	
ANNUAL RUNOFF (CFSM)	0.934		1.51		0.818	
ANNUAL RUNOFF (INCHES)	12.68		20.58		11.12	
10 PERCENT EXCEEDS	47		61		42	
50 PERCENT EXCEEDS	1.7		19		7.6	
90 PERCENT EXCEEDS	0.13		6.1		2.0	

e Estimated



50128900 LAGO LOCO AT DAMSITE NEAR YAUCO, PR

LOCATION.--Lat 18°02'41", long 66°53'16", Hydrologic Unit 21010004, at Damsite, 2.60 mi (4.18 km) northwest from Yauco Plaza, 0.45 mi (0.72 km) northeast from Escuela Río Cañas and 0.95 mi (1.53 km) northwest from Escuela Susúa Alta.

DRAINAGE AREA.--8.35 mi^2 (21.6 km^2).

PERIOD OF RECORD.--May 1995 to current year.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago Loco was completed in 1951. The dam is a concrete gravity structure with a total length of 600 ft (183 m), maximum structural height of 72 ft (21.9 m), the ungated overflow spillway is 150 ft (47.7 m) long with crest at elevation of 230 ft (70.1 m). It has a normal storage capacity of 1,950 acre-feet (2.40 hm^3) as for May 4, 1979. The Loco Dam is owned by the Puerto Rico Electric Power Authority (PREPA) and it is part of the Southwestern Puerto Rico Project which was developed for electric power generation and irrigation of the lands in the Lajas Valley. Some of the project waters are used for water supply in the Lajas area. The maximum drawdown of the dam is from 230 ft (70.1 m) to 220 ft (67.1 m) and the capacity table provided by PREPA includes only that portion of the storage for the dam. Gage-height and precipitation satellite telemetry at station.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation, 235.71 ft (71.84 m), May 6, 2001; minimum elevation, 217.77 ft (66.4 m), June 10, 1997.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 233.86 ft (71.28 m), November 13; minimum elevation, 229.37 ft (69.91 m), March 12.

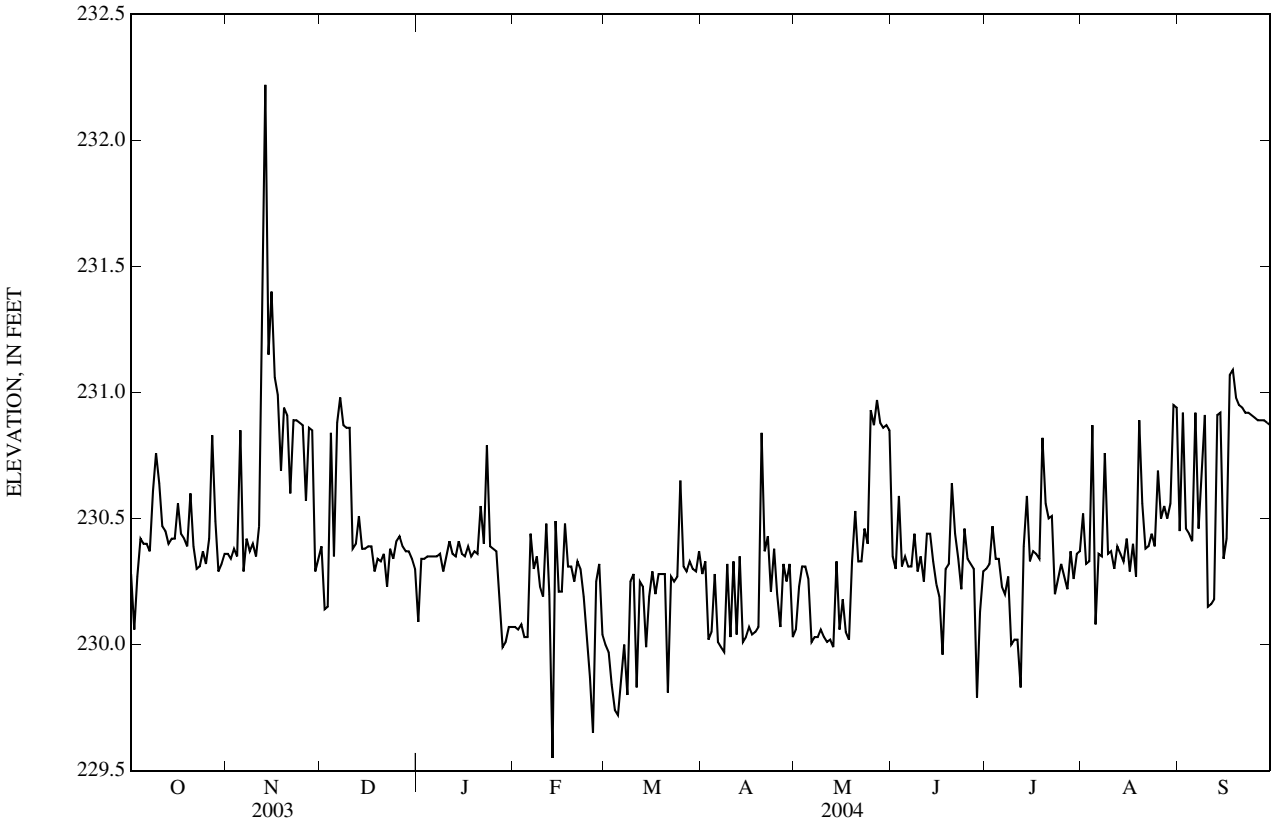
Capacity Table
(based on data from Puerto Rico Electric Power Authority)
(Elevation in ft, capacity in acre-ft)

Elevation	Contents	Elevation	Contents
220	0	230	639
225	299	232	787

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	230.28	230.36	230.39	230.09	230.07	230.00	230.28	230.06	230.35	230.30	230.52	230.45
2	230.06	230.34	230.14	230.34	230.06	229.97	230.33	230.23	230.30	230.32	230.32	230.92
3	230.27	230.38	230.15	230.34	230.08	229.84	230.02	230.31	230.59	230.47	230.33	230.46
4	230.42	230.35	230.84	230.35	230.03	229.74	230.05	230.31	230.31	230.34	230.87	230.44
5	230.40	230.85	230.35	230.35	230.03	229.72	230.28	230.26	230.35	230.34	230.08	230.41
6	230.40	230.29	230.88	230.35	230.44	229.87	230.01	230.01	230.31	230.23	230.36	230.92
7	230.37	230.42	230.98	230.35	230.30	230.00	229.99	230.03	230.31	230.20	230.35	230.46
8	230.61	230.37	230.87	230.36	230.35	229.80	229.97	230.03	230.44	230.27	230.76	230.67
9	230.76	230.40	230.86	230.29	230.23	230.25	230.32	230.06	230.29	230.00	230.36	230.91
10	230.64	230.35	230.86	230.35	230.19	230.28	230.03	230.03	230.35	230.02	230.37	230.15
11	230.47	230.47	230.38	230.41	230.48	229.83	230.33	230.01	230.25	230.02	230.30	230.16
12	230.45	231.20	230.40	230.36	230.20	230.25	230.04	230.02	230.44	229.83	230.39	230.18
13	230.40	232.22	230.51	230.35	229.55	230.23	230.35	229.99	230.44	230.39	230.36	230.91
14	230.42	231.15	230.38	230.41	230.49	229.99	230.01	230.33	230.33	230.59	230.33	230.92
15	230.42	231.40	230.38	230.36	230.21	230.19	230.03	230.06	230.24	230.33	230.42	230.34
16	230.56	231.06	230.39	230.35	230.21	230.29	230.07	230.18	230.19	230.37	230.29	230.42
17	230.44	230.99	230.39	230.39	230.48	230.20	230.04	230.05	229.96	230.36	230.40	231.07
18	230.42	230.69	230.29	230.35	230.31	230.28	230.05	230.02	230.30	230.34	230.27	231.09
19	230.39	230.94	230.34	230.37	230.31	230.28	230.07	230.33	230.32	230.82	230.89	230.98
20	230.60	230.91	230.33	230.36	230.25	230.28	230.84	230.53	230.64	230.56	230.56	230.95
21	230.39	230.60	230.36	230.55	230.33	229.81	230.37	230.33	230.44	230.50	230.38	230.94
22	230.30	230.89	230.23	230.40	230.30	230.27	230.43	230.33	230.34	230.51	230.39	230.92
23	230.31	230.89	230.38	230.79	230.19	230.25	230.21	230.46	230.22	230.20	230.44	230.92
24	230.37	230.88	230.34	230.39	230.02	230.27	230.38	230.40	230.46	230.26	230.39	230.91
25	230.32	230.87	230.41	230.38	229.87	230.65	230.20	230.93	230.34	230.32	230.69	230.90
26	230.42	230.57	230.43	230.37	229.65	230.31	230.07	230.87	230.32	230.27	230.50	230.89
27	230.83	230.86	230.39	230.19	230.25	230.29	230.32	230.97	230.30	230.22	230.55	230.89
28	230.49	230.85	230.37	229.99	230.32	230.33	230.25	230.88	229.79	230.37	230.50	230.89
29	230.29	230.29	230.37	230.01	230.04	230.30	230.32	230.86	230.13	230.26	230.56	230.88
30	230.32	230.34	230.34	230.07	---	230.29	230.03	230.87	230.29	230.36	230.95	230.87
31	230.36	---	230.30	230.07	---	230.37	---	230.85	---	230.37	230.94	---
MAX	230.83	232.22	230.98	230.79	230.49	230.65	230.84	230.97	230.64	230.82	230.95	231.09
MIN	230.06	230.29	230.14	229.99	229.55	229.72	229.97	229.99	229.79	229.83	230.08	230.15

50128900 LAGO LOCO AT DAMSITE NEAR YAUCO, PR—Continued



50128905 CANAL DE RIEGO DE LAJAS BELOW LAGO LOCO DAM, YAUCO, PR

LOCATION.--Lat 18°02'35", long 66°53'18", Hydrologic Unit 21010004, on right side of irrigation conduit outlet upstream from Cipolletti Weir, located downstream from Lago Loco Dam 0.05 mi (0.08 km), 5.4 mi (8.67 km) south east from Sabana Grande Plaza and 0.35 mi (0.56 km) northeast from Escuela Río Cañas.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--March 2000 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 197 ft (60 m), from topographic map.

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

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum discharge, 105 ft^3/s (2.974 m^3/s) March 27, 2000, gage height, 2.15 ft (0.655 m) from rating curve extended above 70 ft^3/s (1.98 m^3/s) on basis of step-backwater analysis; no flow many days during the year 2000.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum discharge, 94 ft^3/s (2.662 m^3/s), March 20, gage height, 2 ft (0.610 m); minimum daily discharge, 6.3 ft^3/s (0.178 m^3/s), September 16.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	18	22	23	25	35	28	22	A	38	23	24
2	22	18	23	23	26	36	25	21	A	31	24	26
3	20	21	22	23	27	37	22	23	23	25	25	27
4	18	20	21	23	28	36	22	30	21	25	23	24
5	18	19	20	23	27	35	27	31	19	25	23	24
6	21	19	20	23	26	33	27	27	20	32	23	24
7	21	18	20	24	25	33	24	26	21	34	22	25
8	19	18	20	26	25	37	25	24	23	35	21	26
9	19	18	20	26	28	A	25	24	23	34	24	28
10	19	19	20	24	A	A	23	26	25	30	29	24
11	19	21	20	24	A	A	23	24	22	30	30	21
12	19	19	20	24	A	38	28	25	22	33	29	21
13	19	10	20	23	37	28	19	25	22	36	25	25
14	20	11	20	23	34	28	34	23	27	36	21	24
15	20	18	20	26	34	32	32	20	30	33	21	19
16	19	18	12	24	34	33	26	20	30	31	21	18
17	19	18	1.5	21	36	32	23	21	30	25	22	18
18	18	18	15	21	37	34	23	22	28	25	23	18
19	18	18	31	21	38	34	23	20	23	25	25	18
20	18	18	22	24	37	32	26	19	23	31	23	21
21	5.2	20	22	26	35	32	23	20	26	36	22	24
22	12	20	24	25	35	32	18	20	30	35	22	22
23	29	21	25	23	36	36	22	20	32	36	24	23
24	19	21	24	22	29	40	21	A	39	37	24	23
25	18	21	23	22	36	37	21	A	37	36	25	22
26	18	22	23	24	35	31	22	A	30	36	27	22
27	21	21	23	8.1	34	27	23	A	30	36	25	25
28	22	21	23	12	33	27	23	A	34	30	23	25
29	25	21	25	30	33	29	25	A	31	28	24	25
30	26	21	27	26	---	21	24	A	31	25	24	26
31	A	---	24	25	---	31	---	A	---	22	23	---
TOTAL	---	566	652.5	712.1	---	---	727	A	---	971	740	692
MEAN	---	18.9	21.0	23.0	---	---	24.2	A	---	31.3	23.9	23.1
MAX	---	22	31	30	---	---	34	A	---	38	30	28
MIN	---	10	1.5	8.1	---	---	18	A	---	22	21	18
AC-FT	---	1,120	1,290	1,410	---	---	1,440	A	---	1,930	1,470	1,370

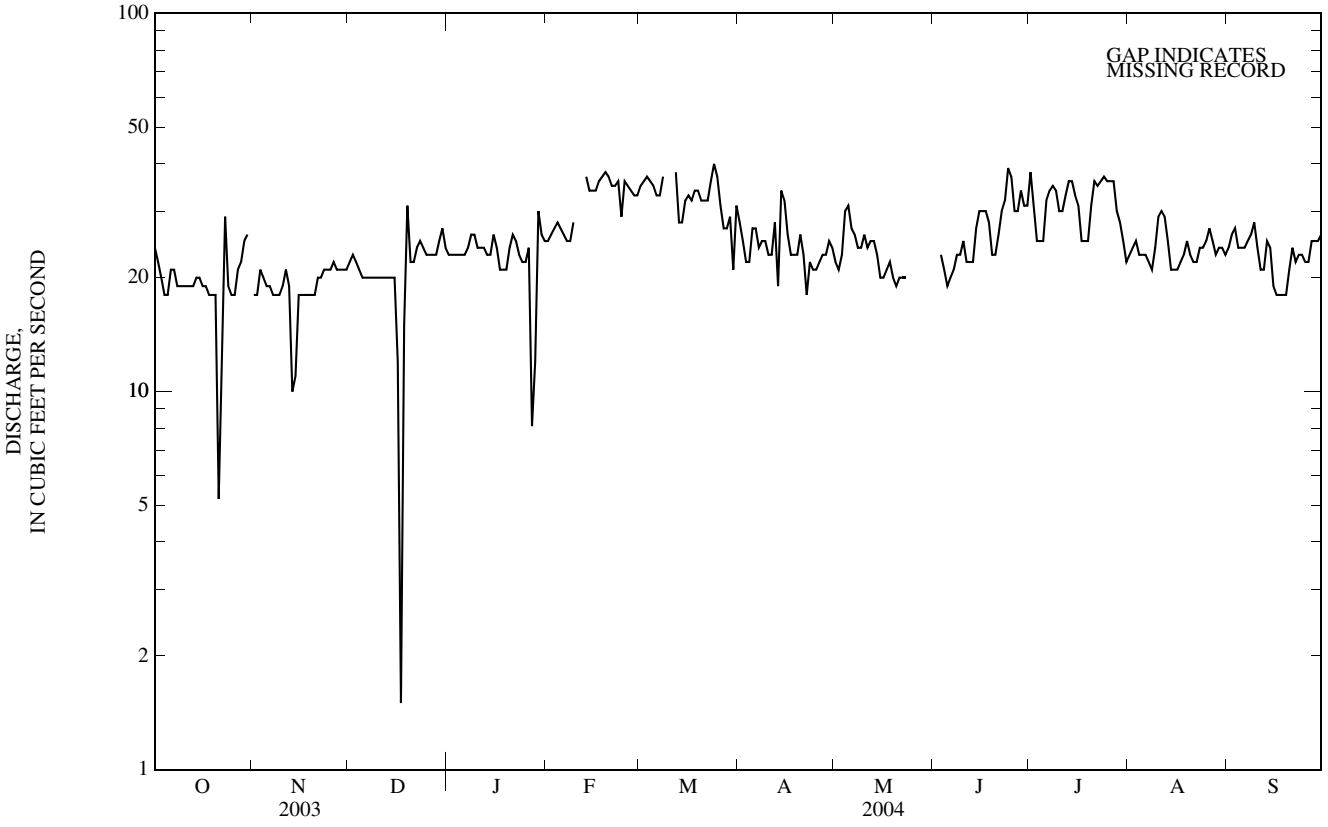
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2004, BY WATER YEAR (WY)

MEAN	28.4	28.9	30.1	40.0	55.5	59.7	31.0	28.7	42.2	44.0	39.3	27.4
MAX	34.0	34.8	40.4	50.1	63.6	67.0	38.1	38.0	57.2	53.2	45.2	36.1
(WY)	(2002)	(2002)	(2003)	(2002)	(2002)	(2003)	(2002)	(2003)	(2003)	(2002)	(2003)	(2001)
MIN	22.7	18.9	21.0	23.0	48.9	52.4	24.2	18.6	31.7	31.3	23.9	20.3
(WY)	(2001)	(2004)	(2004)	(2004)	(2003)	(2002)	(2004)	(2001)	(2001)	(2004)	(2004)	(2003)

A No gage height record

50128905 CANAL DE RIEGO DE LAJAS BELOW LAGO LOCO DAM, YAUCO, PR—Continued

SUMMARY STATISTICS	WATER YEARS 2000 - 4	
ANNUAL MEAN	41.0	
HIGHEST ANNUAL MEAN	41.0	2002
LOWEST ANNUAL MEAN	41.0	2002
HIGHEST DAILY MEAN	98	Mar 28, 2000
LOWEST DAILY MEAN	1.5	Dec 17, 2003
ANNUAL SEVEN-DAY MINIMUM	15	May 13, 2001
MAXIMUM PEAK FLOW	105	Mar 27, 2000
MAXIMUM PEAK STAGE	2.15	Mar 27, 2000
ANNUAL RUNOFF (AC-FT)	29,720	
10 PERCENT EXCEEDS	62	
50 PERCENT EXCEEDS	39	
90 PERCENT EXCEEDS	24	



50128920 CANAL DE RIEGO DE LAJAS ABOVE MAJINAS FILTRATION PLANT, PR

LOCATION.--Lat 18°02'41", long 66°56'59", Hydrologic Unit 21010003, 0.1 mi (0.2 km) south of intersection of Highways 2 and 117, 2.1 mi, (3.4 km) northeast of Escuela Thomas A. Edison, 0.5 mi (0.8 km) southeast of Escuela Dr. Santiago Veve, and 2.6 mi (4.2 km) southeast of Plaza de Sabana Grande.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--February 2000 to current year.

GAGE.--Water-stage recorder. Altitude of gage is about 164 ft (50 m) from topographic map.

REMARKS.--Records fair.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum discharge, 199 ft^3/s (5.64 m^3/s), May 6, 2001, gage height, 5.43 ft (1.66 m) from rating curve extended above 60 ft^3/s (1.70 m^3/s) on basis of step-backwater analysis; minimum daily discharge, 1.6 ft^3/s (0.045 m^3/s), October 23, 2002.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum discharge, 134 ft^3/s (3.79 m^3/s), November 13, gage height, 4.44 ft (1.35 m); minimum daily discharge, 1.4 ft^3/s (.039 m^3/s), December 17, 2003.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

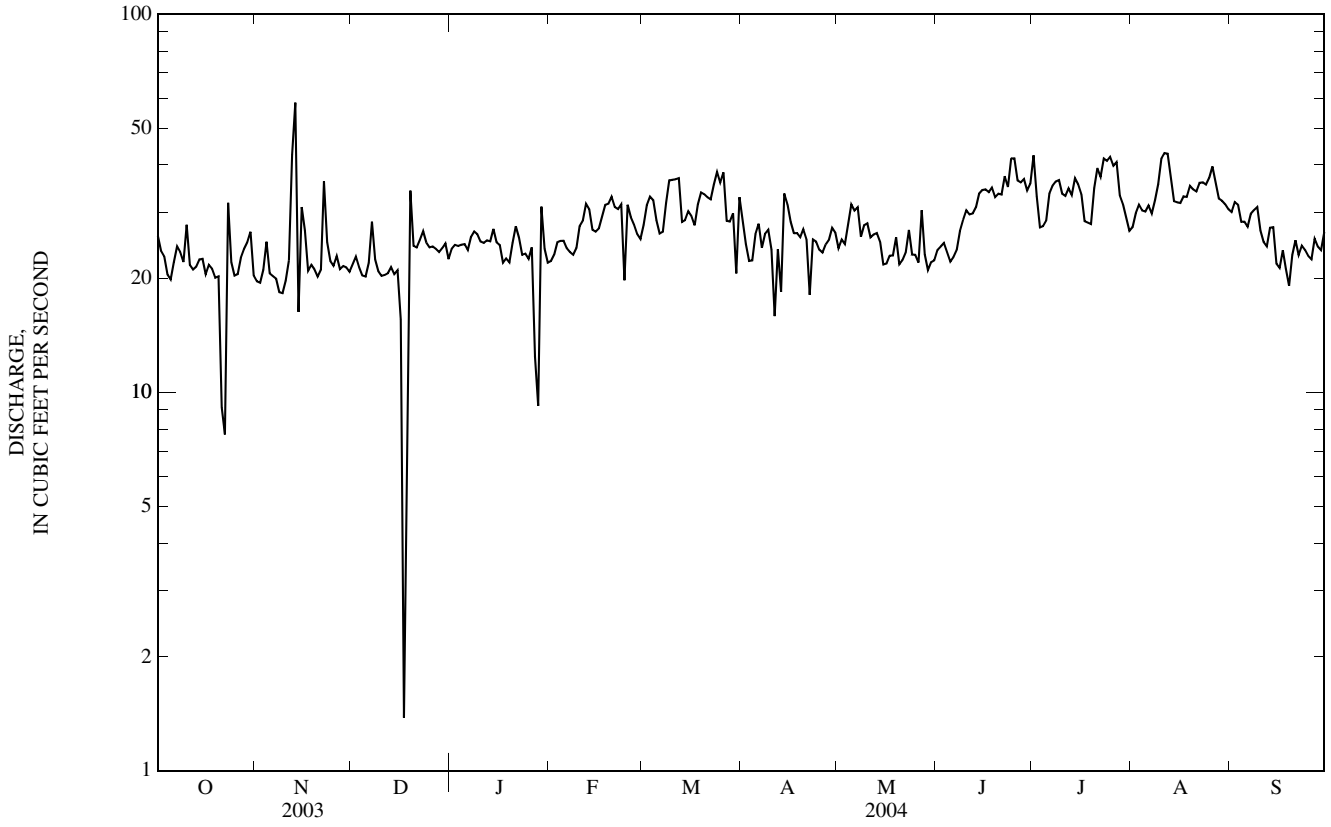
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	20	22	24	22	28	28	24	24	42	27	30
2	24	20	23	25	23	31	25	25	24	33	30	32
3	23	21	21	24	25	33	22	25	25	27	31	31
4	21	25	20	25	25	32	22	28	23	28	30	28
5	20	21	20	25	25	29	26	31	22	28	30	28
6	22	20	22	24	24	26	28	30	23	34	31	27
7	24	20	28	26	24	27	24	31	24	35	30	30
8	24	18	22	27	23	32	26	26	27	36	32	30
9	22	18	21	26	24	36	27	28	29	36	36	31
10	28	20	20	25	28	37	24	28	30	34	42	27
11	22	22	20	25	28	37	16	26	30	33	43	25
12	21	43	21	25	32	37	24	26	30	35	43	24
13	22	58	21	25	31	28	18	26	31	33	37	27
14	22	16	21	27	27	29	34	25	34	37	32	27
15	23	31	21	25	27	30	31	22	34	36	32	22
16	21	27	16	25	27	29	28	22	34	33	32	21
17	22	21	1.4	22	29	28	26	23	34	28	33	24
18	21	22	9.3	23	31	31	26	23	35	28	33	21
19	20	21	34	22	32	34	26	26	33	28	35	19
20	20	20	24	25	33	33	27	22	34	35	34	23
21	9.1	21	24	28	31	33	25	22	33	39	34	25
22	7.7	36	25	26	31	32	18	23	37	37	36	23
23	32	25	27	23	31	36	25	27	35	42	36	24
24	22	22	25	23	20	38	25	23	42	41	35	24
25	20	22	24	23	31	36	24	23	42	42	37	23
26	21	23	24	24	29	38	23	22	36	40	40	23
27	23	21	24	12	28	28	25	30	36	41	36	26
28	24	22	24	9.2	26	28	25	23	37	33	33	24
29	25	21	24	31	25	30	27	21	34	31	32	24
30	27	21	25	24	---	21	26	22	36	29	31	27
31	20	---	23	22	---	33	---	22	---	27	31	---
TOTAL	678.8	718	676.7	740.2	792	980	751	775	948	1,061	1,054	770
MEAN	21.9	23.9	21.8	23.9	27.3	31.6	25.0	25.0	31.6	34.2	34.0	25.7
MAX	32	58	34	31	33	38	34	31	42	42	43	32
MIN	7.7	16	1.4	9.2	20	21	16	21	22	27	27	19
AC-FT	1,350	1,420	1,340	1,470	1,570	1,940	1,490	1,540	1,880	2,100	2,090	1,530

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2004, BY WATER YEAR (WY)

MEAN	23.9	28.1	30.9	40.0	45.2	45.6	30.7	24.8	37.7	43.6	38.2	25.6
MAX	31.4	36.6	37.8	46.5	58.6	58.9	36.7	26.8	48.4	49.3	42.3	29.2
(WY)	(2002)	(2002)	(2003)	(2001)	(2002)	(2003)	(2002)	(2002)	(2003)	(2000)	(2003)	(2001)
MIN	20.9	23.9	21.8	23.9	27.3	31.6	25.0	22.6	31.6	34.2	34.0	23.0
(WY)	(2001)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2001)	(2004)	(2004)	(2004)	(2000)

SUMMARY STATISTICS	FOR 2004 WATER YEAR		WATER YEARS 2000 - 2004	
ANNUAL TOTAL	9,944.7			
ANNUAL MEAN	27.2		27.2	
HIGHEST ANNUAL MEAN			27.2	2004
LOWEST ANNUAL MEAN			27.2	2004
HIGHEST DAILY MEAN	58	Nov 13	77	Jul 25, 2000
LOWEST DAILY MEAN	1.4	Dec 17	1.4	Dec 17, 2003
ANNUAL SEVEN-DAY MINIMUM	16	Dec 12	13	Oct 9, 2002
MAXIMUM PEAK FLOW	134	Nov 13	199	May 6, 2001
MAXIMUM PEAK STAGE	3.80	Nov 13	5.43	May 6, 2001
ANNUAL RUNOFF (AC-FT)	19,730		19,680	
10 PERCENT EXCEEDS	36		36	
50 PERCENT EXCEEDS	26		26	
90 PERCENT EXCEEDS	21		21	

50128920 CANAL DE RIEGO DE LAJAS ABOVE MAJINAS FILTRATION PLANT, PR—Continued



50128925 CANAL DE RIEGO DE LAJAS BELOW MAJINAS FILTRATION PLANT, PR

LOCATION.--Lat 18°02'41", long 66°57'01", Hydrologic Unit 21010004, on upstream side from iron platform used as cross way and reference point, downstream of Majinas Filtration Plant intake, 0.08 mi (0.12 km) east of new Highway 2, 0.10 mi (0.16 km) south of Highway 121, and 2.6 mi (4.2 km) southeast of Plaza de Sabana Grande.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--February 2000 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 164 ft (50 m), from topographic map.

REMARKS.--Records fair, except those above 50 ft^3/s (1.46 m^3/s), which are poor.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum discharge, 197 ft^3/s (5.58 m^3/s), May 6, 2001, gage height, 5.39 ft (1.64 m) from rating curve extended above 50 ft^3/s (1.416 m^3/s) on basis of logarithmic extension using gage height and flow comparison with upstream station 50128920 Canal de Riego de Lajas above Majinas Filtration Plant, Sabana Grande, Puerto Rico; minimum daily discharge, .01 ft^3/s (0.00 m^3/s), September 17, 2003.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum discharge, 123 ft^3/s (4.35 m^3/s) November 13, gage height, 4.35 ft (1.33 m); minimum daily discharge .23 ft^3/s (0.01 m^3/s) December 17.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

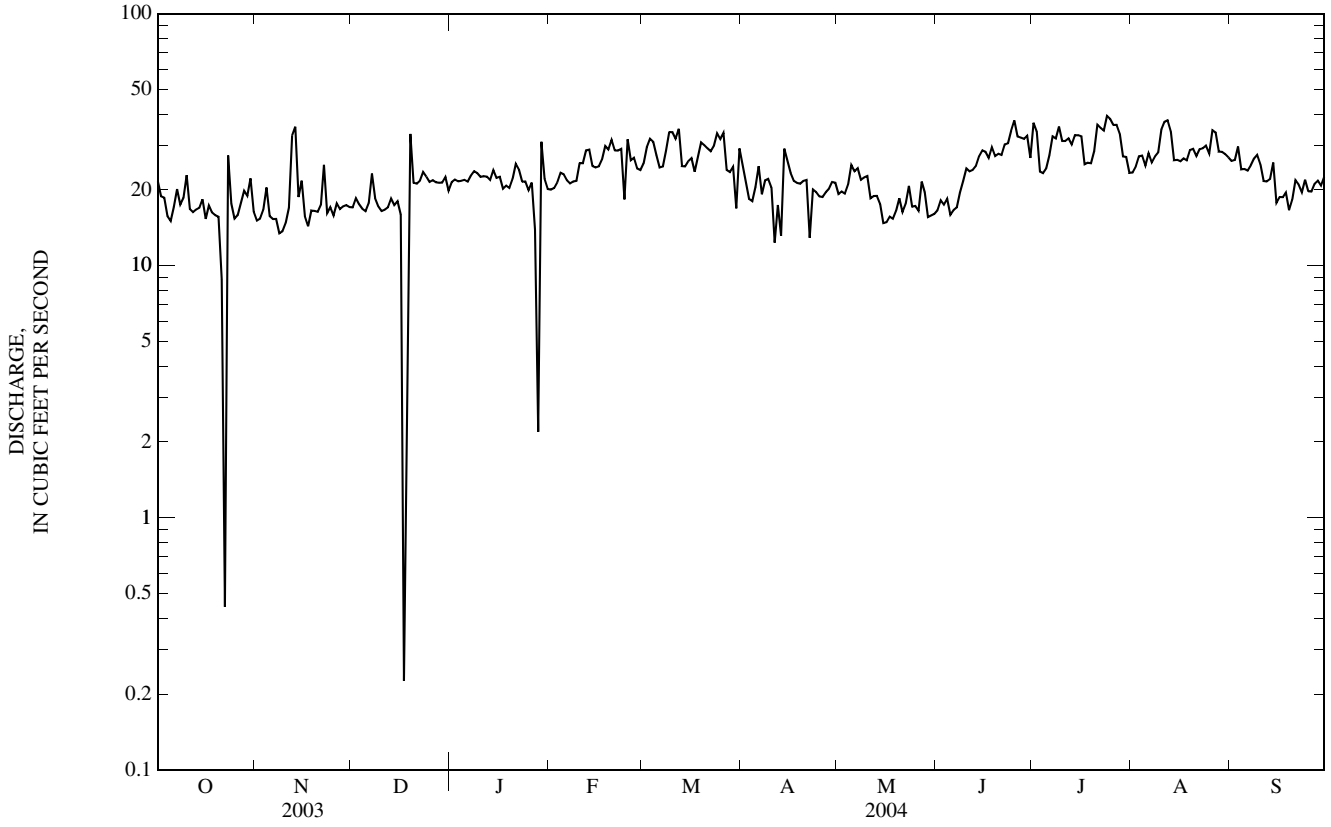
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.6	15.1	17.0	21.5	20.1	25.5	24.9	19.2	16.6	36.9	23.5	26.0
2	18.9	15.4	18.5	22.0	20.3	29.6	21.3	19.7	18.2	34.2	24.7	26.3
3	18.6	16.7	17.5	21.6	21.5	31.9	18.4	19.3	17.5	23.6	27.2	29.7
4	15.7	20.4	16.8	21.7	23.4	31.0	18.0	21.0	18.5	23.3	27.4	24.2
5	15.1	15.7	16.5	21.9	23.1	27.5	20.6	25.1	15.9	24.4	25.0	24.2
6	17.1	15.3	17.7	21.6	21.9	24.5	24.8	23.7	16.6	27.5	28.0	23.9
7	20.1	15.4	23.2	22.8	21.2	24.7	19.2	24.4	17.0	32.6	25.7	25.0
8	17.5	13.5	18.5	23.7	21.6	28.7	21.8	21.9	19.5	32.0	27.1	26.6
9	18.6	13.7	17.2	23.3	21.7	33.9	22.1	22.4	21.7	35.6	28.1	27.5
10	22.9	14.8	16.5	22.5	25.5	33.9	20.4	22.7	24.3	31.3	34.8	25.3
11	16.8	17.0	16.7	22.7	25.5	31.9	12.4	18.5	23.7	31.3	37.2	21.7
12	16.3	32.8	17.1	22.6	28.7	35.0	17.4	18.9	24.0	32.0	37.8	21.6
13	16.7	35.6	18.5	21.9	28.9	24.8	13.2	18.9	24.9	30.3	34.1	22.1
14	17.0	18.7	17.4	24.0	24.9	24.8	29.1	17.6	27.2	33.0	26.3	25.7
15	18.4	21.8	18.0	22.3	24.5	26.0	26.0	14.7	28.7	32.9	26.3	17.8
16	15.3	15.7	16.0	22.5	24.8	26.7	23.4	14.9	28.3	32.6	26.0	18.7
17	17.4	14.3	0.226	20.2	26.4	23.6	21.7	15.7	26.8	25.3	26.7	18.7
18	16.3	16.6	1.57	20.8	29.9	27.0	21.3	15.4	29.5	25.6	26.2	19.5
19	15.9	16.5	33.3	20.4	29.0	30.9	21.2	16.5	27.3	25.5	28.8	16.6
20	15.7	16.4	21.4	22.1	31.6	30.1	21.7	18.5	27.8	28.5	29.1	18.3
21	8.85	17.4	21.2	25.4	28.7	29.2	21.9	16.3	27.5	36.3	27.3	21.8
22	0.444	25.1	21.8	24.0	28.6	28.5	12.9	17.6	30.3	35.3	29.0	21.0
23	27.4	16.2	23.5	21.6	29.1	29.9	20.1	20.7	30.6	34.4	29.2	19.6
24	17.7	17.1	22.6	21.6	18.3	33.6	19.6	17.2	34.3	39.3	30.0	21.9
25	15.4	15.9	21.5	20.0	31.7	31.8	18.9	17.3	37.7	38.3	27.9	19.8
26	15.9	17.7	21.9	21.4	26.2	33.7	18.7	16.5	32.6	36.2	34.5	19.7
27	17.8	16.8	21.5	13.9	26.8	24.0	19.6	21.6	32.2	36.2	33.8	21.2
28	19.9	17.2	21.4	2.19	24.3	23.6	20.2	19.6	31.9	33.4	28.4	21.8
29	18.9	17.4	21.4	31.0	24.0	24.7	21.5	15.6	32.8	27.2	28.3	20.8
30	22.2	17.1	22.5	22.1	---	16.9	21.4	15.8	26.8	27.0	27.7	22.5
31	16.4	---	19.8	20.2	---	29.2	---	16.1	---	23.4	26.9	---
TOTAL	532.794	539.3	578.696	665.49	732.2	877.1	613.7	583.3	770.7	965.4	893.0	669.5
MEAN	17.2	18.0	18.7	21.5	25.2	28.3	20.5	18.8	25.7	31.1	28.8	22.3
MAX	27.4	35.6	33.3	31.0	31.7	35.0	29.1	25.1	37.7	39.3	37.8	29.7
MIN	0.444	13.5	0.226	2.19	18.3	16.9	12.4	14.7	15.9	23.3	23.5	16.6
AC-FT	1,060	1,070	1,150	1,320	1,450	1,740	1,220	1,160	1,530	1,910	1,770	1,330

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2004, BY WATER YEAR (WY)

MEAN	20.7	22.1	26.6	34.9	37.7	41.2	27.1	23.3	30.3	37.2	33.4	24.5
MAX	30.1	33.1	34.0	42.2	46.1	55.6	33.7	29.9	43.2	41.2	38.2	31.1
(WY)	(2002)	(2002)	(2003)	(2003)	(2003)	(2003)	(2000)	(2003)	(2003)	(2001)	(2003)	(2002)
MIN	15.6	12.4	18.7	21.5	25.2	28.3	20.5	18.2	24.2	31.1	27.9	19.1
(WY)	(2001)	(2001)	(2004)	(2004)	(2004)	(2004)	(2004)	(2001)	(2000)	(2004)	(2001)	(2000)

50128925 CANAL DE RIEGO DE LAJAS BELOW MAJINAS FILTRATION PLANT, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2000 - 2004	
ANNUAL TOTAL	11,871.001		8,421.180			
ANNUAL MEAN	32.5		23.0		29.1	
HIGHEST ANNUAL MEAN					34.6	2003
LOWEST ANNUAL MEAN					23.0	2004
HIGHEST DAILY MEAN	71.7	Mar 13	39.3	Jul 24	86.5	Aug 2, 2002
LOWEST DAILY MEAN	0.011	Sep 17	0.226	Dec 17	0.011	Sep 17, 2003
ANNUAL SEVEN-DAY MINIMUM	13	Dec 12	13	Dec 12	10	Nov 7, 2000
MAXIMUM PEAK FLOW			123	Nov 13	197	May 6, 2001
MAXIMUM PEAK STAGE			4.35	Nov 13	5.39	May 6, 2001
ANNUAL RUNOFF (AC-FT)	23,550		16,700		21,060	
10 PERCENT EXCEEDS	52		32		47	
50 PERCENT EXCEEDS	30		22		27	
90 PERCENT EXCEEDS	17		16		16	



50128935 CANAL DE RIEGO DE LAJAS ABOVE LAJAS FILTRATION PLANT AT LAJAS, PR

LOCATION.--Lat 18°02'45", long 66°03'16", Hydrologic Unit 21010003, on upstream side of Lajas Filtration Plant intake 2.8 mi (4.4 km) south of San Germán Plaza, 2.6 mi (4.2 km) east of Cerro Quemado and 1.5 mi (2.4 km) northeast of Universidad de Puerto Rico, Estación Experimental Agrícola and 0.6 mi (0.96 km) northwest from Lajas Plaza.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--January 2001 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 131.2 ft (40 m), from topographic map.

REMARKS.--Records poor.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum discharge, 69.9 ft^3/s (1.979 m^3/s), March 26, 2004, gage height, 3.42 ft (1.042 m) from rating curve extended based on measurements, but could be higher during period of no gage-height record; no flow many days each year.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum discharge, 69.9 ft^3/s (1.979 m^3/s), March 26, 2004, gage height 3.42 ft (1.042 m); minimum discharge, 0.12 ft^3/s (.004 m^3/s), January 28.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	A	A	A	A	14.4	18.9	19.2	15.2	13.3	18.8	16.0	13.2
2	A	A	A	A	12.7	21.5	18.1	16.3	13.5	22.6	15.9	11.8
3	A	A	A	A	13.4	24.6	16.1	15.2	12.8	15.1	15.4	14.4
4	A	A	A	A	15.6	22.9	16.6	16.1	14.6	16.0	18.9	12.1
5	A	A	A	A	14.6	18.1	18.8	18.9	15.8	17.1	15.2	12.5
6	A	A	A	A	14.1	15.6	21.6	16.0	16.5	17.3	16.8	12.1
7	A	A	A	A	13.7	16.4	13.0	16.4	14.6	19.9	14.7	11.9
8	A	A	A	A	14.2	16.3	15.0	16.0	15.7	18.2	16.1	11.0
9	A	A	A	A	10.4	21.6	15.9	18.7	13.5	21.2	13.3	12.8
10	A	A	A	A	14.7	23.5	14.1	18.6	14.5	21.5	15.2	12.6
11	A	A	A	A	14.3	19.1	3.33	15.7	18.4	22.2	16.5	11.7
12	A	A	A	A	16.1	23.8	8.67	16.6	18.7	23.2	17.4	11.2
13	A	A	A	A	20.2	14.9	8.62	16.2	18.2	19.2	16.5	10.3
14	A	A	A	A	15.8	14.8	20.8	17.1	16.6	20.0	15.0	17.4
15	A	A	A	A	16.4	17.3	18.8	11.5	15.7	20.7	14.9	15.0
16	A	A	A	A	17.4	20.4	17.1	12.2	15.0	20.1	12.6	18.6
17	A	A	A	A	16.1	19.3	17.2	11.8	13.4	16.4	10.8	15.1
18	A	A	A	A	19.1	21.4	16.8	14.8	16.6	17.2	12.6	15.2
19	A	A	A	A	16.8	23.2	17.2	13.6	16.2	17.1	11.6	11.5
20	A	A	A	A	21.9	22.6	17.4	13.5	16.2	17.8	11.9	10.9
21	A	A	A	A	22.6	23.3	18.7	9.96	15.8	23.1	12.3	12.1
22	A	A	A	18.1	23.6	23.5	7.34	13.0	18.7	19.7	14.9	12.1
23	A	A	A	17.7	23.5	24.5	16.0	19.3	21.8	18.5	15.5	11.7
24	A	A	A	16.7	14.0	27.0	15.2	15.0	25.4	27.8	12.4	14.1
25	A	A	A	16.0	19.8	27.9	15.5	15.0	27.2	28.3	11.0	11.2
26	A	A	A	14.9	17.9	31.1	14.0	13.9	25.7	28.5	15.2	11.7
27	A	A	A	9.75	21.4	23.7	15.3	20.0	17.2	27.3	16.0	13.1
28	A	A	A	0.124	19.2	23.0	16.4	17.3	19.9	21.2	13.3	14.4
29	A	A	A	23.2	19.5	21.2	16.9	12.7	17.3	12.5	14.2	10.8
30	A	A	A	13.7	---	13.0	16.4	14.4	5.60	14.1	11.3	12.5
31	A	---	A	13.5	---	24.0	---	14.7	---	14.7	10.8	---
TOTAL	---	---	---	---	493.4	658.4	466.06	475.66	504.40	617.3	444.2	385.0
MEAN	---	---	---	---	17.0	21.2	15.5	15.3	16.8	19.9	14.3	12.8
MAX	---	---	---	---	23.6	31.1	21.6	20.0	27.2	28.5	18.9	18.6
MIN	---	---	---	---	10.4	13.0	3.33	9.96	5.60	12.5	10.8	10.3
AC-FT	---	---	---	---	979	1,310	924	943	1,000	1,220	881	764

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

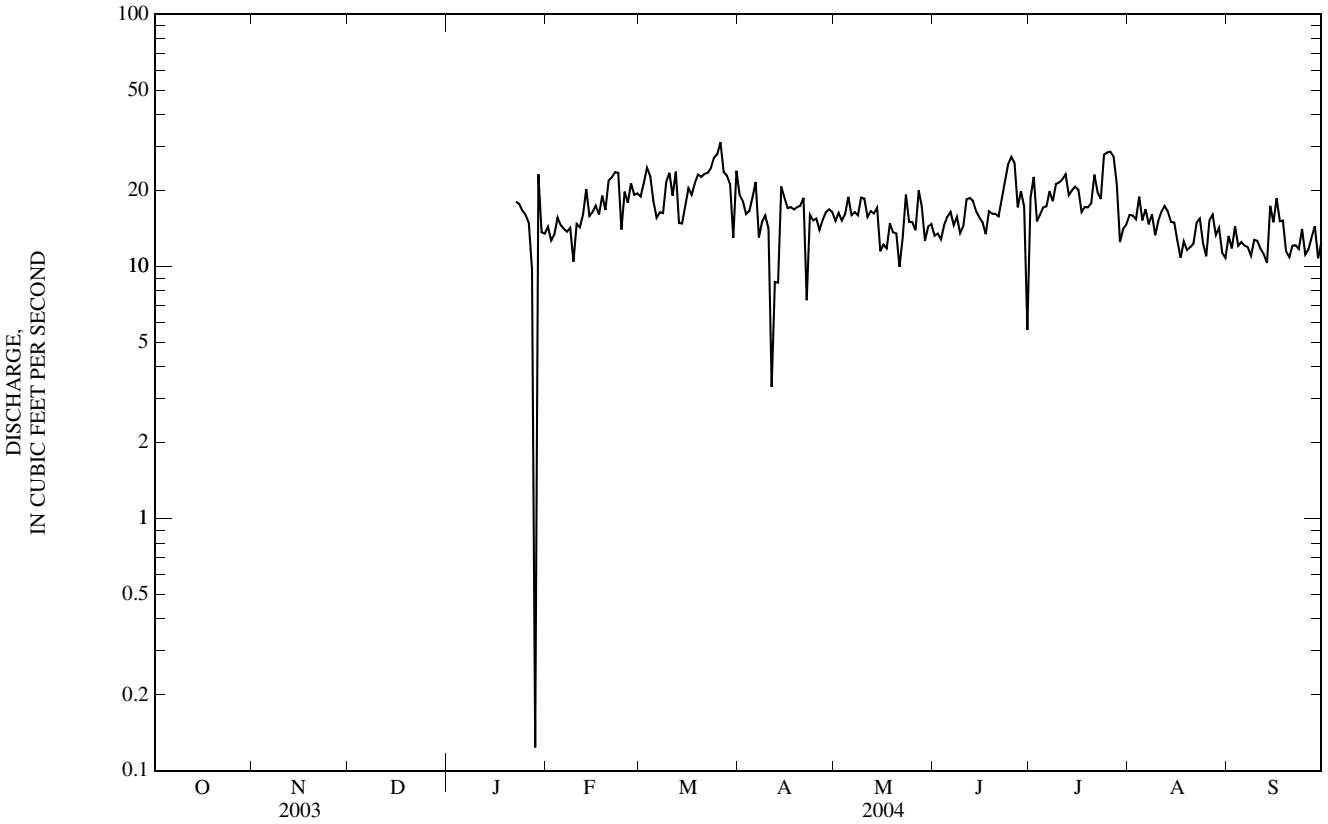
MEAN	15.3	18.8	20.7	22.0	19.9	25.6	14.9	15.3	16.8	22.8	10.7	12.8
MAX	19.0	22.4	20.7	22.0	21.5	30.0	15.5	15.3	16.8	24.8	14.3	12.8
(WY)	(2002)	(2002)	(2003)	(2003)	(2002)	(2003)	(2004)	(2004)	(2004)	(2003)	(2004)	(2004)
MIN	11.6	15.3	20.7	22.0	17.0	21.2	14.3	15.3	16.8	19.9	7.09	12.8
(WY)	(2003)	(2003)	(2003)	(2003)	(2004)	(2004)	(2003)	(2004)	(2004)	(2004)	(2002)	(2004)

SUMMARY STATISTICS — WATER YEARS 2001 - 2004

HIGHEST DAILY MEAN	54.0	Aug 7, 2003
LOWEST DAILY MEAN	0.000	Oct 23, 2002
ANNUAL SEVEN-DAY MINIMUM	3.4	Aug 15, 2002
MAXIMUM PEAK FLOW	70	Mar 26, 2004
MAXIMUM PEAK STAGE	3.42	Mar 26, 4007

A No gage-height record

50128935 CANAL DE RIEGO DE LAJAS ABOVE LAJAS FILTRATION PLANT AT LAJAS, PR—Continued



50128940 CANAL DE RIEGO DE LAJAS BELOW LAJAS FILTRATION PLANT AT LAJAS, PR

LOCATION.--Lat 18°02'44", long 66°03'17", Hydrologic Unit 21010003, on downstream side of Lajas Filtration Plant intake 2.8 mi (4.4 km) south of San Germán town plaza, 2.6 mi (4.2 km) east of Cerro Quemado and 1.5 mi (2.4 km) northeast of Universidad de Puerto Rico, Estación Experimental Agrícola and 0.6 mi (0.96 km) northwest from Lajas Plaza.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--January 2001 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 131.2 ft (40 m), from topographic map.

REMARKS.--Records fair.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum discharge, 190 ft^3/s (5.381 m^3/s), May 6, 2001, gage height, 3.64 ft (1.109 m) from rating curve; no flow many days each year.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum discharge, 129.0 ft^3/s (3.653 m^3/s), January 14, gage height, 3.65 ft (0.103 m); no flow many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.5	9.54	11.3	10.9	A	A	13.4	8.90	7.96	18.1	11.4	12.3
2	9.37	9.59	11.1	14.1	A	A	12.5	10.0	8.10	23.0	10.9	10.4
3	9.94	10.3	10.0	13.5	A	A	11.1	9.19	7.48	14.0	10.3	13.5
4	8.82	16.8	8.62	13.1	A	A	11.5	9.82	9.16	15.0	13.3	12.4
5	9.11	10.5	9.64	14.2	A	A	13.6	13.3	9.64	16.1	10.1	12.7
6	9.85	10.1	14.0	15.1	A	A	16.3	11.1	9.54	15.4	10.6	12.0
7	11.1	10.9	A	13.0	A	A	8.27	11.5	8.02	16.7	8.98	11.5
8	9.81	10.1	A	9.90	A	A	9.99	11.0	8.86	13.7	11.1	10.3
9	9.37	9.08	5.91	11.4	A	A	10.7	13.9	7.11	16.8	9.02	12.3
10	19.9	8.20	4.61	10.7	A	A	8.97	13.7	8.10	16.9	10.7	11.1
11	10.8	14.2	6.04	11.6	A	13.1	0.789	10.8	11.2	17.5	12.8	9.79
12	9.24	A	4.66	12.2	A	17.4	5.37	11.7	11.2	18.4	14.1	9.61
13	10.3	63.4	8.94	12.2	A	8.93	5.58	11.4	11.5	14.4	13.1	9.09
14	7.80	15.7	7.57	24.3	A	8.84	15.5	12.6	10.1	15.8	11.6	15.7
15	9.10	19.6	7.45	18.1	A	11.0	13.6	7.06	9.57	16.5	11.7	11.5
16	6.23	15.6	4.55	14.0	A	14.1	11.8	7.94	9.13	16.5	9.44	14.5
17	8.33	10.0	0.000	6.44	A	12.9	11.9	7.74	7.96	13.4	7.69	11.0
18	8.70	9.70	0.000	8.67	A	14.8	11.6	10.8	10.5	14.2	9.42	13.1
19	9.39	9.74	27.0	5.87	A	16.3	11.4	9.02	10.3	14.1	8.48	9.05
20	8.28	8.37	9.77	9.23	A	15.8	10.8	8.18	10.3	14.6	8.88	8.51
21	3.90	9.61	9.40	A	A	16.3	12.1	4.94	10.1	19.2	9.19	9.90
22	0.000	22.8	8.92	A	A	16.6	2.73	7.50	12.8	15.8	11.5	10.2
23	15.1	13.5	9.03	A	A	17.6	9.91	13.1	14.6	14.6	11.5	9.86
24	9.25	11.6	6.90	A	A	19.8	9.09	9.62	14.7	23.7	8.76	12.1
25	8.25	8.34	11.2	A	A	19.8	9.28	9.72	14.3	24.5	7.99	9.04
26	8.39	9.46	10.2	A	A	23.3	8.04	8.64	25.2	25.1	14.5	9.30
27	8.84	8.60	6.13	A	A	16.2	9.27	14.9	15.9	24.0	16.7	10.4
28	11.6	9.53	6.39	A	A	15.7	10.3	11.6	19.2	17.9	12.4	11.7
29	11.7	9.93	6.77	A	---	14.2	10.5	7.14	16.5	9.33	13.5	8.52
30	17.4	9.88	11.6	A	---	8.84	10.1	8.77	3.30	10.7	10.4	10.0
31	8.71	---	5.74	A	---	17.6	---	9.17	---	10.8	9.65	---
TOTAL	302.080	---	---	---	---	---	305.989	314.75	332.33	516.73	339.70	331.37
MEAN	9.74	---	---	---	---	---	10.2	10.2	11.1	16.7	11.0	11.0
MAX	19.9	---	---	---	---	---	16.3	14.9	25.2	25.1	16.7	15.7
MIN	0.000	---	---	---	---	---	0.789	4.94	3.30	9.33	7.69	8.51
AC-FT	599	---	---	---	---	---	607	624	659	1,020	674	657

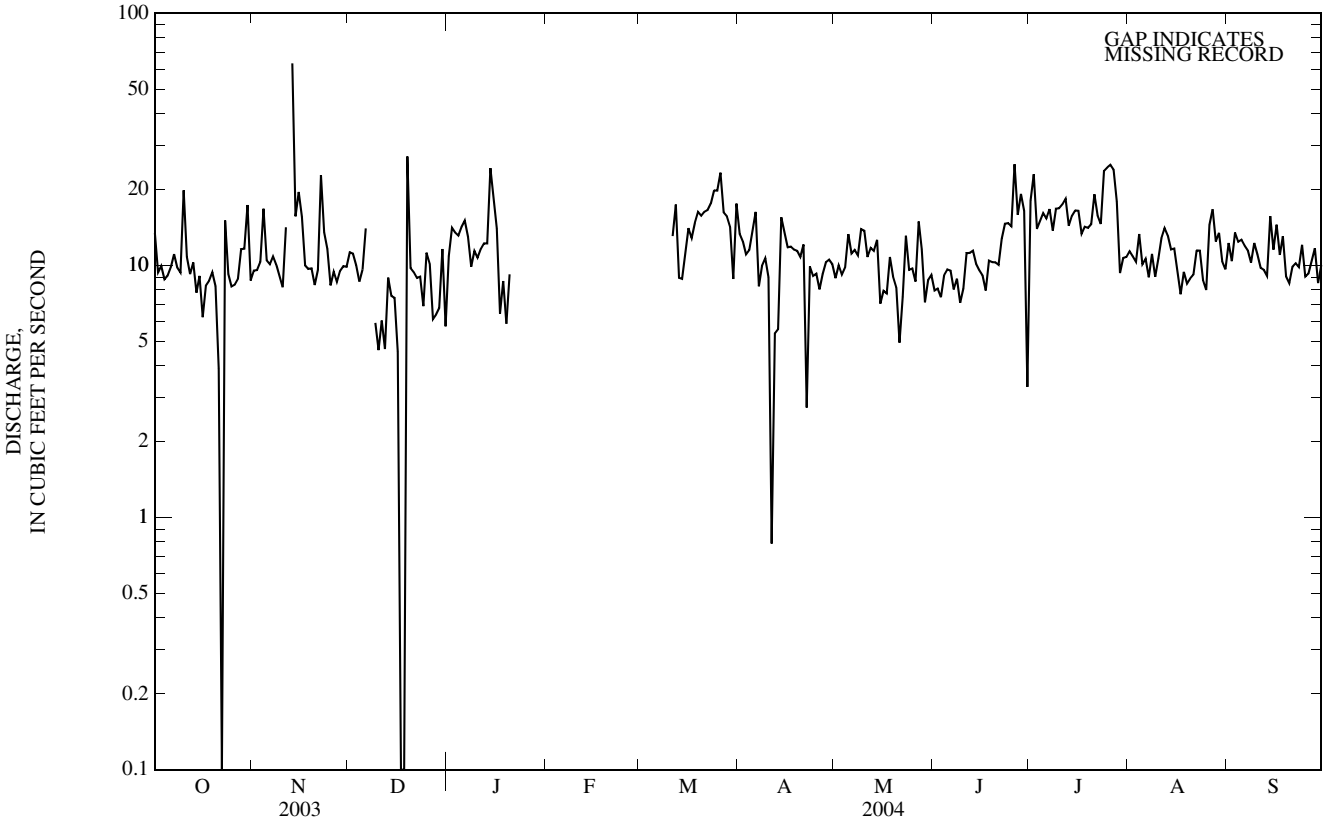
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

MEAN	11.5	15.0	13.9	16.4	17.4	19.3	12.1	10.5	13.4	17.2	14.4	11.8
MAX	15.5	17.9	14.8	17.0	20.2	24.2	14.8	14.1	20.2	22.3	20.4	14.0
(WY)	(2002)	(2002)	(2003)	(2003)	(2002)	(2003)	(2002)	(2003)	(2003)	(2002)	(2003)	(2001)
MIN	9.16	12.2	12.9	15.9	15.4	15.9	10.2	8.26	8.28	13.1	11.0	10.2
(WY)	(2003)	(2003)	(2002)	(2002)	(2001)	(2001)	(2004)	(2002)	(2001)	(2001)	(2004)	(2003)

A No gage-height record

50128940 CANAL DE RIEGO DE LAJAS BELOW LAJAS FILTRATION PLANT AT LAJAS, PR—Continued

SUMMARY STATISTICS	WATER YEARS 2001 - 2004	
ANNUAL MEAN	15.6	
HIGHEST ANNUAL MEAN	15.6	2003
LOWEST ANNUAL MEAN	15.6	2003
HIGHEST DAILY MEAN	63.4	Nov 13, 2003
LOWEST DAILY MEAN	0.000	Oct 23, 2002
ANNUAL SEVEN-DAY MINIMUM	2.5	Aug 15, 2002
MAXIMUM PEAK FLOW	190	May 6, 2001
MAXIMUM PEAK STAGE	3.64	May 6, 2001
ANNUAL RUNOFF (AC-FT)	11,280	
10 PERCENT EXCEEDS	25	
50 PERCENT EXCEEDS	14	
90 PERCENT EXCEEDS	8.8	



50128945 CANAL DE RIEGO DE LAJAS AT BO. PALMAREJO NR LAJAS, PR

LOCATION.--Lat 18°02'14", long 67°04'44", Hydrologic Unit 21010004, 0.2 mi (0.32 km) south from Escuela Palmarejo, 1.6 mi (2.57 km) southwest from Lajas Plaza church and 0.5 mi (.80 km) northwest from Universidad de Puerto Rico, Estación Experimental Agrícola.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--January 2001 to current year.

GAGE.--Water-stage recorder. Altitude of gage is about 98 ft (30 m) from topographic map.

REMARKS.--Records fair. Controlled by Lago Loco dam.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum discharge, 97 ft^3/s (2.75 m^3/s), May 6, 2001, gage height, 3.32 ft (1.01 m); no flow many days each year.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum discharge, 85 ft^3/s (2.41 m^3/s), November 13, gage height, 3.13 ft (0.96 m); no flow many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	6.1	9.7	9.6	8.0	9.3	9.1	6.4	6.6	8.7	9.4	0.00
2	6.1	6.2	7.2	11	7.3	9.2	9.8	7.4	6.6	11	9.0	0.00
3	6.9	6.1	7.6	11	7.9	11	8.4	6.3	6.3	8.0	8.2	0.25
4	6.2	12	7.7	11	9.9	11	9.0	6.6	7.9	9.0	11	0.00
5	6.7	5.3	8.3	11	8.6	9.7	9.3	6.6	9.6	9.9	8.3	0.49
6	6.6	5.3	11	11	8.2	8.8	11	5.6	9.0	8.1	7.6	4.8
7	7.0	6.3	20	9.4	8.6	9.5	6.1	8.5	6.3	9.5	7.4	1.5
8	6.7	7.2	9.4	8.2	9.4	8.2	7.7	9.7	6.3	8.3	9.2	0.31
9	7.6	6.5	4.2	8.0	5.7	12	8.7	13	5.8	13	6.9	3.2
10	20	5.9	A	8.8	8.7	12	7.6	8.7	6.8	15	8.2	2.8
11	9.1	13	A	9.2	8.7	9.5	0.80	3.2	8.9	15	8.9	4.2
12	7.5	15	A	9.6	9.9	13	4.2	6.2	10	14	11	5.4
13	8.2	51	A	9.3	12	7.6	4.9	6.7	10	7.7	11	3.4
14	5.7	14	A	14	10	7.0	7.9	13	7.5	10	9.8	8.6
15	6.5	18	7.0	9.6	11	8.8	8.0	7.0	7.3	10	9.8	9.7
16	4.3	15	4.0	10	11	13	8.1	7.9	7.0	12	7.3	11
17	6.1	7.2	0.00	7.5	8.6	11	8.6	5.6	6.3	9.1	5.8	9.1
18	6.7	7.3	0.00	8.6	12	12	8.3	12	8.1	10	7.8	14
19	6.9	8.9	9.5	7.4	10	13	7.8	7.8	8.9	9.2	5.9	8.2
20	6.0	6.9	7.7	7.5	15	15	6.9	8.9	9.0	9.4	5.7	6.1
21	2.9	7.9	7.6	14	14	16	8.7	4.2	8.5	13	7.9	6.2
22	0.00	23	7.8	12	15	16	1.1	6.8	12	11	9.8	7.3
23	7.9	13	7.0	13	13	16	6.3	13	12	9.7	7.9	6.5
24	5.5	8.6	7.7	11	9.5	16	6.6	6.7	14	23	1.3	8.4
25	4.8	7.4	11	10	8.5	16	7.0	8.2	15	22	2.2	7.2
26	5.1	7.4	9.7	9.0	8.9	23	5.3	7.4	22	24	9.8	8.4
27	4.9	8.0	7.9	6.1	11	35	6.6	13	12	17	7.1	9.7
28	6.9	9.0	8.1	0.07	11	32	7.8	10	12	15	2.1	12
29	5.4	9.1	6.8	17	11	15	7.7	6.5	4.1	6.1	0.04	7.4
30	8.7	9.0	6.9	6.2	---	7.9	7.3	8.1	0.61	8.0	0.00	8.1
31	4.6	---	5.7	3.6	---	11	---	8.7	---	8.4	0.00	---
TOTAL	206.10	325.6	---	293.67	292.4	414.5	216.60	249.7	266.41	364.1	216.34	174.25
MEAN	6.65	10.9	---	9.47	10.1	13.4	7.22	8.05	8.88	11.7	6.98	5.81
MAX	20	51	---	17	15	35	11	13	22	24	11	14
MIN	0.00	5.3	---	0.07	5.7	7.0	0.80	3.2	0.61	6.1	0.00	0.00
AC-FT	409	646	---	582	580	822	430	495	528	722	429	346

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

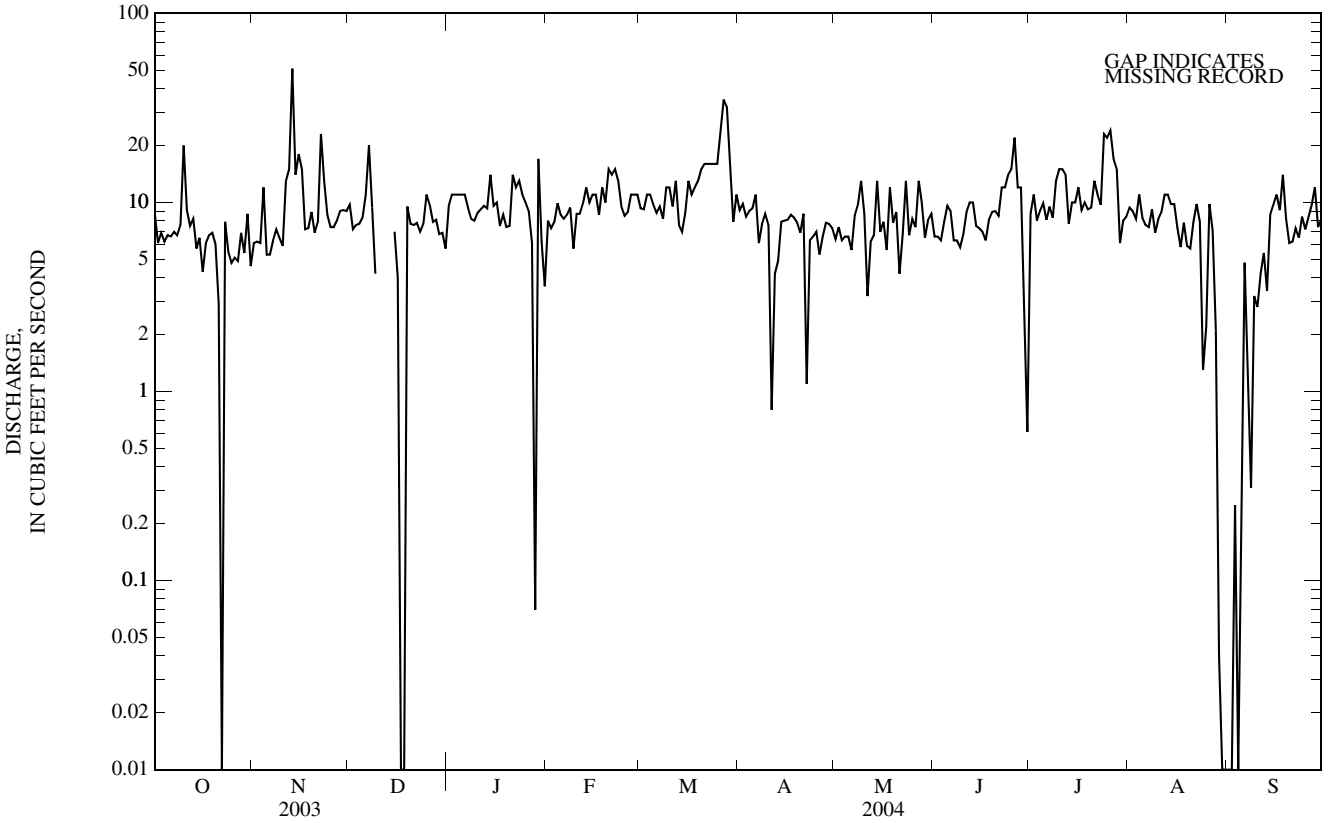
MEAN	9.29	12.1	10.7	12.0	11.5	13.6	7.22	8.23	11.3	15.2	10.3	8.60
MAX	13.1	15.3	11.9	14.0	14.1	15.7	7.22	10.9	18.0	20.0	13.6	11.3
(WY)	(2002)	(2002)	(2003)	(2003)	(2002)	(2003)	(2004)	(2003)	(2003)	(2002)	(2001)	(2001)
MIN	6.65	10.1	9.51	9.47	10.1	11.7	7.22	5.78	7.35	11.7	6.98	5.81
(WY)	(2004)	(2003)	(2002)	(2004)	(2004)	(2001)	(2004)	(2001)	(2001)	(2004)	(2004)	(2004)

SUMMARY STATISTICS — WATER YEARS 2001 - 2004

HIGHEST DAILY MEAN	51	Nov 13, 2003
LOWEST DAILY MEAN	0.00	Apr 13, 2001
ANNUAL SEVEN-DAY MINIMUM	0.04	Aug 29, 2004
MAXIMUM PEAK FLOW	97	May 6, 2001
MAXIMUM PEAK STAGE	3.32	May 6, 2001

A No gage-height record

50128945 CANAL DE RIEGO DE LAJAS AT BO. PALMAREJO NR LAJAS, PR—Continued



50129700 RIO LOCO AT GUANICA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 17°58'33", long 66°54'52", 0.6 mi (1.0 km) northwest of Guánica Plaza and 1.2 mi (1.9 km) northeast of Ensenada.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1975 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV 18...	1725	1,990	89	3.1	7.3	240	26.0	100	21.2	11.9	4.57	.5	12.1
MAR 29...	1410	--	120	3.4	7.4	579	25.3	160	33.9	18.4	5.86	2	55.7
MAY 26...	1415	--	170	7.6	8.0	301	26.7	140	25.7	18.0	2.04	.4	11.1
AUG 24...	1200	--	11	4.7	7.4	501	26.7	180	39.4	19.0	1.79	1	33.9

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
NOV 18...	94	11.9	<.2	17.2	11.4	--	147	788	74	.90	.07	.48	.500
MAR 29...	148	65.7	<.2	19.4	39.4	<.1	327	--	92	1.2	.09	.96	1.00
MAY 26...	127	11.9	<.2	24.7	11.3	--	181	--	152	.80	.04	.77	.780
AUG 24...	195	34.9	.2	24.1	23.0	--	295	--	<10	--	.04	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
NOV 18...	.02	.83	1.4	6.2	.56	20	4,600	39,000	--	--	--	--	--
MAR 29...	.04	1.1	2.2	9.7	.68	20	--	--	E1	93.9	116	<.2	5.6
MAY 26...	.01	.76	1.6	7.0	.22	10	E1,500	50,000	--	--	--	--	--
AUG 24...	--	--	--	--	.05	10	360	4,100	<2	73.1	59	<.2	3.6

Date	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
NOV 18...	--	--	--	--	--	--	--	--	--	--	--
MAR 29...	10	<.01	3,100	1.3	170	<.02	<3	<.3	8	<.80	<16
MAY 26...	--	--	--	--	--	--	--	--	--	--	--
AUG 24...	M	<.01	560	<1.0	62.6	<.02	<3	<.3	E2	<.10	<16

50129700 RIO LOCO AT GUANICA, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED
PESTICIDE ANALYSES

Date	Time	2,4,5-T water unfltrd ug/L (39740)	2,4-D water unfltrd ug/L (39730)	Aldrin, water, unfltrd ug/L (39330)	alpha-Endosulfan, water, unfltrd ug/L (39388)	Carbophenothion, water, unfltrd ug/L (39786)	Chlordane, technical, water, unfltrd ug/L (39350)	Chlorpyrifos water unfltrd ug/L (38932)	Diazinon, water, unfltrd ug/L (39570)	Dichlorprop, water, unfltrd ug/L (82183)	Dieldrin, water, unfltrd ug/L (39380)	Disulfoton, water, unfltrd ug/L (39011)	Endrin, water, unfltrd ug/L (39390)
AUG 24...	1200	<.01	.10	<.01	<.03	<.02	<.1	<.01	<.02	<.02	<.016	<.10	<.01

Date	Ethion, water, unfltrd ug/L (39398)	Fonofos water unfltrd ug/L (82614)	Heptachlor epoxide water unfltrd ug/L (39420)	Heptachlor, water, unfltrd ug/L (39410)	Lindane water, unfltrd ug/L (39340)	Malathion, water, unfltrd ug/L (39530)	Methyl parathion, water, unfltrd ug/L (39600)	Mirex, water, unfltrd ug/L (39755)	p,p'-DDD, water, unfltrd ug/L (39360)	p,p'-DDE, water, unfltrd ug/L (39365)	p,p'-DDT, water, unfltrd ug/L (39370)	p,p'-Methoxychlor, water, unfltrd ug/L (39480)	Parathion, water, unfltrd ug/L (39540)
AUG 24...	<.01	<.01	<.009	<.01	<.014	<.10	<.01	<.006	<.016	<.014	<.010	<.006	<.01

Date	PCBs, water, unfltrd ug/L (39516)	Phorate water unfltrd ug/L (39023)	Silvex, water, unfltrd ug/L (39760)	Toxaphene, water, unfltrd ug/L (39400)	Tribuphos, water, unfltrd ug/L (39040)
AUG 24...	<.1	<.02	<.02	<1	<.02

< Actual value is known to be less than the value shown
E Estimated value
M Presence verified, not quantified

THIS PAGE IS INTENTIONALLY BLANK

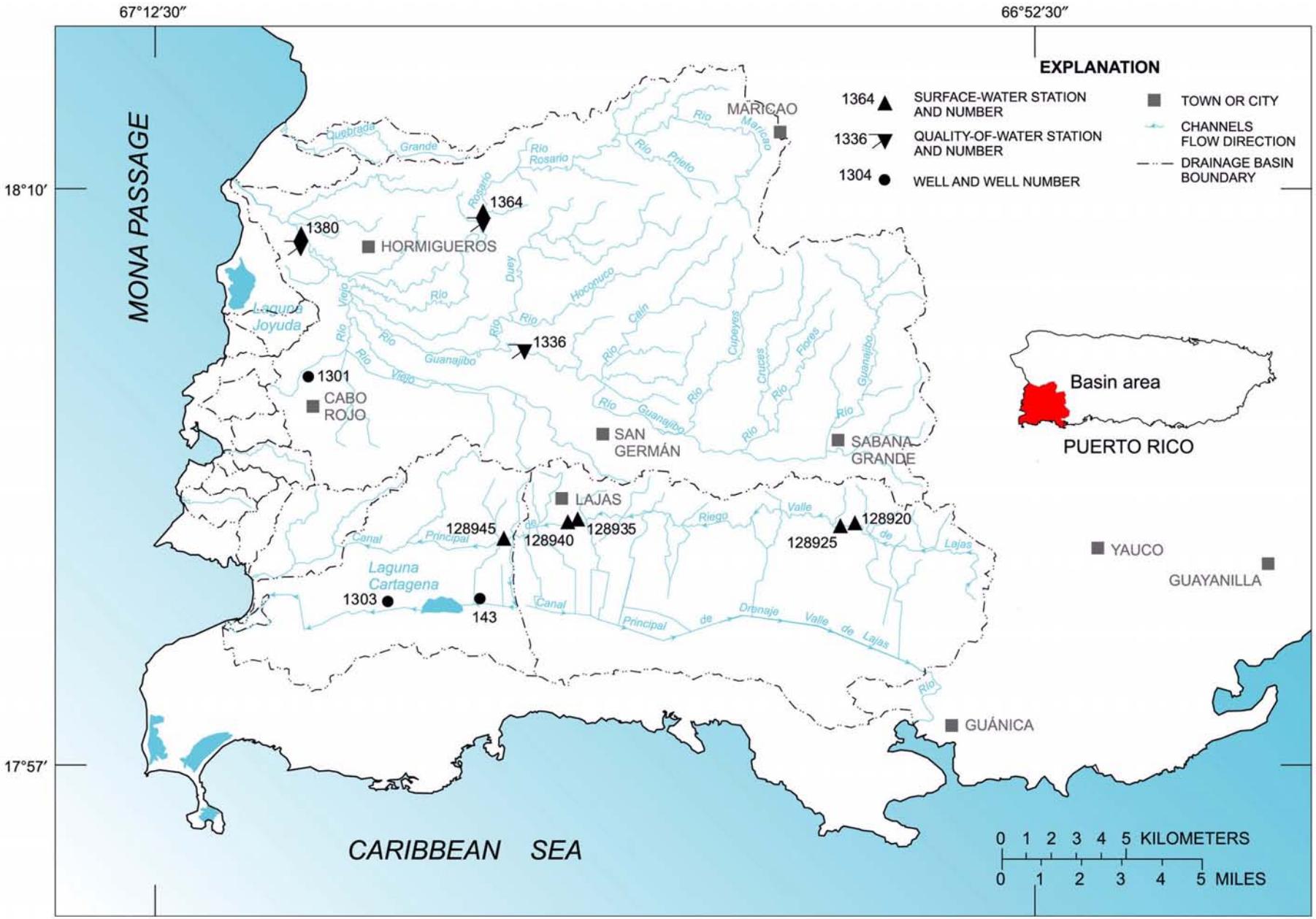


Figure 22. Río Guanajibo basin.

50133600 RIO GUANAJIBO NEAR SAN GERMAN, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°07'18", long 67°03'56", at bridge on Highway 347, 2.2 mi (3.5 km) northwest of San Germán.

DRAINAGE AREA.--45.5 mi^2 (117.8 km^2).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV													
18...	1200	330	63	7.4	7.9	515	26.8	280	29.5	50.3	1.69	.3	12.5
MAR													
30...	1400	22	15	7.8	7.9	612	27.8	300	33.7	53.2	2.57	.6	22.5
MAY													
27...	1440	144	7.0	7.3	7.8	520	29.3	240	25.6	42.3	1.50	.3	11.3
AUG													
24...	0848	79	15	7.4	7.8	365	23.6	160	16.5	29.6	1.12	.3	7.65

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
NOV													
18...	238	18.8	<.2	39.3	20.7	--	315	281	82	.50	.14	1.55	1.60
MAR													
30...	259	31.5	<.2	35.7	24.9	<.1	359	--	17	.70	.34	1.47	1.60
MAY													
27...	223	14.9	<.2	36.1	15.7	--	281	109	<10	.30	.14	.92	.980
AUG													
24...	165	11.7	<.2	30.8	10.8	--	210	44.6	21	--	.16	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
NOV													
18...	.05	.36	2.1	9.3	.16	10	E1,900	38,000	--	--	--	--	--
MAR													
30...	.13	.36	2.3	10.2	.45	<10	--	--	<2	68.5	63	<.2	5.4
MAY													
27...	.06	.16	1.3	5.7	.16	<10	E140	5,000	--	--	--	--	--
AUG													
24...	--	--	--	--	.17	<10	3,600	26,000	M	44.3	40	<.2	14.4

50133600 RIO GUANAJIBO NEAR SAN GERMAN, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
NOV											
18...	--	--	--	--	--	--	--	--	--	--	--
MAR											
30...	M	<.01	650	<1.0	58.6	<.02	<3	<.3	<4	<.20	<16
MAY											
27...	--	--	--	--	--	--	--	--	--	--	--
AUG											
24...	M	<.01	1,010	E.6	48.2	<.02	3	<.3	E4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50136400 RIO ROSARIO NEAR HORMIGUEROS, PR

LOCATION.--Lat 18°09'36", long 67°05'08", Hydrologic Unit 21010003, at bridge on Highway 348, 0.5 mi (0.8 km) southwest of Rosario Plaza.

DRAINAGE AREA.--18.3 mi^2 (47.4 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 50.0 ft (15.2 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88	92	71	37	24	19	37	58	99	162	57	87
2	283	80	72	36	24	18	21	57	102	123	60	73
3	200	174	70	34	24	17	18	54	58	78	57	75
4	137	129	65	33	24	16	23	47	40	116	55	69
5	121	89	69	33	22	16	18	32	36	238	55	66
6	134	78	72	52	22	16	16	28	33	133	55	65
7	128	74	116	38	21	16	18	25	33	88	55	184
8	102	296	114	32	21	16	18	33	31	71	56	446
9	227	154	76	46	21	15	18	58	136	63	53	163
10	353	108	64	36	21	15	16	54	105	70	58	82
11	238	144	59	49	20	15	15	39	55	69	63	88
12	154	216	63	40	20	16	15	46	40	56	109	69
13	117	1,060	87	38	20	16	15	73	35	212	117	77
14	171	456	117	53	19	20	14	185	34	182	81	60
15	191	276	81	58	20	24	14	204	37	135	78	274
16	111	206	63	40	20	19	14	188	37	112	94	884
17	187	164	59	33	21	17	15	87	34	78	84	238
18	161	170	55	31	20	17	19	63	28	69	87	144
19	110	150	55	30	20	17	247	89	26	61	84	113
20	146	122	53	34	22	21	101	81	31	66	69	94
21	111	113	59	39	20	23	34	86	34	61	63	79
22	93	102	56	33	20	16	30	72	35	51	69	73
23	85	94	60	43	19	16	35	69	31	67	69	68
24	119	94	51	51	19	23	51	65	30	137	65	62
25	88	92	275	33	19	17	64	48	128	122	132	57
26	e134	92	136	30	18	16	36	40	65	154	181	53
27	115	84	71	27	18	17	32	34	106	109	121	51
28	126	81	54	27	18	15	31	31	101	90	140	49
29	96	77	46	36	19	17	101	28	198	70	297	46
30	96	73	42	26	---	20	82	27	190	59	146	51
31	119	---	39	25	---	19	---	28	---	53	94	---
TOTAL	4,541	5,140	2,370	1,153	596	545	1,168	2,029	1,948	3,155	2,804	3,940
MEAN	146	171	76.5	37.2	20.6	17.6	38.9	65.5	64.9	102	90.5	131
MAX	353	1,060	275	58	24	24	247	204	198	238	297	884
MIN	85	73	39	25	18	15	14	25	26	51	53	46
AC-FT	9,010	10,200	4,700	2,290	1,180	1,080	2,320	4,020	3,860	6,260	5,560	7,810
CFSM	8.00	9.36	4.18	2.03	1.12	0.96	2.13	3.58	3.55	5.56	4.94	7.18
IN.	9.23	10.45	4.82	2.34	1.21	1.11	2.37	4.12	3.96	6.41	5.70	8.01

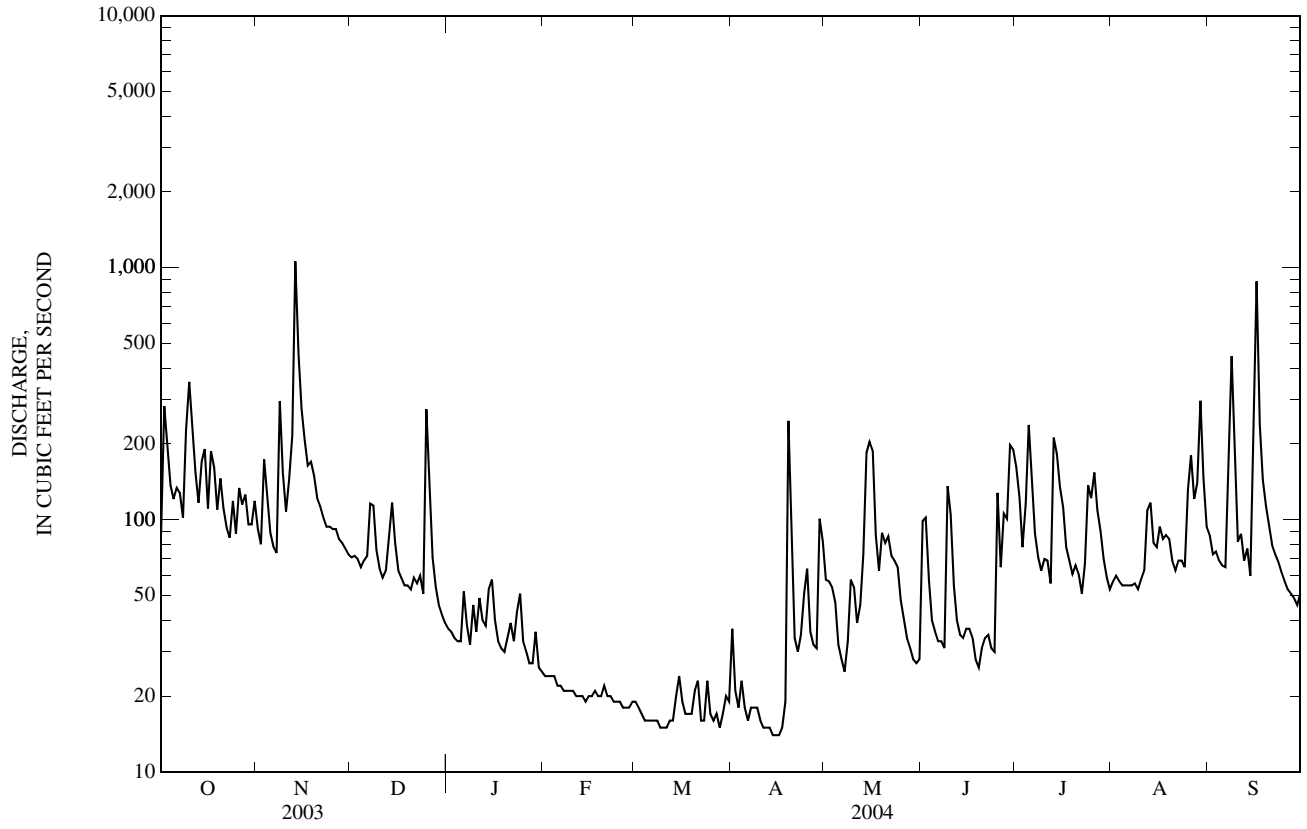
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2004, BY WATER YEAR (WY)

MEAN	109	80.7	38.9	24.9	19.6	20.0	27.1	46.9	45.4	45.4	63.6	102
MAX	206	171	80.9	39.7	37.8	77.0	60.1	122	127	102	102	308
(WY)	(1986)	(2004)	(2002)	(1997)	(1995)	(1989)	(2002)	(1993)	(1999)	(2004)	(1989)	(1998)
MIN	33.2	16.1	9.92	15.1	8.55	10.1	11.0	14.8	12.0	20.6	25.1	32.7
(WY)	(1992)	(1992)	(1992)	(1994)	(1992)	(1992)	(1998)	(1997)	(1992)	(2002)	(1991)	(1986)

50136400 RIO ROSARIO NEAR HORMIGUEROS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1986 - 2004	
ANNUAL TOTAL	21,775.7		29,389			
ANNUAL MEAN	59.7		80.3		52.1	
HIGHEST ANNUAL MEAN					80.3	2004
LOWEST ANNUAL MEAN					30.8	1992
HIGHEST DAILY MEAN	1,060	Nov 13	1,060	Nov 13	4,420	Sep 22, 1998
LOWEST DAILY MEAN	9.3	Apr 12	14	Apr 14	3.9	May 9, 1992
ANNUAL SEVEN-DAY MINIMUM	10	Mar 14	15	Apr 11	4.2	May 6, 1992
MAXIMUM PEAK FLOW			5,390	Nov 13	13,700	Sep 22, 1998
MAXIMUM PEAK STAGE			12.27	Nov 13	18.66	Sep 22, 1998
INSTANTANEOUS LOW FLOW					3.7	May 9, 1992
ANNUAL RUNOFF (AC-FT)	43,190		58,290		37,760	
ANNUAL RUNOFF (CFSM)	3.26		4.39		2.85	
ANNUAL RUNOFF (INCHES)	44.27		59.74		38.70	
10 PERCENT EXCEEDS	121		161		117	
50 PERCENT EXCEEDS	38		59		31	
90 PERCENT EXCEEDS	14		18		12	

e Estimated



50136400 RIO ROSARIO NEAR HORMIGUEROS, PR

WATER-QUALITY RECORDS

PERIOD OF RECORD.--WATER YEARS 1979 TO CURRENT YEAR.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV 18...	0900	149	12	8.5	8.0	225	23.3	110	19.9	15.8	1.28	.3	6.77
MAR 31...	0900	18	<2.0	8.9	8.0	275	27.7	130	27.9	14.8	1.30	.3	8.42
MAY 27...	1145	34	<2.0	9.3	8.3	258	27.5	76	13.0	10.6	.68	.2	3.74
AUG 18...	0845	43	--	8.0	8.0	272	23.8	--	--	--	--	--	--

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
NOV 18...	102	6.48	<.2	30.0	5.6	--	147	59.2	<10	<.20	.01	1.10	<.01
MAR 31...	124	8.21	<.2	28.8	5.8	<.1	170	--	<10	<.20	.01	.650	<.01
MAY 27...	120	6.69	<.2	28.3	5.6	--	140	12.9	<10	<.20	<.01	.520	<.01
AUG 18...	126	--	--	--	--	--	--	--	--	--	--	--	--

Date	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)
NOV 18...	.04	<10	E880	42,000	--	--	--	--	--	--	--	--	--
MAR 31...	.04	<10	--	--	<2	36.6	15	<.2	2.0	M	<.01	50	<1.0
MAY 27...	.03	<10	E54	E718	--	--	--	--	--	--	--	--	--
AUG 18...	--	--	260	6,000	--	--	--	--	--	--	--	--	--

50136400 RIO ROSARIO NEAR HORMIGUEROS, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
NOV 18...	--	--	--	--	--	--	--
MAR 31...	5.6	<.02	<3	<.3	<4	<.10	<16
MAY 27...	--	--	--	--	--	--	--
AUG 18...	--	--	--	--	--	--	--

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR

LOCATION.--Lat 18°08'36", long 67°08'57", Hydrologic Unit 21010003, at bridge on Highway 100, 1.4 mi (2.3 km) west of Hormigueros, and 2.0 mi (3.2 km) downstream from Río Rosario.

DRAINAGE AREA.--120 mi^2 (311 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Annual low-flow measurements 1959, monthly measurements April 1959 to November 1967, January 1973 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. Previous to November 7, 1980, at site 0.3 mi (0.5 km) upstream at datum 7.36 ft (2.243 m) higher.

REMARKS.--Records fair, except those for estimated daily discharges which are poor. Gage-height and precipitation satellite telemetry at station. Daily discharges affected by sewage treatment plant about 2.1 mi (3.4 km) upstream from gage.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	172	462	290	134	91	e46	85	377	199	304	139	275
2	551	356	349	129	89	e48	61	305	239	275	136	216
3	656	521	252	126	87	e45	52	257	231	175	145	187
4	469	936	241	121	99	e43	66	175	170	318	135	175
5	387	549	251	121	e81	e44	56	133	229	453	128	166
6	465	421	266	124	e75	e43	50	105	206	299	121	162
7	466	375	748	122	e70	e42	51	94	148	209	116	446
8	466	513	897	113	e67	e44	51	90	137	164	112	849
9	780	664	385	120	e66	e43	48	182	228	142	109	911
10	1,580	387	291	121	e64	e42	50	197	303	133	112	332
11	1,350	600	246	128	e65	e42	48	158	153	135	118	336
12	651	842	225	144	e63	e42	48	139	131	135	314	352
13	491	3,580	311	115	e64	e44	45	147	122	373	344	281
14	410	6,770	358	130	e62	e44	42	431	117	443	158	373
15	536	2,450	227	152	e60	e60	41	715	116	366	144	389
16	443	1,820	179	121	e61	e74	42	944	110	348	184	4,060
17	636	1,030	161	113	e59	e53	80	897	114	203	169	3,330
18	567	1,020	148	109	e57	51	55	737	107	167	135	1,270
19	394	1,110	143	104	e54	55	317	760	103	146	142	846
20	392	877	137	102	e56	57	470	1,130	100	136	125	545
21	377	693	147	137	e66	72	117	2,630	98	141	115	432
22	294	737	157	244	e55	56	88	1,290	97	126	130	375
23	264	582	167	242	e52	50	103	730	96	124	188	331
24	265	484	150	233	e49	64	399	609	96	534	222	288
25	241	413	428	134	e47	84	441	500	159	619	167	262
26	358	375	1,050	116	e48	85	200	378	162	386	490	246
27	297	357	308	110	e48	83	133	323	131	338	806	245
28	265	332	225	105	e46	57	102	363	175	229	808	277
29	250	311	190	112	e47	53	411	256	335	196	611	242
30	399	283	165	111	---	56	622	210	403	164	563	222
31	811	---	146	96	---	59	---	180	---	147	360	---
TOTAL	15,683	29,850	9,238	4,089	1,848	1,681	4,374	15,442	5,015	7,928	7,546	18,421
MEAN	506	995	298	132	63.7	54.2	146	498	167	256	243	614
MAX	1,580	6,770	1,050	244	99	85	622	2,630	403	619	808	4,060
MIN	172	283	137	96	46	42	41	90	96	124	109	162
AC-FT	31,110	59,210	18,320	8,110	3,670	3,330	8,680	30,630	9,950	15,730	14,970	36,540
CFSM	4.22	8.29	2.48	1.10	0.53	0.45	1.22	4.15	1.39	2.13	2.03	5.12
IN.	4.86	9.25	2.86	1.27	0.57	0.52	1.36	4.79	1.55	2.46	2.34	5.71

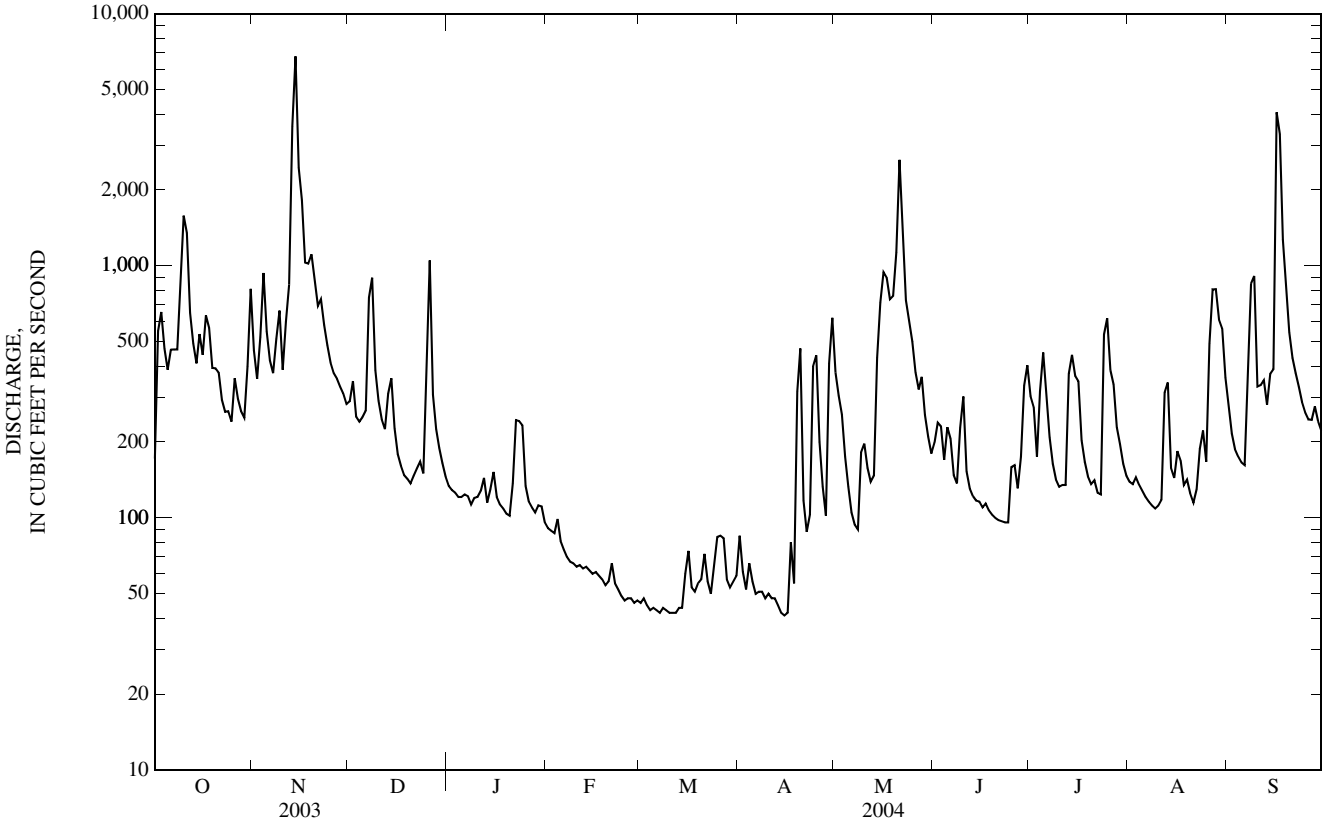
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 2004, BY WATER YEAR (WY)

MEAN	447	394	133	62.6	50.2	44.9	79.9	187	109	103	211	462
MAX	1,254	1,518	422	132	119	244	316	698	504	256	757	2,075
(WY)	(1986)	(1978)	(1976)	(2004)	(1996)	(1989)	(1989)	(2001)	(1979)	(2004)	(1988)	(1975)
MIN	97.5	42.7	15.4	13.8	13.9	10.6	16.1	12.7	9.23	26.4	42.3	78.5
(WY)	(1992)	(1992)	(1992)	(1973)	(1977)	(1977)	(1977)	(1977)	(1977)	(1976)	(1976)	(1997)

50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1973 - 2004	
ANNUAL TOTAL	74,753.1		121,115			
ANNUAL MEAN	205		331		192	
HIGHEST ANNUAL MEAN					402	1979
LOWEST ANNUAL MEAN					69.6	1994
HIGHEST DAILY MEAN	6,770	Nov 14	6,770	Nov 14	35,000	Sep 16, 1975
LOWEST DAILY MEAN	6.9	Mar 13	41	Apr 15	5.0	Jun 18, 1977
ANNUAL SEVEN-DAY MINIMUM	7.4	Mar 10	43	Mar 6	5.5	Jun 17, 1977
MAXIMUM PEAK FLOW			8,930	Nov 14	128,000	Sep 16, 1975
MAXIMUM PEAK STAGE			23.36	Nov 14	28.50	Sep 16, 1975
INSTANTANEOUS LOW FLOW					4.6	Jun 22, 1977
ANNUAL RUNOFF (AC-FT)	148,300		240,200		139,100	
ANNUAL RUNOFF (CFSM)	1.71		2.76		1.60	
ANNUAL RUNOFF (INCHES)	23.17		37.55		21.74	
10 PERCENT EXCEEDS	466		673		419	
50 PERCENT EXCEEDS	60		171		80	
90 PERCENT EXCEEDS	15		53		23	

e Estimated



50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV 17...	1600	--	110	5.8	7.8	362	25.8	190	25.6	31.3	2.38	.3	9.47
MAR 30...	0955	60	7.3	7.5	8.0	460	24.6	220	33.8	33.9	1.85	.4	14.6
MAY 28...	1035	435	100	5.7	7.6	385	25.4	180	28.2	27.4	2.51	.3	10.6
SEP 02...	0839	229	23	6.6	7.9	405	26.4	200	28.8	29.9	2.13	.3	9.85

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
NOV 17...	164	12.4	<.2	30.9	14.6	--	225	--	135	.60	.08	.98	1.00
MAR 30...	203	19.1	<.2	33.0	15.2	<.1	273	--	<10	.20	.02	.80	.810
MAY 28...	175	12.7	<.2	28.6	13.5	--	228	268	153	1.2	.12	.58	.610
SEP 02...	187	11.9	<.2	30.8	13.6	--	242	150	43	--	.09	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
NOV 17...	.02	.52	1.6	7.1	.29	20	E200	E600	--	--	--	--	--
MAR 30...	.01	.18	1.0	4.5	.22	<10	--	--	<2	60.8	40	<.2	3.6
MAY 28...	.03	1.1	1.8	8.0	.44	20	5,800	E110,000	--	--	--	--	--
SEP 02...	--	--	--	--	.23	20	E1,500	5,000	<2	75.8	44	<.2	30.9

Date	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
NOV 17...	--	--	--	--	--	--	--	--	--	--	--
MAR 30...	M	<.01	460	<1.0	50.6	<.02	<3	<.3	<4	E.06	<32
MAY 28...	--	--	--	--	--	--	--	--	--	--	--
SEP 02...	M	<.01	3,230	E.8	178	<.02	<3	<.3	9	<.20	<16

50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED
PESTICIDE ANALYSES

Date	Time	2,4,5-T water unfltrd ug/L (39740)	2,4-D water unfltrd ug/L (39730)	Aldrin, water, unfltrd ug/L (39330)	alpha-Endosulfan, water, unfltrd ug/L (39388)	Carbophenothion, water, unfltrd ug/L (39786)	Chlordane, technical, water, unfltrd ug/L (39350)	Chlorpyrifos water unfltrd ug/L (38932)	Diazinon, water, unfltrd ug/L (39570)	Dichlorprop, water, unfltrd ug/L (82183)	Dieldrin, water, unfltrd ug/L (39380)	Disulfoton, water, unfltrd ug/L (39011)	Endrin, water, unfltrd ug/L (39390)
SEP													
02...	0839	<.01	.04	<.01	<.03	<.02	<.1	<.01	<.02	<.02	<.016	<.10	<.01

Date	Ethion, water, unfltrd ug/L (39398)	Fonofos water unfltrd ug/L (82614)	Heptachlor epoxide water unfltrd ug/L (39420)	Heptachlor, water, unfltrd ug/L (39410)	Lindane water, unfltrd ug/L (39340)	Malathion, water, unfltrd ug/L (39530)	Methyl parathion, water, unfltrd ug/L (39600)	Mirex, water, unfltrd ug/L (39755)	p,p'-DDD, water, unfltrd ug/L (39360)	p,p'-DDE, water, unfltrd ug/L (39365)	p,p'-DDT, water, unfltrd ug/L (39370)	p,p'-Methoxychlor, water, unfltrd ug/L (39480)	Parathion, water, unfltrd ug/L (39540)
SEP													
02...	<.01	<.01	<.009	<.01	<.014	<.10	<.01	<.006	<.016	<.014	<.010	<.006	<.01

Date	PCBs, water, unfltrd ug/L (39516)	Phorate water unfltrd ug/L (39023)	Silvex, water, unfltrd ug/L (39760)	Toxaphene, water, unfltrd ug/L (39400)	Tribuphos, water, unfltrd ug/L (39040)
SEP					
02...	<.1	<.02	<.02	<1	<.02

< Actual value is known to be less than the value shown
E Estimated value
M Presence verified, not quantified

THIS PAGE IS INTENTIONALLY BLANK

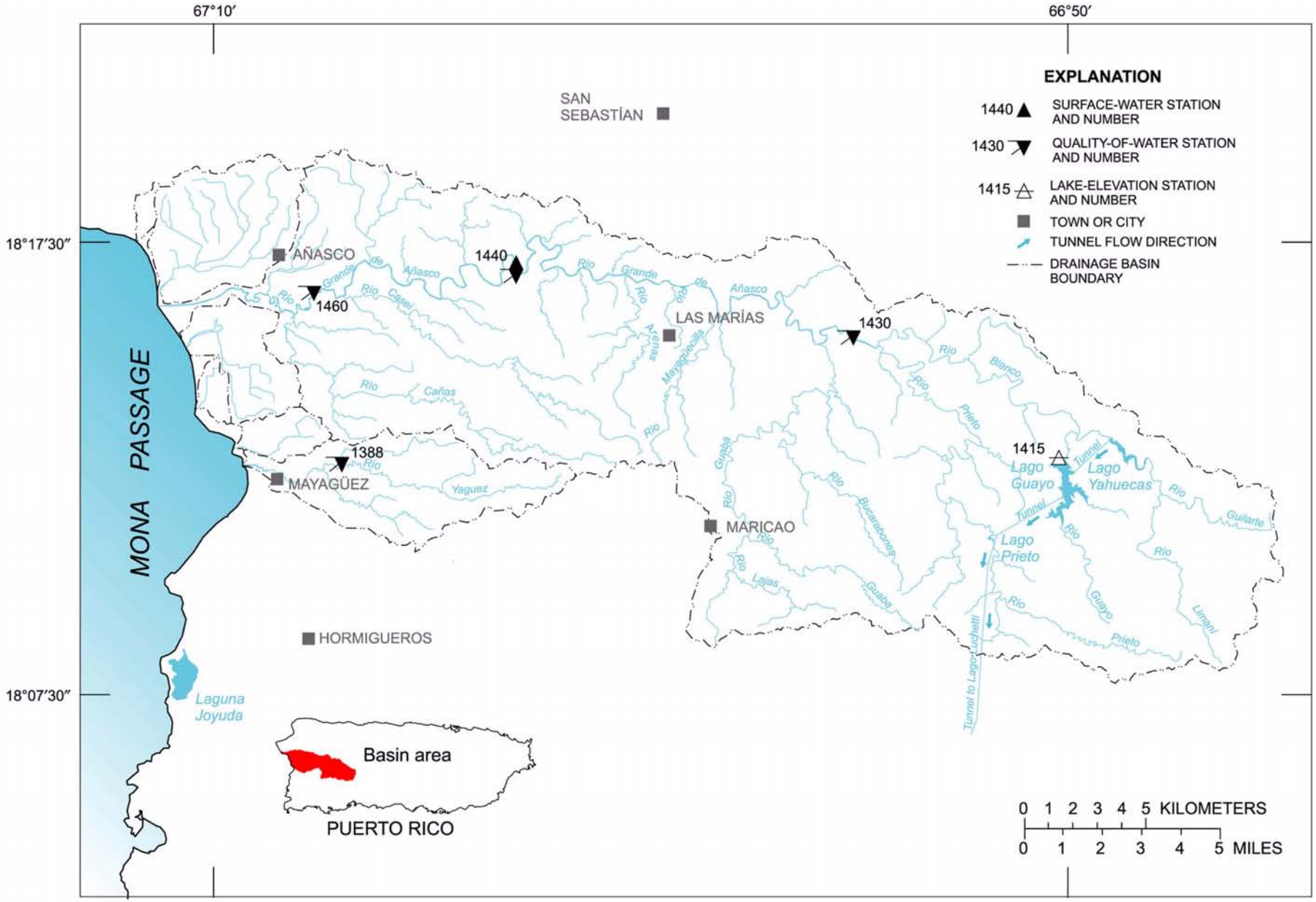


Figure 23. Río Yagüez to Río Grande de Añasco basins.

50138800 RIO YAGÜEZ NEAR MAYAGÜEZ, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°12'31", long 67°07'07", at steel-truss bridge on unnumbered paved road about 800 ft (244 m) south of Highway 106, 1.8 mi (2.9 km) west of Highways 106 and 352 junction, and 1.4 mi (2.3 km) east-northeast from Mayagüez Plaza.

DRAINAGE AREA.--6.7 mi^2 (17.3 km^2).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
MAR													
31...	1145	6.7	8.5	8.6	8.1	318	24.7	140	39.0	10.4	1.95	.4	11.6
MAY													
27...	0845	7.9	8.2	7.8	7.9	310	23.9	130	35.6	10.3	1.85	.4	10.2
SEP													
02...	1308	25	6.3	7.8	7.9	286	26.6	110	30.8	8.64	2.31	.4	9.81

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
MAR													
31...	141	10.8	<.2	33.9	6.9	<.1	199	--	<10	<.20	.03	.720	<.01
MAY													
27...	139	9.65	<.2	32.2	6.8	--	190	4.05	<10	<.20	<.01	.790	<.01
SEP													
02...	121	8.54	<.2	29.1	5.6	--	172	11.6	<10	--	.02	--	--

Date	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)
MAR													
31...	.06	<10	25,000	86,000	<2	73.7	26	<.2	E.4	M	<.01	200	<1.0
MAY													
27...	.05	<10	260	30,000	--	--	--	--	--	--	--	--	--
SEP													
02...	.04	<10	360	4,700	<2	71.7	21	<.2	E.6	M	<.01	240	<1.0

Date	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
MAR							
31...	14.0	<.02	<3	<.3	<4	<.10	<32
MAY							
27...	--	--	--	--	--	--	--
SEP							
02...	11.0	<.02	<3	<.3	E2	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantifiedì

50141500 LAGO GUAYO AT DAMSITE NEAR CASTAÑER, PR

LOCATION.--Lat 18°12'46", long 66°50'06", Hydrologic Unit 21010003, at Guayo Dam on Río Guayo, 1.1 mi (1.8 km) southwest of Lago Yahuecas, 2.6 mi (4.2 km) southwest of Lago Prieto, 2.1 mi (3.4 km) north of Castañer, and 6.0 mi (9.6 km) west of Adjuntas.

DRAINAGE AREA.--9.60 mi^2 (24.9 km^2).

PERIOD OF RECORD.--April 1980 to January 1985, June 1989 to current year. Prior to October 1994, published as Lago Guayo near Castañer.

GAGE.--Water-stage recorder. Datum of gage is mean sea level.

REMARKS.--Lago Guayo was completed in 1956. The dam is on Río Guayo and is the largest in the Southwestern Puerto Rico Project. The maximum storage is 17,400 acre-feet (21.5 hm^3) for power and irrigation. The dam is a concrete gravity structure with a total length of 555 ft (169 m), a maximum structural height of 190 ft (58 m), and a maximum width at the base of 145 ft (44 m). The ungated overflow spillway with a crest elevation of 60 ft (18.29 m) and a crest length of 220 ft (67 m) was designed to pass a maximum flood of 30,200 ft^3/s (855 m^3/s), at a reservoir elevation of 70 ft (21.34 m). Timber flashboards that were added to increase storage capacity were subsequently removed and their use discontinued. Gage-height and precipitation satellite telemetry at station. New capacity table based U.S. Geological Survey Water-Resources Investigations Report 99-4053, October 1997.

EXTREMES OBSERVED FOR PERIOD OF RECORD.--Maximum elevation,1,465.35 ft (446.64 m), September 22, 1998; minimum elevation recorded, 1,415.43 ft (431.42 m), June 2, 1990, but may have been less during period of no gage-height record June 2-5, 1990.

EXTREMES OBSERVED FOR CURRENT YEAR.--Maximum elevation, 1,461.82 ft (445.56 m), September 16; minimum elevation 1,440.52 ft (439.07 m), October 1.

Capacity Table
(based on data from U.S. Geological Survey Water-Resources Investigations Report 99-4053, 1997)
(Elevation in ft, capacity in acre-ft)

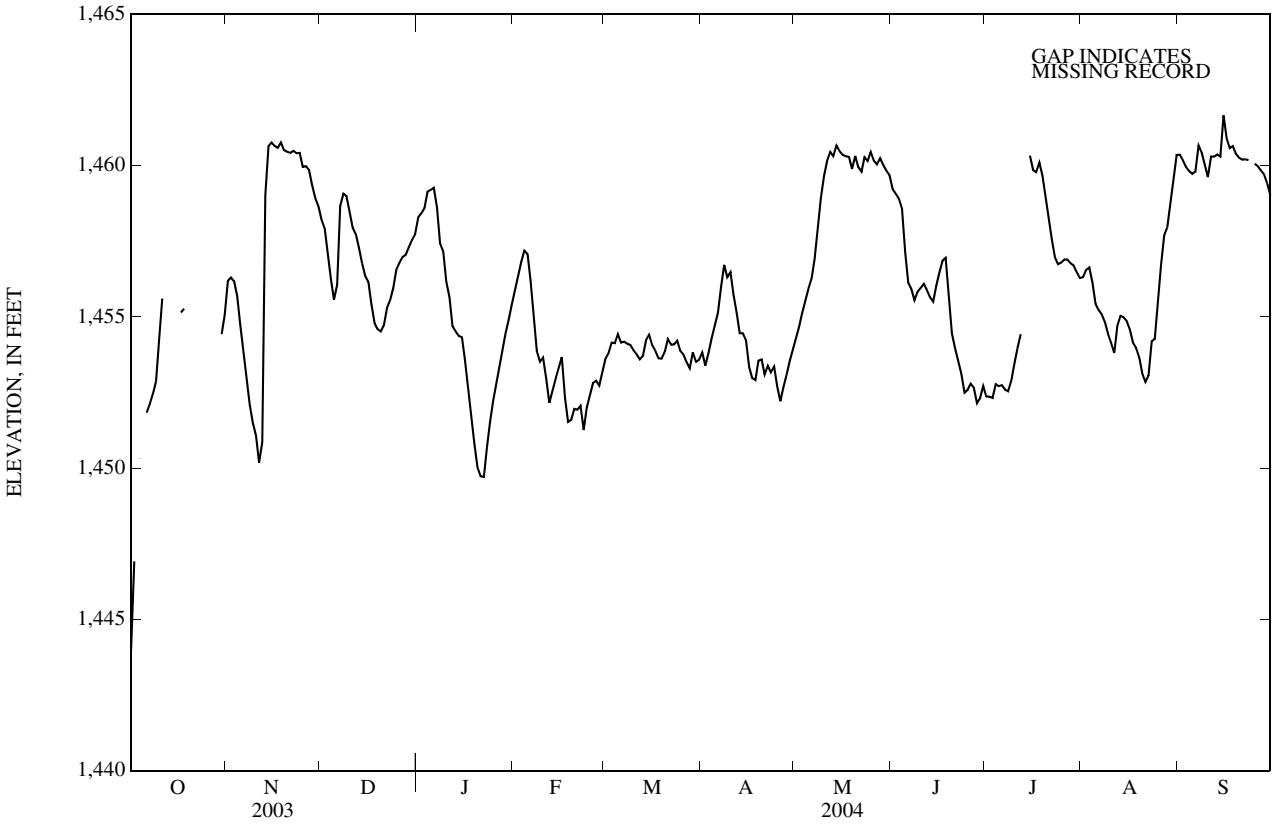
Elevation	Contents	Elevation	Contents
1,333	0	1,400	2,745
1,353	241	1,440	8,622
1,373	820	1,460	13,436

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,443.97	1,456.19	1,458.22	1,458.29	1,455.88	1,453.62	1,453.82	1,454.29	1,459.22	1,452.37	1,456.31	1,460.36
2	1,446.92	1,456.30	1,457.93	1,458.42	1,456.34	1,453.81	1,453.39	1,454.67	1,459.07	1,452.36	1,456.55	1,460.18
3	A	1,456.18	1,457.10	1,458.60	1,456.83	1,454.15	1,453.81	1,455.12	1,458.91	1,452.32	1,456.63	1,459.96
4	1,450.32	1,455.70	1,456.25	1,459.14	1,457.19	1,454.13	1,454.28	1,455.54	1,458.59	1,452.77	1,456.15	1,459.82
5	A	1,454.71	1,455.57	1,459.20	1,457.08	1,454.43	1,454.70	1,455.92	1,457.15	1,452.71	1,455.43	1,459.73
6	1,451.83	1,453.92	1,456.06	1,459.27	1,456.19	1,454.15	1,455.14	1,456.26	1,456.14	1,452.74	1,455.23	1,459.80
7	1,452.11	1,453.06	1,458.67	1,458.61	1,454.98	1,454.18	1,455.97	1,456.91	1,455.92	1,452.60	1,455.08	1,460.67
8	1,452.46	1,452.08	1,459.07	1,457.44	1,453.87	1,454.11	1,456.72	1,457.97	1,455.55	1,452.54	1,454.84	1,460.44
9	1,452.87	1,451.50	1,459.00	1,457.17	1,453.52	1,454.07	1,456.31	1,458.92	1,455.83	1,452.88	1,454.44	1,460.01
10	1,454.30	1,451.07	1,458.44	1,456.17	1,453.65	1,453.89	1,456.48	1,459.66	1,455.95	1,453.46	1,454.15	1,459.62
11	1,455.61	1,450.18	1,457.95	1,455.65	1,452.94	1,453.76	1,455.74	1,460.15	1,456.09	1,453.96	1,453.81	1,460.30
12	A	1,450.86	1,457.73	1,454.69	1,452.16	1,453.59	1,455.13	1,460.45	1,455.89	1,454.43	1,454.69	1,460.30
13	A	1,459.02	1,457.29	1,454.52	1,452.55	1,453.71	1,454.46	1,460.31	1,455.65	A	1,455.03	1,460.37
14	A	1,460.64	1,456.77	1,454.37	1,452.94	1,454.24	1,454.46	1,460.66	1,455.50	A	1,454.99	1,460.30
15	A	1,460.76	1,456.36	1,454.32	1,453.31	1,454.41	1,454.23	1,460.48	1,456.04	1,460.33	1,454.86	1,461.66
16	A	1,460.65	1,456.16	1,453.56	1,453.67	1,454.05	1,453.34	1,460.35	1,456.47	1,459.85	1,454.59	1,460.91
17	1,455.14	1,460.59	1,455.42	1,452.57	1,452.33	1,453.88	1,452.98	1,460.31	1,456.86	1,459.78	1,454.15	1,460.58
18	1,455.27	1,460.77	1,454.79	1,451.75	1,451.53	1,453.63	1,452.91	1,460.29	1,456.95	1,460.10	1,453.98	1,460.65
19	A	1,460.51	1,454.59	1,450.79	1,451.60	1,453.62	1,453.55	1,459.89	1,455.70	1,459.67	1,453.66	1,460.39
20	A	1,460.46	1,454.52	1,450.03	1,451.96	1,453.85	1,453.59	1,460.32	1,454.46	1,458.98	1,453.13	1,460.26
21	A	1,460.42	1,454.72	1,449.73	1,451.93	1,454.27	1,453.09	1,459.95	1,453.96	1,458.28	1,452.85	1,460.20
22	A	1,460.49	1,455.30	1,449.71	1,452.06	1,454.08	1,453.38	1,459.80	1,453.53	1,457.55	1,453.06	1,460.21
23	A	1,460.41	1,455.55	1,450.68	1,451.26	1,454.09	1,453.17	1,460.28	1,453.12	1,456.97	1,454.19	1,460.18
24	A	1,460.42	1,455.96	1,451.54	1,452.00	1,454.21	1,453.36	1,460.15	1,452.49	1,456.74	1,454.27	A
25	A	1,459.96	1,456.56	1,452.22	1,452.43	1,453.88	1,452.71	1,460.45	1,452.58	1,456.79	1,455.41	1,460.06
26	A	1,459.98	1,456.79	1,452.82	1,452.81	1,453.75	1,452.21	1,460.16	1,452.79	1,456.90	1,456.70	1,459.98
27	A	1,459.86	1,456.98	1,453.39	1,452.89	1,453.51	1,452.67	1,460.04	1,452.66	1,456.90	1,457.69	1,459.84
28	A	1,459.34	1,457.05	1,453.94	1,452.73	1,453.30	1,453.09	1,460.24	1,452.15	1,456.77	1,457.95	1,459.71
29	A	1,458.94	1,457.30	1,454.47	1,453.20	1,453.83	1,453.53	1,460.03	1,452.31	1,456.70	1,458.77	1,459.41
30	1,454.43	1,458.66	1,457.54	1,454.93	---	1,453.52	1,453.91	1,459.83	1,452.72	1,456.47	1,459.50	1,459.03
31	1,455.05	---	1,457.73	1,455.42	---	1,453.58	---	1,459.69	---	1,456.28	1,460.35	---
MAX	---	1,460.77	1,459.07	1,459.27	1,457.19	1,454.43	1,456.72	1,460.66	1,459.22	---	1,460.35	---
MIN	---	1,450.18	1,454.52	1,449.71	1,451.26	1,453.30	1,452.21	1,454.29	1,452.15	---	1,452.85	---

A No gage-height record

50141500 LAGO GUAYO AT DAMSITE NEAR CASTAÑER, PR—Continued



50143000 RIO GRANDE DE ANASCO NEAR LARES, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°15'26", long 66°55'00", at bridge on Highway 124, 0.7 mi (1.1 km) downstream from confluence of Río Blanco and Río Prieto, and 3.7 mi (6.0 km) southwest of Lares Plaza.

DRAINAGE AREA.--26.3 mi^2 (68.1 km^2), this does not include 36.2 mi^2 (93.8 km^2) which contributes only during high floods, and 3.5 mi^2 (9.1 km^2) which contributes only part of its storm runoff.

PERIOD OF RECORD.--Water years 1959-68, 1970 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV 20...	1220	485	27	8.0	7.8	218	24.2	86	23.3	6.80	2.02	.4	8.21
MAR 03...	0850	21	3.4	9.1	8.0	316	21.6	130	35.6	10.5	1.83	.5	13.2
JUN 16...	1256	25	4.1	8.8	8.4	281	31.6	--	--	--	--	--	--
AUG 12...	1115	30	33	9.0	8.3	256	27.7	99	28.5	6.87	2.40	.4	9.98

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
NOV 20...	83	8.17	<.2	24.6	11.0	--	134	175	29	.20	.01	1.20	<.01
MAR 03...	121	11.1	<.2	31.7	20.5	<.1	197	11.4	<10	<.20	<.01	.900	<.01
JUN 16...	98	--	--	--	--	--	--	--	<10	.20	.03	.370	<.01
AUG 12...	89	8.56	<.2	26.4	20.9	--	160	12.8	18	--	.04	--	--

Date	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)
NOV 20...	.19	1.4	6.2	.05	<10	300	E10,000	--	--	--	--	--	--
MAR 03...	--	--	--	.04	120	E22	140	<2	20.6	12	<.2	<.8	M
JUN 16...	.17	.57	2.5	.03	<10	E18	160	--	--	--	--	--	--
AUG 12...	--	--	--	.07	<10	4,600	E8,000	<2	22.9	18	<.2	<.8	M

50143000 RIO GRANDE DE ANASCO NEAR LARES, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Manganese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
NOV 20...	--	--	--	--	--	--	--	--	--	--
MAR 03...	<.01	80	<1.0	13.4	<.02	<3	<.3	<4	<.10	<16
JUN 16...	--	--	--	--	--	--	--	--	--	--
AUG 12...	<.01	630	<1.0	51.2	<.02	<3	<.3	5	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR

LOCATION.--Lat 18°17'05", long 67°03'05", Hydrologic Unit 21010003, on left bank, at downstream side of bridge on Highway 108, 0.4 mi (0.6 km) downstream from Quebrada La Zumbadora, 4.4 mi (7.1 km) northwest of Las Marías, 5.4 mi (8.7 km) southwest of San Sebastián.

DRAINAGE AREA.--94.3 mi^2 (244.2 km^2), does not include 36.2 mi^2 (93.8 km^2) which contributes only during high floods, and 3.5 mi^2 (9.1 km^2) which contributes only part of its storm runoff.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1963 to current year.

REVISED RECORDS.--WDR PR-2,000-1: 1999. Revised maximum discharge and revised daily discharges, in cubic feet per second, for water year 1999, are given below. These figures supersede those published in the report for 1999.

GAGE.--Water-stage recorder. Datum of gage is 103.72 ft (31.614 m) above mean sea level (Puerto Rico Department of Public Works bench mark). Previous to October 30, 1975, at site 600 ft (180 m) upstream at same datum.

REMARKS.--Records fair. Transbasin diversion (except during floods) to Río Yauco basin for hydroelectric power and irrigation above Lago Guayo, Yahuecas, and Prieto, combined useable storage 17,300 acre-feet (21.3 hm^3). Limited storm runoff is contributed to basin by 3.5 mi^2 (9.1 km^2) above Río Toro Diversion dam. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

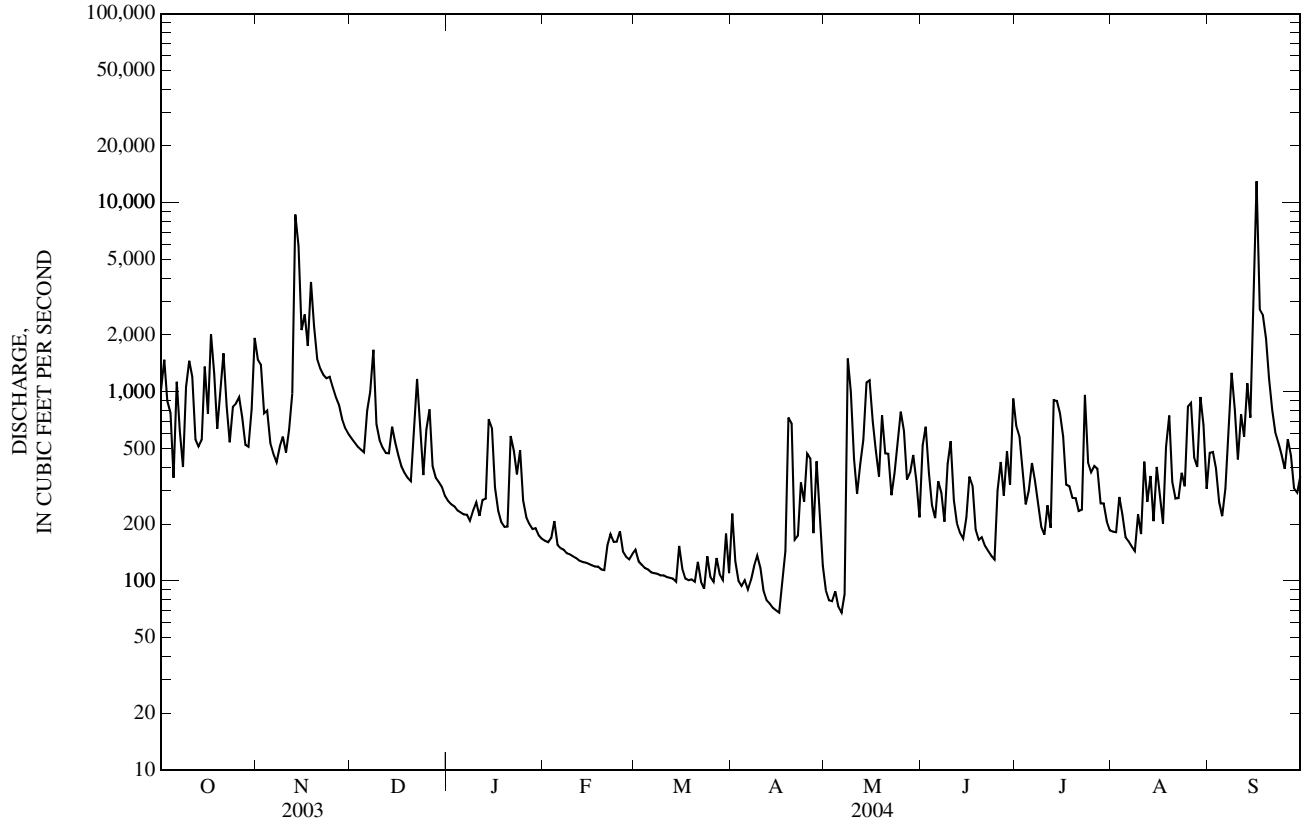
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,030	1,480	568	264	163	146	227	89	522	662	182	476
2	1,480	1,390	539	254	160	127	127	79	654	581	181	481
3	894	770	514	248	169	122	100	78	372	389	278	394
4	773	797	495	236	207	117	94	88	252	254	225	261
5	351	536	479	230	155	115	101	73	215	300	170	220
6	1,130	469	795	225	149	111	90	68	337	420	162	308
7	623	425	1,000	224	146	110	101	85	292	338	152	648
8	400	513	1,670	208	140	109	120	1,500	206	254	144	1,260
9	1,060	579	676	236	138	107	136	1,000	415	194	225	802
10	1,460	478	555	260	135	107	117	442	548	176	177	439
11	1,200	630	507	221	132	105	89	289	267	251	428	760
12	561	981	475	268	128	104	79	416	202	191	262	578
13	515	8,660	473	272	126	103	76	556	179	904	359	1,110
14	557	5,910	654	716	125	99	72	1,120	167	895	207	730
15	1,360	2,120	542	642	123	153	70	1,150	216	771	401	2,680
16	765	2,570	461	312	121	116	68	697	356	580	281	13,000
17	2,020	1,750	404	235	119	103	96	490	318	323	201	2,720
18	1,250	3,810	372	205	119	101	144	357	187	317	513	2,550
19	639	2,230	351	193	115	102	731	752	165	275	750	1,910
20	1,070	1,490	337	194	114	99	680	473	170	274	334	1,170
21	1,600	1,330	605	584	155	126	165	470	153	234	273	797
22	837	1,230	1,170	487	177	99	173	284	144	238	274	611
23	541	1,180	622	366	161	91	331	371	136	964	373	536
24	835	1,200	363	491	161	135	262	548	130	423	317	466
25	868	1,060	631	266	183	105	471	786	301	375	836	392
26	936	938	809	217	143	99	444	620	426	405	873	562
27	734	854	405	200	134	132	179	344	283	392	450	459
28	525	717	351	188	130	108	429	375	485	257	401	309
29	513	642	333	190	139	101	211	463	322	257	940	293
30	808	599	313	174	---	178	120	335	921	206	670	357
31	1,930	---	281	167	---	110	---	217	---	185	307	---
TOTAL	29,265	47,338	17,750	8,973	4,167	3,540	6,103	14,615	9,341	12,285	11,346	37,279
MEAN	944	1,578	573	289	144	114	203	471	311	396	366	1,243
MAX	2,020	8,660	1,670	716	207	178	731	1,500	921	964	940	13,000
MIN	351	425	281	167	114	91	68	68	130	176	144	220
AC-FT	58,050	93,890	35,210	17,800	8,270	7,020	12,110	28,990	18,530	24,370	22,500	73,940
CFSM	10.0	16.7	6.07	3.07	1.52	1.21	2.16	5.00	3.30	4.20	3.88	13.2
IN.	11.54	18.67	7.00	3.54	1.64	1.40	2.41	5.77	3.68	4.85	4.48	14.71

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2004, BY WATER YEAR (WY)

MEAN	685	489	238	147	116	107	173	406	301	268	373	696
MAX	1,514	1,578	573	289	345	271	1,045	1,084	939	657	936	3,505
(WY)	(1999)	(2004)	(2004)	(2004)	(1996)	(1972)	(2002)	(1986)	(1999)	(1979)	(1979)	(1998)
MIN	344	182	103	82.4	62.3	54.4	49.3	63.7	71.2	111	152	206
(WY)	(1983)	(1998)	(1992)	(1998)	(1992)	(1965)	(1968)	(1967)	(1977)	(1990)	(1967)	(1983)

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1963 - 2004	
ANNUAL TOTAL	173,121		202,002			
ANNUAL MEAN	474		552		333	
HIGHEST ANNUAL MEAN					556	1999
LOWEST ANNUAL MEAN					189	1967
HIGHEST DAILY MEAN	8,660	Nov 13	13,000	Sep 16	69,900	Sep 22, 1998
LOWEST DAILY MEAN	55	Mar 19	68	Apr 16	32	Apr 18, 1965
ANNUAL SEVEN-DAY MINIMUM	58	Mar 13	79	Apr 11	35	Apr 14, 1965
MAXIMUM PEAK FLOW			32,700	Sep 16	163,000	Sep 22, 1998
MAXIMUM PEAK STAGE			16.63	Sep 16	34.50	Sep 22, 1998
INSTANTANEOUS LOW FLOW			65	May 6	31	Apr 19, 1965
ANNUAL RUNOFF (AC-FT)	343,400		400,700		241,600	
ANNUAL RUNOFF (CFSM)	5.03		5.85		3.54	
ANNUAL RUNOFF (INCHES)	68.29		79.69		48.04	
10 PERCENT EXCEEDS	1,040		1,080		696	
50 PERCENT EXCEEDS	265		334		191	
90 PERCENT EXCEEDS	79		110		75	



50144000 RIO GRANDE DE ANASCO NEAR SAN SEBASTIAN, PR

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV 21...	1125	1,300	30	4.6	7.8	221	23.8	86	22.4	7.35	1.78	.4	7.77
MAR 02...	1230	120	4.3	9.4	8.1	252	23.9	--	--	--	--	--	--
JUN 15...	1131	186	23	7.6	7.8	238	27.4	--	--	--	--	--	--
AUG 11...	1330	144	12	8.7	8.4	232	29.0	97	25.3	8.21	1.66	.4	8.77

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)
NOV 21...	87	7.37	<.2	27.2	8.8	--	135	474	24	<.20	<.01	1.20	<.01
MAR 02...	106	--	--	--	--	<.1	--	--	--	<.20	.01	.680	<.01
JUN 15...	94	--	--	--	--	--	--	--	17	<.20	.01	.600	<.01
AUG 11...	99	7.04	<.2	28.0	9.4	--	150	58.2	<10	--	.02	--	--

Date	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)
NOV 21...	.06	<10	E180	41,000	--	--	--	--	--	--	--	--	--
MAR 02...	.04	--	E27	250	--	--	--	--	--	--	--	--	--
JUN 15...	.04	<10	E280	6,400	--	--	--	--	--	--	--	--	--
AUG 11...	.03	<10	E140	670	<2	34.6	14	<.2	E.8	<4	<.01	170	<1.0

Date	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
NOV 21...	--	--	--	--	--	--	--
MAR 02...	--	<.02	--	--	--	<.10	<16
JUN 15...	--	--	--	--	--	--	--
AUG 11...	22.2	<.02	<3	<.3	<4	<.10	<16

< Actual value is known to be less than the value shown
E Estimated value

50146000 RIO GRANDE DE ANASCO NEAR ANASCO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°16'00", long 67°08'05", at bridge on Highway 430, 0.2 mi (0.3 km) south of Highway 109 at El Espino and 1.4 mi (2.3 km) east-southeast from Añasco Plaza.

DRAINAGE AREA.--139 mi^2 (360 km^2), this does not include 39.7 mi^2 (102.8 km^2), flow is diverted to south coast.

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV													
19...	1530	20	300	4.7	7.4	185	24.9	70	18.0	6.06	2.04	.3	6.58
MAR													
02...	0825	152	9.3	7.7	7.6	248	22.3	100	26.0	9.09	1.54	.4	9.71
JUN													
16...	0910	237	16	6.3	7.7	242	27.1	--	--	--	--	--	--
AUG													
10...	1320	485	53	7.5	7.5	220	28.6	79	20.1	7.01	1.89	.4	7.41

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
NOV													
19...	72	6.25	<.2	24.5	7.8	--	114	--	96	.70	.03	1.09	1.10
MAR													
02...	105	7.98	<.2	27.3	8.3	<.1	153	62.8	<10	<.20	.01	--	.580
JUN													
16...	113	--	--	--	--	--	--	--	20	.20	.01	--	.480
AUG													
10...	82	6.78	<.2	25.3	7.3	--	128	167	86	--	.04	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
NOV													
19...	.01	.67	1.8	8.0	.29	30	3,500	72,000	--	--	--	--	--
MAR													
02...	<.01	--	--	--	.04	<10	E64	3,900	<2	44.9	9.7	<.2	E.5
JUN													
16...	<.01	.19	.68	3.0	.04	<10	210	4,200	--	--	--	--	--
AUG													
10...	--	--	--	--	.06	<10	390	30,000	<2	65.5	21	<.2	1.6

50146000 RIO GRANDE DE ANASCO NEAR ANASCO, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
NOV 19...	--	--	--	--	--	--	--	--	--	--	--
MAR 02...	M	<.01	430	<1.0	80.7	<.02	<3	<.3	<4	<.10	<16
JUN 16...	--	--	--	--	--	--	--	--	--	--	--
AUG 10...	M	<.01	1,860	2.6	144	<.02	<3	<.3	8	<.20	<16

PESTICIDE ANALYSES

Date	Time	2,4,5-T water unfltrd ug/L (39740)	2,4-D water unfltrd ug/L (39730)	Aldrin, water, unfltrd ug/L (39330)	alpha- Endo- sulfan, water, unfltrd ug/L (39388)	Carbo- pheno- thion, water, unfltrd ug/L (39786)	Chlor- dane, tech- nical, water, unfltrd ug/L (39350)	Chlor- pyrifos water unfltrd ug/L (38932)	Diazi- non, water, unfltrd ug/L (39570)	Di- chlor- prop, water, unfltrd ug/L (82183)	Diel- drin, water, unfltrd ug/L (39380)	Disul- foton, water, unfltrd ug/L (39011)	Endrin, water, unfltrd ug/L (39390)
AUG 10...	1320	<.01	.20	<.01	<.03	<.02	<.1	<.01	<.02	<.02	<.016	<.10	<.01

Date	Ethion, water, unfltrd ug/L (39398)	Fonofos water unfltrd ug/L (82614)	Hepta- chlor epoxide water unfltrd ug/L (39420)	Hepta- chlor, water, unfltrd ug/L (39410)	Lindane water, unfltrd ug/L (39340)	Mala- thion, water, unfltrd ug/L (39530)	Methyl para- thion, water, unfltrd ug/L (39600)	Mirex, water, unfltrd ug/L (39755)	p,p'- DDD, water, unfltrd ug/L (39360)	p,p'- DDE, water, unfltrd ug/L (39365)	p,p'- DDT, water, unfltrd ug/L (39370)	p,p'- Meth- oxy- chlor, water, unfltrd ug/L (39480)	Para- thion, water, unfltrd ug/L (39540)
AUG 10...	<.01	<.01	<.009	<.01	<.014	<.10	<.01	<.006	<.016	<.014	<.010	<.006	<.01

Date	PCBs, water, unfltrd ug/L (39516)	Phorate water unfltrd ug/L (39023)	Silvex, water, unfltrd ug/L (39760)	Toxa- phene, water, unfltrd ug/L (39400)	Tribu- phos, water, unfltrd ug/L (39040)
AUG 10...	<.1	<.02	<.02	<1	<.02

< Actual value is known to be less than the value shown

E Estimated value

M Presence verified, not quantified

THIS PAGE IS INTENTIONALLY BLANK

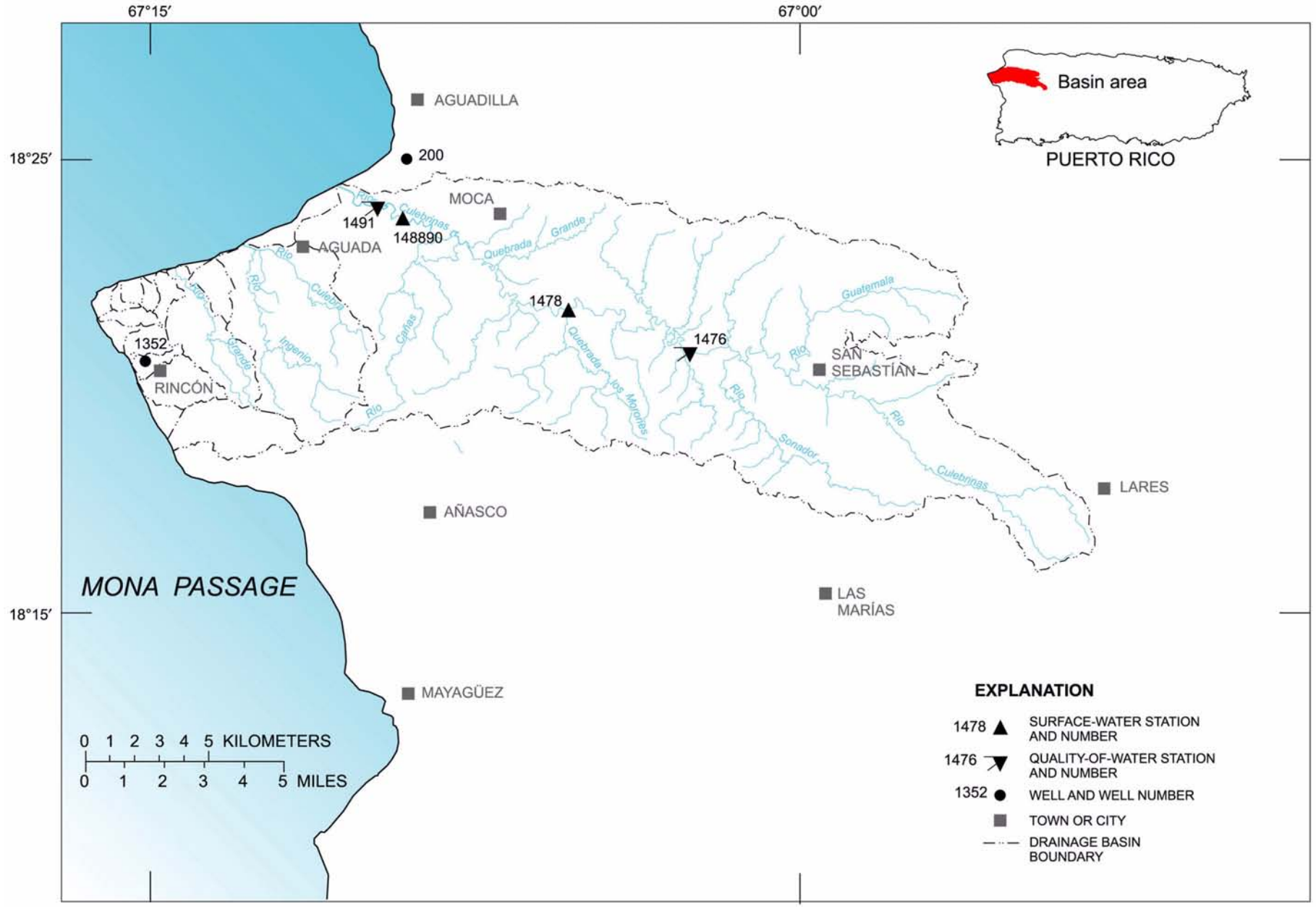


Figure 24. Río Culebrinas basin.

50147600 RIO CULEBRINAS NEAR SAN SEBASTIAN, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'51", long 67°02'40", at bridge on Highway 423, 1.3 mi (2.1 km) south of Quebrada El Salto Bridge on Highway 111, and 2.1 mi (3.4 km) west of Central La Plata.

DRAINAGE AREA.--58.2 mi^2 (150.7 km^2).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
NOV													
20...	1450	231	30	7.9	7.8	304	24.9	130	44.7	4.90	2.48	.3	8.72
MAR													
02...	1625	35	5.6	10.7	8.2	268	25.1	--	--	--	--	--	--
JUN													
15...	0916	43	8.9	7.7	7.9	286	26.3	--	--	--	--	--	--
AUG													
11...	0900	42	7.8	7.8	8.1	309	26.2	130	42.4	5.65	2.60	.5	13.0

Date	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)
NOV													
20...	127	9.11	<.2	25.0	10.6	--	182	--	<10	.30	.08	--	1.20
MAR													
02...	105	--	--	--	--	<.1	--	--	--	.20	.01	1.19	1.20
JUN													
15...	110	--	--	--	--	--	--	--	10	<.20	.01	1.09	1.10
AUG													
11...	125	11.6	<.2	31.7	10.2	--	197	22.3	<10	--	.03	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)
NOV													
20...	<.01	.22	1.5	6.6	.05	<10	E1,600	42,000	--	--	--	--	--
MAR													
02...	.01	.19	1.4	6.2	.12	--	E400	4,500	--	--	--	--	--
JUN													
15...	.01	--	--	--	.11	<10	E1,400	E12,000	--	--	--	--	--
AUG													
11...	--	--	--	--	.10	<10	270	2,400	<2	37.4	33	<.2	<.8

50147600 RIO CULEBRINAS NEAR SAN SEBASTIAN, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen- olic com- pounds, water, unfltrd ug/L (32730)
NOV											
20...	--	--	--	--	--	--	--	--	--	--	--
MAR											
02...	--	--	--	--	--	<.02	--	--	--	<.10	<16
JUN											
15...	--	--	--	--	--	--	--	--	--	--	--
AUG											
11...	<4	<.01	260	<1.0	31.3	<.02	<3	<.3	E4	<.10	<16

< Actual value is known to be less than the value shown

E Estimated value

50147800 RIO CULEBRINAS AT HIGHWAY 404 NEAR MOCA, PR

LOCATION.--Lat 18°21'42", long 67°05'33", Hydrologic Unit 21010003, on right bank, 1.0 mi (1.6 km) below Quebrada Los Morones confluence, 1.1 mi (1.8 km) above Quebrada Las Marías confluence, 2.8 mi (4.5 km) southeast of Moca Plaza, at bridge 404 road over Culebrina river.

DRAINAGE AREA.--71.2 mi^2 (184 km^2).

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

REVISED RECORDS.--WDR PR-99-1: (M).

GAGE.--Water-stage recorder. Elevation of gage is 45 ft (14 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage-height and precipitation satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

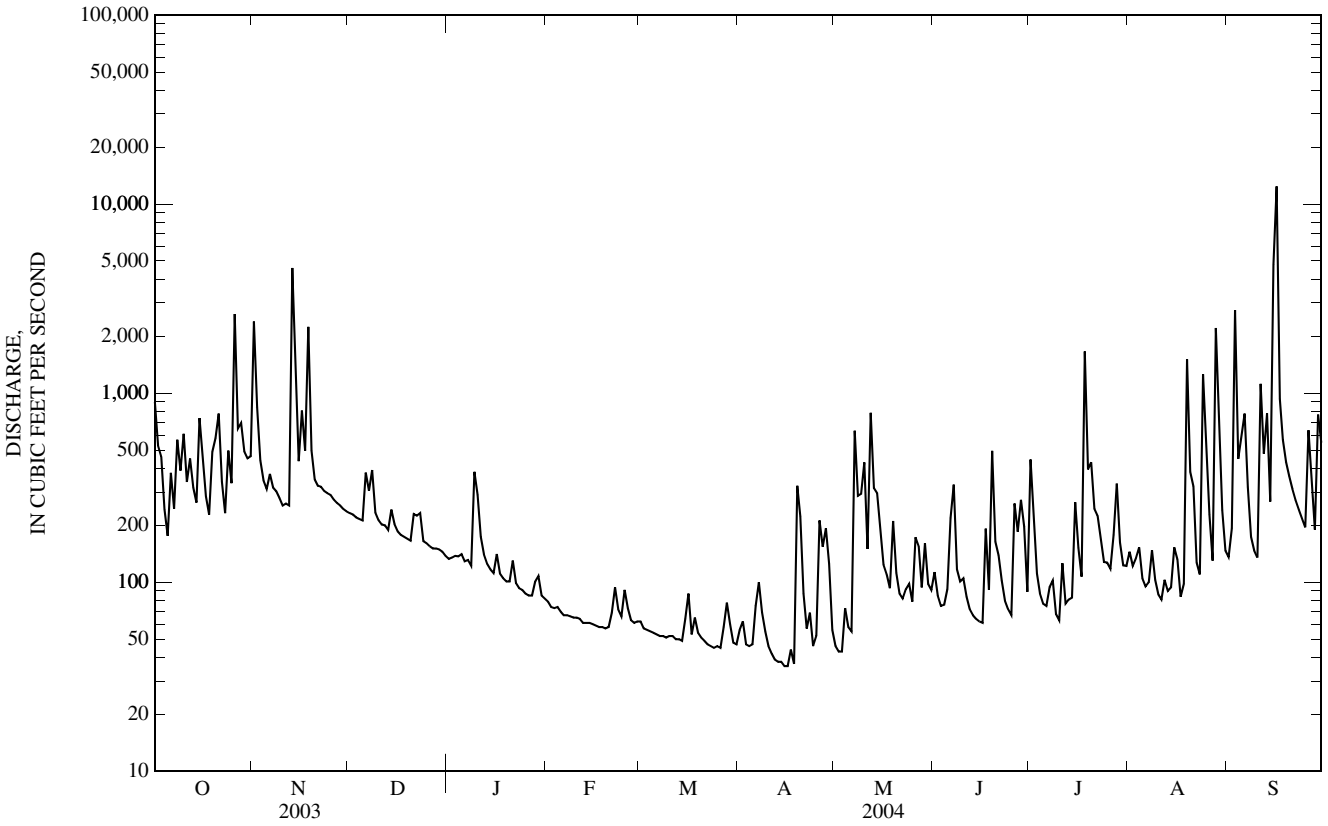
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	899	2,390	232	133	79	62	56	46	113	446	145	136
2	528	844	228	135	74	57	62	43	85	246	122	193
3	462	441	220	138	73	56	47	43	75	111	134	2,750
4	243	346	216	137	74	55	46	73	76	87	153	449
5	176	312	212	141	70	54	47	58	92	77	105	600
6	379	374	380	129	67	53	75	55	219	75	95	780
7	245	317	305	131	67	52	100	633	328	94	100	319
8	568	303	392	122	66	52	69	287	117	102	148	174
9	390	279	234	384	65	51	55	294	101	68	103	147
10	610	255	213	290	65	52	46	430	105	63	86	135
11	339	261	202	174	64	52	42	150	84	126	81	1,120
12	451	255	200	140	61	50	39	788	72	77	103	479
13	317	4,590	189	125	61	50	38	315	67	81	90	782
14	264	1,150	242	117	61	49	38	296	64	83	94	267
15	738	437	203	112	60	64	36	184	62	265	153	4,780
16	476	809	186	141	59	87	36	124	61	152	132	12,400
17	285	496	178	111	58	53	44	110	192	107	84	932
18	228	2,240	174	105	58	65	37	93	91	1,660	98	566
19	489	497	170	101	57	54	324	211	495	395	1,510	432
20	579	350	166	101	58	51	223	112	164	431	384	363
21	780	324	230	130	69	49	87	87	139	245	321	311
22	340	320	225	99	94	47	57	82	102	225	127	271
23	232	304	232	93	72	46	69	92	80	170	110	242
24	497	296	165	91	66	45	46	98	72	128	1,260	218
25	334	290	161	87	91	46	52	79	67	127	502	195
26	2,620	274	155	85	73	45	212	173	261	118	228	637
27	649	263	151	85	63	58	154	155	185	178	130	334
28	696	255	151	101	61	78	193	94	273	333	2,210	190
29	492	244	149	108	62	60	125	161	197	162	810	770
30	453	237	145	85	---	48	56	98	89	123	241	548
31	464	---	138	82	---	47	---	91	---	122	147	---
TOTAL	16,223	19,753	6,444	4,013	1,948	1,688	2,511	5,555	4,128	6,677	10,006	31,520
MEAN	523	658	208	129	67.2	54.5	83.7	179	138	215	323	1,051
MAX	2,620	4,590	392	384	94	87	324	788	495	1,660	2,210	12,400
MIN	176	237	138	82	57	45	36	43	61	63	81	135
AC-FT	32,180	39,180	12,780	7,960	3,860	3,350	4,980	11,020	8,190	13,240	19,850	62,520
CFSM	7.35	9.25	2.92	1.82	0.94	0.76	1.18	2.52	1.93	3.03	4.53	14.8
IN.	8.48	10.32	3.37	2.10	1.02	0.88	1.31	2.90	2.16	3.49	5.23	16.47

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2004, BY WATER YEAR (WY)

MEAN	622	360	157	94.9	76.7	73.3	140	449	383	288	350	571
MAX	1,086	799	630	530	371	319	621	2,054	773	847	831	1,651
(WY)	(1973)	(1982)	(2002)	(1997)	(1996)	(1981)	(1986)	(1986)	(1998)	(1979)	(1979)	(1998)
MIN	231	108	72.1	51.2	37.0	30.4	26.4	96.7	73.1	66.7	119	145
(WY)	(1968)	(1979)	(1992)	(1979)	(1992)	(1979)	(1970)	(1973)	(1997)	(1994)	(1970)	(1986)

50147800 RIO CULEBRINAS AT HIGHWAY 404 NEAR MOCA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1967 - 2004	
ANNUAL TOTAL	116,834		110,466			
ANNUAL MEAN	320		302		299	
HIGHEST ANNUAL MEAN					457	1986
LOWEST ANNUAL MEAN					179	1977
HIGHEST DAILY MEAN	4,590	Nov 13	12,400	Sep 16	17,000	Sep 22, 1998
LOWEST DAILY MEAN	32	Mar 24	36	Apr 15	19	Apr 16, 1979
ANNUAL SEVEN-DAY MINIMUM	34	Mar 20	38	Apr 12	20	Apr 13, 1979
MAXIMUM PEAK FLOW			33,100	Sep 16	41,200	Sep 16, 1975
MAXIMUM PEAK STAGE			31.17	Sep 16	36.60	Sep 16, 1975
INSTANTANEOUS LOW FLOW			35	Apr 15	16	Apr 17, 1979
ANNUAL RUNOFF (AC-FT)	231,700		219,100		216,600	
ANNUAL RUNOFF (CFSM)	4.50		4.24		4.20	
ANNUAL RUNOFF (INCHES)	61.04		57.72		57.05	
10 PERCENT EXCEEDS	572		498		601	
50 PERCENT EXCEEDS	180		136		136	
90 PERCENT EXCEEDS	54		54		43	



50148890 RIO CULEBRINAS AT MARGARITA DAM NEAR AGUADA, PR

LOCATION.--Lat 18°23'40", long 67°09'04", Hydrologic Unit 21010003, on right bank 40 ft upstream of Margarita Dam spillway 0.2 mi (0.32 km) upstream of Highway 2 at Aguadilla Filtration Plant water intake at Río Culebrinas, 1.05 mi (1.69 km) northeast of Central Coloso and 2.55 mi (4.10 km) southeast from Aguadilla Plaza.

DRAINAGE AREA.--94.6 mi^2 (245 km^2).

PERIOD OF RECORD.--July 1998 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 48.6 ft. (14.8 m), from topographic map. For mean sea level elevations add 3.0 ft to gage-height readings.

REMARKS.--Records poor. Gage-height and precipitation satellite telemetry at station. These are water extraction activities at the reservoir by the Puerto Rico Aqueduct and Sewer Authority.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	570	805	198	129	80	57	e39	e60	e150	e570	e152	e480
2	753	1,470	193	129	79	49	65	e55	e105	e340	e147	e400
3	645	665	182	139	79	46	36	e52	e90	e160	e144	e1,600
4	408	428	175	135	81	46	42	e100	e85	e120	e240	e1,430
5	234	348	173	141	71	42	e42	e78	e115	e95	e160	e1,200
6	295	445	408	122	67	45	e34	e70	e300	e85	e120	e1,100
7	520	472	649	125	69	48	e118	e900	e480	e80	e100	e460
8	683	435	579	116	68	43	80	e430	e170	e150	e220	e280
9	633	341	251	411	70	44	e53	e300	e140	e95	e140	e240
10	1,150	292	215	555	65	46	e36	e650	e130	e70	e100	e210
11	622	301	198	191	64	54	e32	e230	e105	e170	e90	e1,000
12	534	287	196	162	68	48	e29	e1,200	e90	e100	e150	e900
13	502	1,940	186	133	63	43	e29	e350	e80	e90	e110	e900
14	394	1,910	637	142	59	43	e28	e350	e72	e85	e100	e730
15	649	908	349	130	62	56	e28	e180	e70	e340	e200	e2,000
16	776	1,520	199	150	67	98	e28	e150	e68	e195	e200	e6,000
17	401	794	184	119	68	48	e28	e125	e270	e140	e100	e4,800
18	292	1,160	176	109	64	67	e28	e330	e130	e1,600	e90	e3,000
19	506	1,000	169	107	61	52	e460	e170	e700	e1,100	e1,400	e2,200
20	685	427	157	111	61	52	e300	e120	e250	e640	e800	e1,600
21	927	364	194	189	76	44	e110	e100	e200	e400	e600	e1,200
22	689	364	282	112	111	41	e70	e92	e150	e340	e350	e900
23	290	322	285	101	76	e38	e90	e86	e110	e290	e240	e700
24	736	304	164	98	66	e36	e70	e82	e90	e190	e1,200	e600
25	536	289	167	91	97	e35	e65	e81	e82	e185	e900	e520
26	1,170	256	160	88	79	e34	e320	e220	e340	e150	e600	e720
27	1,230	237	148	87	66	e33	e220	e220	e260	e200	e340	e600
28	1,250	226	154	90	57	e100	e380	e110	e380	e500	e1,700	e520
29	646	214	146	136	61	e70	e180	e230	e290	e270	e1,100	e800
30	819	205	139	89	---	e48	e75	e120	e130	e170	e800	e700
31	616	---	132	84	---	35	---	e105	---	e160	e600	---
TOTAL	20,161	18,729	7,445	4,521	2,055	1,541	3,115	7,346	5,632	9,080	13,193	37,790
MEAN	650	624	240	146	70.9	49.7	104	237	188	293	426	1,260
MAX	1,250	1,940	649	555	111	100	460	1,200	700	1,600	1,700	6,000
MIN	234	205	132	84	57	33	28	52	68	70	90	210
AC-FT	39,990	37,150	14,770	8,970	4,080	3,060	6,180	14,570	11,170	18,010	26,170	74,960
CFSM	6.87	6.60	2.54	1.54	0.75	0.53	1.10	2.50	1.98	3.10	4.50	13.3
IN.	7.93	7.36	2.93	1.78	0.81	0.61	1.22	2.89	2.21	3.57	5.19	14.86

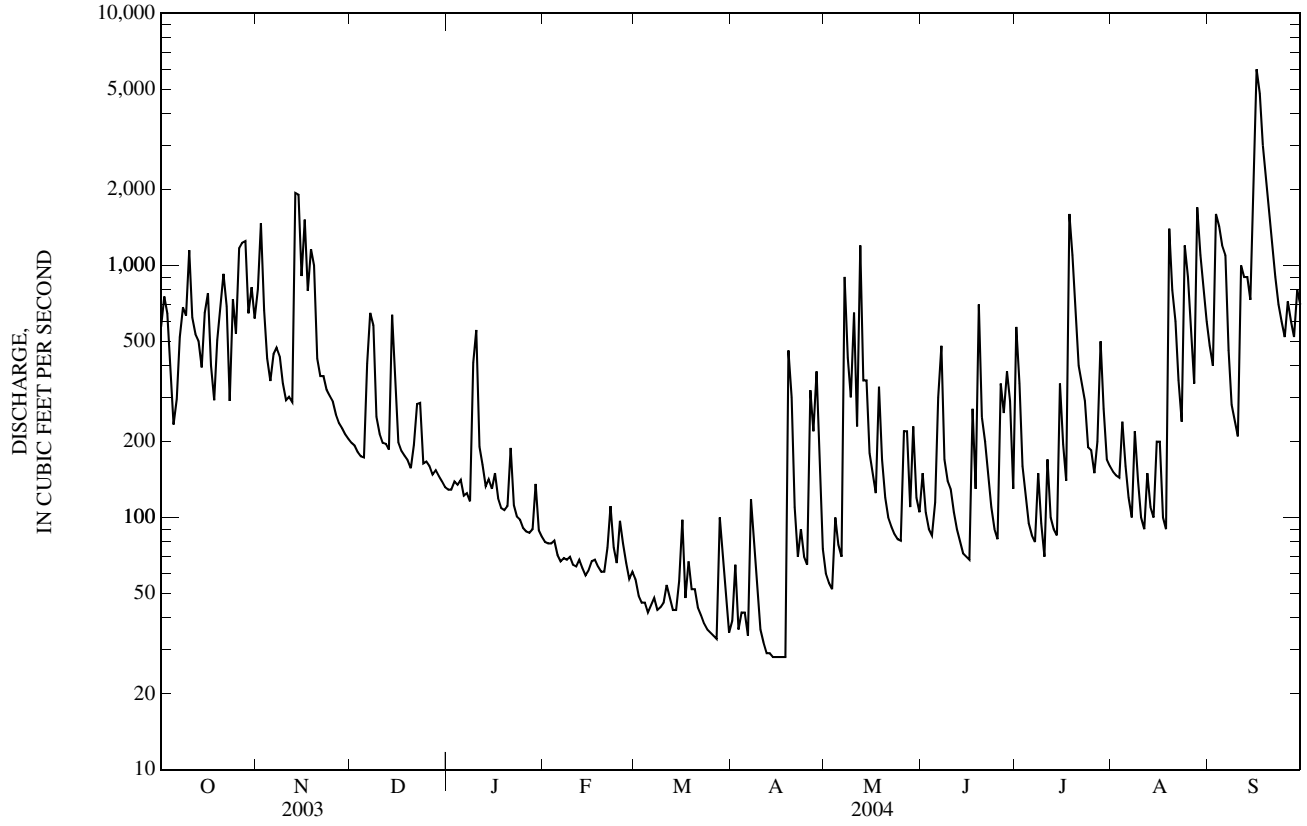
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2004, BY WATER YEAR (WY)

MEAN	655	585	226	124	75.0	92.6	220	355	348	295	509	733
MAX	778	792	392	207	108	318	442	591	632	408	949	1,260
(WY)	(2000)	(2000)	(2002)	(1999)	(2003)	(1999)	(2003)	(2003)	(1999)	(2001)	(1998)	(2004)
MIN	588	252	92.7	71.6	52.1	35.5	89.8	237	156	204	213	363
(WY)	(2001)	(2001)	(2001)	(2001)	(2001)	(2000)	(2000)	(2004)	(2002)	(2003)	(2000)	(2003)

50148890 RIO CULEBRINAS AT MARGARITA DAM NEAR AGUADA, PR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1998 - 2004	
ANNUAL TOTAL	130,238		130,608			
ANNUAL MEAN	357		357		343	
HIGHEST ANNUAL MEAN					362	1999
LOWEST ANNUAL MEAN					308	2001
HIGHEST DAILY MEAN	2,620	May 18	6,000	Sep 16	6,000	Sep 16, 2004
LOWEST DAILY MEAN	26	Mar 26	28	Apr 14	17	Apr 18, 2000
ANNUAL SEVEN-DAY MINIMUM	33	Mar 20	28	Apr 12	26	Apr 13, 2000
MAXIMUM PEAK FLOW					5,480	Sep 22, 1998
MAXIMUM PEAK STAGE					18.28	Sep 22, 1998
ANNUAL RUNOFF (AC-FT)	258,300		259,100		248,300	
ANNUAL RUNOFF (CFSM)	3.77		3.77		3.62	
ANNUAL RUNOFF (INCHES)	51.21		51.36		49.22	
10 PERCENT EXCEEDS	784		843		842	
50 PERCENT EXCEEDS	226		166		194	
90 PERCENT EXCEEDS	63		51		52	

e Estimated



50149100 RIO CULEBRINAS NEAR AGUADA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°24'03", long 67°09'40", at bridge on Highway 2, 2.3 mi (3.7 km) northeast of Aguada Plaza.

DRAINAGE AREA.--97.0 mi^2 (251.1 km^2).

PERIOD OF RECORD.--Water years 1958, 1970 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)
NOV 19...	1115	E830	5.5	7.2	245	25.5	110	38.8	3.65	2.97	.2	5.98	109
MAR 01...	1600	14	8.3	7.8	310	24.2	--	--	--	--	--	--	130
JUN 15...	1345	22	6.4	7.6	371	28.6	--	--	--	--	--	--	144
AUG 10...	0900	180	6.5	7.7	255	26.1	100	34.7	4.23	2.28	.4	9.03	102

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)
NOV 19...	6.82	<.2	15.6	6.5	--	146	452	2.0	.04	.48	.500	.02	2.0
MAR 01...	--	--	--	--	<.1	--	--	<.20	.03	--	.710	<.01	--
JUN 15...	--	--	--	--	--	--	<10	<.20	.03	--	.630	<.01	--
AUG 10...	9.44	<.2	21.5	7.2	--	151	212	--	.04	--	--	--	--

Date	Total nitrogen, water, unfltrd mg/L (00600)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Total coliform, M-Endo, immed, col/ 100 mL (31501)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)
NOV 19...	2.5	11.1	.38	30	10,000	E80,000	--	--	--	--	--	--	--
MAR 01...	--	--	.06	--	570	20,000	--	--	--	--	--	--	--
JUN 15...	--	--	.06	<10	620	6,000	--	--	--	--	--	--	--
AUG 10...	--	--	.09	30	2,600	--	<2	58.1	35	<.2	1.9	M	<.01

Date	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
NOV 19...	--	--	--	--	--	--	--	--	--
MAR 01...	--	--	--	<.02	--	--	--	<.10	<16
JUN 15...	--	--	--	--	--	--	--	--	--
AUG 10...	3,740	12.1	215	E.02	<3	<.3	11	<.40	<16

50149100 RIO CULEBRINAS NEAR AGUADA, PR—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED
PESTICIDE ANALYSES

Date	Time	2,4,5-T water unfltrd ug/L (39740)	2,4-D water unfltrd ug/L (39730)	Aldrin, water, unfltrd ug/L (39330)	alpha-Endosulfan, water, unfltrd ug/L (39388)	Carbophenothion, water, unfltrd ug/L (39786)	Chlordane, technical, water, unfltrd ug/L (39350)	Chlorpyrifos water unfltrd ug/L (38932)	Diazinon, water, unfltrd ug/L (39570)	Dichlorprop, water, unfltrd ug/L (82183)	Dieldrin, water, unfltrd ug/L (39380)	Disulfoton, water, unfltrd ug/L (39011)	Endrin, water, unfltrd ug/L (39390)
AUG													
10...	0900	<.01	.07	<.01	<.03	<.02	<.1	<.01	<.02	<.02	<.016	<.10	<.01

Date	Ethion, water, unfltrd ug/L (39398)	Fonofos water unfltrd ug/L (82614)	Heptachlor epoxide water unfltrd ug/L (39420)	Heptachlor, water, unfltrd ug/L (39410)	Lindane water, unfltrd ug/L (39340)	Malathion, water, unfltrd ug/L (39530)	Methyl parathion, water, unfltrd ug/L (39600)	Mirex, water, unfltrd ug/L (39755)	p,p'-DDD, water, unfltrd ug/L (39360)	p,p'-DDE, water, unfltrd ug/L (39365)	p,p'-DDT, water, unfltrd ug/L (39370)	p,p'-Methoxychlor, water, unfltrd ug/L (39480)	Parathion, water, unfltrd ug/L (39540)
AUG													
10...	<.01	<.01	<.009	<.01	<.014	<.10	<.01	<.006	<.016	<.014	<.010	<.006	<.01

Date	PCBs, water, unfltrd ug/L (39516)	Phorate water unfltrd ug/L (39023)	Silvex, water, unfltrd ug/L (39760)	Toxaphene, water, unfltrd ug/L (39400)	Tribuphos, water, unfltrd ug/L (39040)
AUG					
10...	<.1	<.02	<.02	<1	<.02

< Actual value is known to be less than the value shown
E Estimated value
M Presence verified, not quantified

THIS PAGE IS INTENTIONALLY BLANK

Water Quality at
Partial Record Stations
in Puerto Rico

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION

Water-quality partial-record stations are particular sites where chemical-quality, biological and or sediment data are collected systemticaly over a period of years for use in hydrological analyses. The data are collected usually less than quarterly.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)
50048610 BAHIA DE SAN JUAN NO. 6, SAN JUAN PR (LAT 18 26 56N LONG 066 07 56W)													
FEB 2002													
26...	1020	1.00	--	5.8	--	8.1	53,200	26.7	--	62	.30	.02	<.020
26...	1030	3.00	24.0	6.1	93	8.1	52,600	26.7	120	26	.30	.02	<.020
MAY													
29...	1020	8.00	--	5.1	81	6.9	55,100	28.8	120	<10	.30	.04	<.020
29...	1030	1.00	--	4.6	--	7.7	55,400	28.6	--	28	.20	.05	<.020
SEP													
30...	1000	1.00	--	9.0	143	8.0	50,400	29.6	120	71	.30	.02	<.020
30...	1015	5.00	27.0	6.3	--	8.0	53,300	29.7	--	48	.20	.02	<.020
50049720 LAGUNA SAN JOSE NO. 3 AT SAN JUAN, PR (LAT 18 26 40N LONG 066 02 26W)													
FEB 2002													
28...	0800	1.00	--	.7	--	7.0	33,200	27.7	--	36	2.0	.70	<.020
28...	0815	5.00	13.0	15.2	200	8.5	20,500	25.6	82	18	1.1	.04	<.020
MAY													
30...	1130	5.00	23.0	8.3	116	8.3	20,100	29.3	79	24	1.3	.07	<.020
30...	1140	1.00	--	.9	--	7.9	26,500	29.6	--	11	1.2	.25	<.020
50049755 SJ5300 (LAT 18 25 28N LONG 066 01 11W)													
FEB 2002													
27...	1100	--	--	5.3	--	7.8	24,600	26.4	--	108	.90	.06	<.020
27...	1115	3.00	60.0	6.6	87	7.8	20,200	25.7	80	12	.90	.05	.020
MAY													
31...	0915	5.00	40.0	4.6	64	7.6	23,100	28.4	87	11	1.3	.46	<.020
31...	0930	1.00	--	3.0	--	7.4	24,700	29.0	--	18	1.2	.48	<.020
50049830 QDA JUAN MENDEZ NR REPARTO UNIVERSITARIO, SAN JUAN (LAT 18 23 36N LONG 066 02 31W)													
FEB 2002													
25...	1215	--	--	5.7	68	6.9	351	24.2	113	<10	<.20	.09	.650
MAY													
28...	1140	--	--	6.8	84	7.2	342	26.2	110	<10	<.20	.02	.500
50049850 MPN500 (LAT 18 26 07N LONG 066 03 30W)													
FEB 2002													
27...	0845	--	--	--	--	--	--	--	--	56	2.2	2.10	.030
27...	0850	1.00	13.0	1.0	13	7.3	33,300	25.6	160	42	4.1	2.90	.030
MAY													
30...	0915	1.00	7.00	1.4	21	7.2	37,200	29.6	166	25	4.6	3.30	<.020

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Nitrite water, unfltrd mg/L as N (00615)	Total nitro-gen, water, unfltrd mg/L as NO3 (71887)	Phos-phorus, water, unfltrd mg/L (00665)	Biomass plank-ton, ash wgt mg/L (81353)	Biomass plank-ton, dry wgt mg/L (81354)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Fecal strep-tococci KF MF, col/ 100 mL (31673)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)
50048610 BAHIA DE SAN JUAN NO. 6, SAN JUAN PR (LAT 18 26 56N LONG 066 07 56W)									
FEB 2002									
26...	<.01	--	.12	--	--	--	--	--	--
26...	<.01	--	.12	388	401	<10	--	2.2	<.1
MAY									
29...	<.01	--	<.02	319	331	E32	--	.9	<.1
29...	<.01	--	<.02	--	--	--	--	--	--
SEP									
30...	<.01	--	.06	319	331	150	--	3.8	<.1
30...	<.01	--	.06	--	--	--	--	--	--
50049720 LAGUNA SAN JOSE NO. 3 AT SAN JUAN, PR (LAT 18 26 40N LONG 066 02 26W)									
FEB 2002									
28...	<.01	--	.29	--	--	--	--	--	--
28...	<.01	--	.14	557	576	E30	--	8.8	.4
MAY									
30...	.01	--	.17	348	358	<10	--	5.2	<.1
30...	.02	--	.21	--	--	--	--	--	--
50049755 SJ5300 (LAT 18 25 28N LONG 066 01 11W)									
FEB 2002									
27...	<.01	--	.14	--	--	--	--	--	--
27...	.01	4.1	.15	286	293	250	--	1.7	<.1
MAY									
31...	.01	--	.27	292	300	2,400	--	8.0	<.1
31...	.01	--	.27	--	--	--	--	--	--
50049830 QDA JUAN MENDEZ NR REPARTO UNIVERSITARIO, SAN JUAN (LAT 18 23 36N LONG 066 02 31W)									
FEB 2002									
25...	<.01	--	.06	--	--	E910	--	--	--
MAY									
28...	<.01	--	.04	--	--	5,600	--	--	--
50049850 MPN500 (LAT 18 26 07N LONG 066 03 30W)									
FEB 2002									
27...	.02	9.9	.52	--	--	--	--	--	--
27...	.02	18.3	.62	486	504	48,000	--	3.4	.2
MAY									
30...	.01	--	.68	700	724	26,000	--	45.6	<.1
30...	--	--	--	--	--	26,000	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Nitrate water unfltrd mg/L as N (00620)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Biomass phytoplankton, ashfree drymass mg/L (49953)	E coli, m-TEC MF, water, col/ 100 mL (31633)
50048610 BAHIA DE SAN JUAN NO. 6, SAN JUAN PR (LAT 18 26 56N LONG 066 07 56W)							
FEB 2002							
26...	--	<1.0	--	.28	--	--	--
26...	9.1	--	--	.28	--	--	--
MAY							
29...	2.0	--	--	.26	--	--	68
29...	--	<1.0	--	.15	--	--	--
SEP							
30...	5.4	--	--	.28	--	11.600	58
30...	--	<1.0	--	.18	--	--	--
50049720 LAGUNA SAN JOSE NO. 3 AT SAN JUAN, PR (LAT 18 26 40N LONG 066 02 26W)							
FEB 2002							
28...	--	4.0	--	1.3	--	--	--
28...	5.7	--	--	1.1	--	--	--
MAY							
30...	3.8	--	--	1.2	--	--	E60
30...	--	<1.0	--	.95	--	--	--
50049755 SJ5300 (LAT 18 25 28N LONG 066 01 11W)							
FEB 2002							
27...	--	<1.0	--	.84	--	--	--
27...	2.5	--	.01	.85	.92	--	--
MAY							
31...	2.9	--	--	.84	--	--	61,000
31...	--	<1.0	--	.72	--	--	--

Date	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Nitrate water unfltrd mg/L as N (00620)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	E coli, m-TEC MF, water, col/ 100 mL (31633)
50049830 QDA JUAN MENDEZ NR REPARTO UNIVERSITARIO, SAN JUAN (LAT 18 23 36N LONG 066 02 31W)						
FEB 2002						
25...	4.8	--	--	--	--	--
MAY						
28...	4.0	--	--	--	--	E17,000
50049850 MPN500 (LAT 18 26 07N LONG 066 03 30W)						
FEB 2002						
27...	--	<1.0	.01	.10	2.2	--
27...	7.1	--	.01	1.2	4.1	--
MAY						
30...	19	6.0	--	1.3	--	35,000

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION

Water-quality partial-record stations are particular sites where chemical-quality, biological and or sediment data are collected systemticaly over a period of years for use in hydrological analyses. The data are collected usually less than quarterly.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)
50049960 RIO PUERTO NUEVO AT MOUTH, SAN JUAN, PR (LAT 18 25 42N LONG 066 04 43W)													
FEB 2002													
27...	0815	1.00	--	3.2	46	7.6	41,800	26.2	150	10	2.0	1.60	.410
MAY													
30...	0840	1.00	13.0	5.4	70	7.3	7,600	27.3	151	11	2.2	1.60	.370
50050060 CANO SAN ANTONIO AT MOUTH, SAN JUAN PR (LAT 18 27 29N LONG 066 06 31W)													
FEB 2002													
26...	0850	1.00	--	5.2	--	8.0	53,800	26.2	--	20	<.20	.02	<.020
26...	0915	34.0	52.0	6.9	104	7.0	53,300	26.3	120	18	.20	<.01	<.020
MAY													
29...	0845	34.0	60.0	6.6	103	7.6	55,200	28.0	121	14	<.20	.04	<.020
29...	0900	1.00	--	3.2	--	7.9	56,000	27.8	--	31	<.20	.04	<.020
SEP													
30...	0840	1.00	--	6.6	105	7.8	52,800	29.1	120	46	<.20	.02	<.020
30...	0850	35.0	36.0	3.7	--	7.9	54,100	29.1	--	91	.20	.07	.030
50050105 QDA SAN ANTON NR URB. COUNTRY CLUB, CAROLINA PR (LAT 18 24 01N LONG 066 59 31W)													
FEB 2002													
25...	1015	--	--	6.8	82	7.4	428	23.9	140	<10	.50	.13	1.50
MAY													
28...	1015	--	--	4.5	56	7.6	418	27.1	130	<20	2.8	1.00	.180
50050310 QUEBRADA BLASINA AT SABANA GARDENS, SAN JUAN, PR (LAT 18 25 13N LONG 066 58 00W)													
FEB 2002													
25...	0830	--	--	3.0	43	7.8	40,800	25.6	130	22	1.0	.20	.070
MAY													
28...	0845	--	--	1.3	18	7.7	19,800	28.5	136	44	3.5	.46	.110
50050340 LAGUNA PINONES NO. 2 NR CAROLINA, PR (LAT 18 26 32N LONG 065 57 03W)													
MAR 2002													
01...	0850	--	--	.7	--	7.6	41,200	25.2	--	60	1.1	.01	<.020
01...	0900	1.00	13.0	5.6	80	8.0	47,200	24.8	140	40	1.0	.01	<.020
JUN													
03...	1000	1.00	11.0	6.8	108	8.4	49,600	29.9	139	35	1.1	.06	<.020

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Nitrite water, unfltrd mg/L as N (00615)	Total nitro-gen, water, unfltrd mg/L as NO3 (71887)	Phos-phorus, water, unfltrd mg/L (00665)	Biomass plank-ton, ash wgt mg/L (81353)	Biomass plank-ton, dry wgt mg/L (81354)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)
50049960 RIO PUERTO NUEVO AT MOUTH, SAN JUAN, PR (LAT 18 25 42N LONG 066 04 43W)								
FEB 2002								
27...	.09	10.7	.32	--	--	34,000	--	--
MAY								
30...	.06	11.4	.30	--	--	E8,600	--	--
50050060 CANO SAN ANTONIO AT MOUTH, SAN JUAN PR (LAT 18 27 29N LONG 066 06 31W)								
FEB 2002								
26...	<.01	--	.11	--	--	--	--	--
26...	<.01	--	.10	317	330	E10	.3	<.1
MAY								
29...	<.01	--	<.02	324	335	E4	2.2	<.1
29...	<.01	--	<.02	--	--	--	--	--
SEP								
30...	<.01	--	.06	307	318	200	3.4	<.1
30...	.01	1.0	.06	--	--	--	--	--
50050105 QDA SAN ANTON NR URB. COUNTRY CLUB, CAROLINA PR (LAT 18 24 01N LONG 066 59 31W)								
FEB 2002								
25...	.05	8.9	.11	--	--	2,300	--	--
MAY								
28...	.02	13.2	.29	--	--	>60,000	--	--
50050310 QUEBRADA BLASINA AT SABANA GARDENS, SAN JUAN, PR (LAT 18 25 13N LONG 066 58 00W)								
FEB 2002								
25...	.02	4.7	.13	--	--	5,200	--	--
MAY								
28...	.05	16.0	.44	--	--	E190,000	--	--
50050340 LAGUNA PINONES NO. 2 NR CAROLINA, PR (LAT 18 26 32N LONG 065 57 03W)								
MAR 2002								
01...	<.01	--	.11	--	--	--	--	--
01...	.01	--	.08	616	637	E20	3.0	<.1
JUN								
03...	<.01	--	.06	914	939	<10	14.8	<.1

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Turbid-ity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Nitrate water unfltrd mg/L as N (00620)	Organic nitro-gen, water, unfltrd mg/L (00605)	Total nitro-gen, water, unfltrd mg/L (00600)	Biomass phyto-plank-ton, ashfree drymass mg/L (49953)	E coli, m-TEC MF, water, col/ 100 mL (31633)
50049960 RIO PUERTO NUEVO AT MOUTH, SAN JUAN, PR (LAT 18 25 42N LONG 066 04 43W)								
FEB 2002								
27...	0815	7.0	--	.32	.40	2.4	--	--
MAY								
30...	0840	7.5	--	.31	.60	2.6	--	70,000
50050060 CANO SAN ANTONIO AT MOUTH, SAN JUAN PR (LAT 18 27 29N LONG 066 06 31W)								
FEB 2002								
26...	0850	--	<1.0	--	--	--	--	--
26...	0915	2.6	--	--	--	--	--	--
MAY								
29...	0845	1.6	--	--	--	--	--	E13
29...	0900	--	--	--	--	--	--	--
SEP								
30...	0840	9.6	--	--	--	--	11.200	170
30...	0850	--	<1.0	.02	.13	.23	--	--
50050105 QDA SAN ANTON NR URB. COUNTRY CLUB, CAROLINA PR (LAT 18 24 01N LONG 066 59 31W)								
FEB 2002								
25...	1015	8.4	--	1.45	.37	2.0	--	--
MAY								
28...	1015	7.7	--	.16	1.8	3.0	--	>60,000
50050310 QUEBRADA BLASINA AT SABANA GARDENS, SAN JUAN, PR (LAT 18 25 13N LONG 066 58 00W)								
FEB 2002								
25...	0830	7.8	--	.05	.80	1.1	--	--
MAY								
28...	0845	16	--	.06	3.0	3.6	--	160,000
50050340 LAGUNA PINONES NO. 2 NR CAROLINA, PR (LAT 18 26 32N LONG 065 57 03W)								
MAR 2002								
01...	0850	--	<1.0	--	1.1	--	--	--
01...	0900	7.7	--	--	.99	--	--	--
JUN								
03...	1000	7.6	<1.0	--	1.0	--	--	<10

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)
50050353 SUAREZ CANAL AT HWY 26 BRIDGE NR CAROLINA, PR (LAT 18 25 47N LONG 065 59 26W)													
FEB 2002													
28...	0905	1.00	--	1.2	--	7.6	42,400	26.9	--	36	.60	.24	<.020
28...	0915	10.0	72.0	7.5	100	7.6	21,300	25.9	78	20	.80	.13	.050
MAY													
31...	1015	10.0	59.0	2.4	34	7.8	24,100	29.2	85	16	1.4	.65	<.020
31...	1030	1.00	--	.6	--	7.5	48,300	29.0	--	20	.80	.35	<.020
50050355 LAGUNA TORRECILLA NO. 3 NR CAROLINA, PR (LAT 18 26 37N LONG 065 58 51W)													
FEB 2002													
28...	0935	1.00	--	6.5	--	7.9	51,200	26.7	--	18	.50	.03	<.020
28...	0945	3.00	32.0	7.3	106	7.8	43,800	26.5	106	26	.50	.06	<.020
MAY													
31...	1115	3.00	35.0	2.3	34	7.8	37,600	29.1	95	25	1.0	.42	<.020
31...	1130	1.00	--	4.2	--	7.9	57,600	28.4	--	39	.30	.08	<.020
50050375 LAGUNA TORRECILLA NO. 1 NR CAROLINA, PR (LAT 18 27 36N LONG 065 59 34W)													
MAR 2002													
01...	0955	1.00	--	6.7	--	8.0	55,200	25.9	--	38	<.20	<.01	<.020
01...	1005	4.00	61.0	6.7	102	8.0	55,200	25.9	120	28	<.20	<.01	<.020
JUN													
03...	1100	2.00	22.0	5.8	91	8.0	48,700	29.5	120	35	.50	.05	<.020
03...	1110	1.00	--	5.6	--	7.9	50,800	29.4	--	30	.40	.05	<.020

Date	Nitrite water, unfltrd mg/L as N (00615)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	Biomass plankton, ash wgt mg/L (81353)	Biomass plankton, dry wgt mg/L (81354)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)
50050353 SUAREZ CANAL AT HWY 26 BRIDGE NR CAROLINA, PR (LAT 18 25 47N LONG 065 59 26W)								
FEB 2002								
28...	<.01	--	.14	--	--	--	--	--
28...	<.01	3.8	.12	280	288	550	3.7	.2
MAY								
31...	<.01	--	.31	331	339	E2,000	3.5	<.1
31...	<.01	--	.13	--	--	--	--	--
50050355 LAGUNA TORRECILLA NO. 3 NR CAROLINA, PR (LAT 18 26 37N LONG 065 58 51W)								
FEB 2002								
28...	<.01	--	.11	--	--	--	--	--
28...	<.01	--	.12	293	302	E140	2.9	<.1
MAY								
31...	<.01	--	.18	305	313	480	10.0	<.1
31...	<.01	--	.05	--	--	--	--	--
50050375 LAGUNA TORRECILLA NO. 1 NR CAROLINA, PR (LAT 18 27 36N LONG 065 59 34W)								
MAR 2002								
01...	.01	--	.03	308	321	--	E.1	<.1
01...	.01	--	.03	316	327	<4	E.2	<.1
JUN								
03...	<.01	--	.05	463	474	E10	2.8	<.1
03...	<.01	--	.07	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	E coli, m-TEC MF, water, col/ 100 mL (31633)
50050353 SUAREZ CANAL AT HWY 26 BRIDGE NR CAROLINA, PR (LAT 18 25 47N LONG 065 59 26W)						
FEB 2002						
28...	0905	--	<1.0	.36	--	--
28...	0915	4.2	--	.67	.85	--
MAY						
31...	1015	3.1	--	.75	--	6,500
31...	1030	--	<1.0	.45	--	--
50050355 LAGUNA TORRECILLA NO. 3 NR CAROLINA, PR (LAT 18 26 37N LONG 065 58 51W)						
FEB 2002						
28...	0935	--	<1.0	.47	--	--
28...	0945	5.6	--	.44	--	--
MAY						
31...	1115	3.7	--	.58	--	2,200
31...	1130	--	<1.0	.22	--	--
50050375 LAGUNA TORRECILLA NO. 1 NR CAROLINA, PR (LAT 18 27 36N LONG 065 59 34W)						
MAR 2002						
01...	0955	--	<1.0	--	--	--
01...	1005	3.6	--	--	--	--
JUN						
03...	1100	6.5	--	.45	--	<10
03...	1110	--	<1.0	.35	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION

Water-quality partial-record stations are particular sites where chemical-quality, biological and or sediment data are collected systemticaly over a period of years for use in hydrological analyses. The data are collected usually less than quarterly.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)
50049960 RIO PUERTO NUEVO AT MOUTH, SAN JUAN, PR (LAT 18 25 42N LONG 066 04 43W)													
OCT 2002													
01...	0830	1.00	--	.8	10	6.6	4,740	28.2	180	12	5.1	4.30	.170
MAR 2003													
04...	0745	1.00	20.0	1.3	17	7.1	12,000	25.9	160	<10	3.5	3.10	.070
JUN													
10...	0900	1.00	6.00	.8	10	7.3	4,350	27.7	140	<10	--	--	--
50050060 CANO SAN ANTONIO AT MOUTH, SAN JUAN PR (LAT 18 27 29N LONG 066 06 31W)													
MAR 2003													
03...	0900	1.00	--	15.4	239	7.7	54,700	27.1	130	<10	.30	.02	<.020
03...	0910	37.0	38.0	6.1	--	7.8	54,800	27.1	--	<10	.30	.02	<.020
JUN													
11...	0835	1.00	--	6.2	98	7.7	54,900	28.0	--	<10	--	--	--
11...	0850	38.0	50.0	4.6	--	7.4	55,100	27.8	120	16	<.20	.01	<.020
50050105 QDA SAN ANTON NR URB. COUNTRY CLUB, CAROLINA PR (LAT 18 24 01N LONG 066 59 31W)													
OCT 2002													
07...	0750	--	--	5.8	73	7.1	389	26.8	130	<10	.70	.18	.930
MAR 2003													
07...	1020	--	--	6.5	79	7.4	442	25.1	150	<10	.60	.22	1.30
07...	1025	--	--	--	--	--	--	--	--	12	.60	.22	1.30
JUN													
17...	0930	--	--	6.7	84	7.7	406	26.9	120	<10	--	--	--
50050310 QUEBRADA BLASINA AT SABANA GARDENS, SAN JUAN, PR (LAT 18 25 13N LONG 066 58 00W)													
OCT 2002													
07...	0855	--	--	2.4	32	7.3	7,890	28.1	140	<10	1.0	.45	.200
MAR 2003													
07...	0825	--	--	3.0	38	7.1	8,580	25.9	160	<10	1.5	.69	.490
JUN													
17...	0830	--	--	1.4	18	7.1	5,520	27.6	130	<10	--	--	--
50050340 LAGUNA PINONES NO. 2 NR CAROLINA, PR (LAT 18 26 32N LONG 065 57 03W)													
OCT 2002													
03...	0810	1.00	9.00	5.7	84	7.7	34,800	29.1	130	31	1.8	<.01	<.020
MAR 2003													
06...	0910	1.00	13.0	6.2	93	8.0	48,000	27.0	160	10	1.4	.02	<.020
JUN													
16...	0910	1.00	18.0	6.2	94	8.1	47,900	27.7	120	31	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Nitrite water, unfltrd mg/L as N (00615)	Total nitro-gen, water, unfltrd mg/L as NO3 (71887)	Phos-phorus, water, unfltrd mg/L (00665)	Biomass plank-ton, ash wgt mg/L (81353)	Biomass plank-ton, dry wgt mg/L (81354)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)
50049960 RIO PUERTO NUEVO AT MOUTH, SAN JUAN, PR (LAT 18 25 42N LONG 066 04 43W)								
OCT 2002								
01...	.13	23.3	.73	--	--	430,000	--	--
MAR 2003								
04...	.06	15.8	.58	--	--	E140,000	--	--
JUN								
10...	--	--	--	--	--	E610,000	--	--
50050060 CANO SAN ANTONIO AT MOUTH, SAN JUAN PR (LAT 18 27 29N LONG 066 06 31W)								
MAR 2003								
03...	<.01	--	<.02	319	333	E4	E3.0	<.1
03...	.01	--	<.02	--	--	--	--	--
JUN								
11...	--	--	--	--	--	E15	--	--
11...	<.01	--	.04	--	--	--	--	--
50050105 QDA SAN ANTON NR URB. COUNTRY CLUB, CAROLINA PR (LAT 18 24 01N LONG 066 59 31W)								
OCT 2002								
07...	.05	7.2	.08	--	--	27,000	--	--
MAR 2003								
07...	.09	8.4	.25	--	--	3,200	--	--
07...	.09	8.4	.22	--	--	--	--	--
JUN								
17...	--	--	--	--	--	E6,000	--	--
50050310 QUEBRADA BLASINA AT SABANA GARDENS, SAN JUAN, PR (LAT 18 25 13N LONG 066 58 00W)								
OCT 2002								
07...	.04	5.3	.14	--	--	E19,000	--	--
MAR 2003								
07...	.09	8.8	.13	--	--	E1,900	--	--
JUN								
17...	--	--	--	--	--	2,700	--	--
50050340 LAGUNA PINONES NO. 2 NR CAROLINA, PR (LAT 18 26 32N LONG 065 57 03W)								
OCT 2002								
03...	<.01	--	.10	716	745	<4	5.9	<.1
MAR 2003								
06...	.01	--	.07	772	808	E2	E26.3	4.7
JUN								
16...	--	--	--	--	--	E13	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Nitrate water unfltrd mg/L as N (00620)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Biomass phyto-plank-ton, ashfree drymass mg/L (49953)	E coli, m-TEC MF, water, col/ 100 mL (31633)
50049960 RIO PUERTO NUEVO AT MOUTH, SAN JUAN, PR (LAT 18 25 42N LONG 066 04 43W)							
OCT 2002							
01...	14	--	.04	.80	5.3	--	620,000
MAR 2003							
04...	5.3	--	.01	.40	3.6	--	E160,000
JUN							
10...	10	--	--	--	--	--	E600,000
50050060 CANO SAN ANTONIO AT MOUTH, SAN JUAN PR (LAT 18 27 29N LONG 066 06 31W)							
MAR 2003							
03...	3.7	--	--	.28	--	13.600	E12
03...	--	.6	--	.28	--	--	--
JUN							
11...	1.3	--	--	--	--	--	E15
11...	--	<.1	--	--	--	--	--
50050105 QDA SAN ANTON NR URB. COUNTRY CLUB, CAROLINA PR (LAT 18 24 01N LONG 066 59 31W)							
OCT 2002							
07...	4.9	--	.88	.52	1.6	--	7,100
MAR 2003							
07...	9.9	--	1.21	.38	1.9	--	3,700
07...	7.2	--	1.21	.38	1.9	--	--
JUN							
17...	3.4	--	--	--	--	--	E14,000
50050310 QUEBRADA BLASINA AT SABANA GARDENS, SAN JUAN, PR (LAT 18 25 13N LONG 066 58 00W)							
OCT 2002							
07...	4.8	--	.16	.55	1.2	--	39,000
MAR 2003							
07...	4.2	--	.40	.81	2.0	--	24,000
JUN							
17...	4.5	--	--	--	--	--	4,000
50050340 LAGUNA PINONES NO. 2 NR CAROLINA, PR (LAT 18 26 32N LONG 065 57 03W)							
OCT 2002							
03...	10	<1.0	--	--	--	28.500	E42
MAR 2003							
06...	12	.5	--	1.4	--	35.000	E2
JUN							
16...	8.2	--	--	--	--	--	E16

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)
50050353 SUAREZ CANAL AT HWY 26 BRIDGE NR CAROLINA, PR (LAT 18 25 47N LONG 065 59 26W)													
OCT 2002													
03...	1015	1.00	--	4.9	68	8.0	15,900	29.8	75	10	1.3	.40	<.020
03...	1025	10.0	38.0	2.7	--	7.4	40,800	30.1	--	26	.80	.32	<.020
MAR 2003													
06...	1110	1.00	--	3.4	48	7.5	29,500	27.6	66	<10	1.3	.33	<.020
06...	1120	13.0	46.0	1.9	--	7.4	44,000	28.0	--	<10	.90	.30	<.020
JUN													
16...	1055	1.00	--	3.4	48	6.2	24,400	29.2	70	<10	--	--	--
16...	1100	13.0	42.0	.5	--	6.2	44,500	29.2	--	41	--	--	--
50050355 LAGUNA TORRECILLA NO. 3 NR CAROLINA, PR (LAT 18 26 37N LONG 065 58 51W)													
OCT 2002													
03...	0940	1.00	--	3.3	48	7.8	29,000	29.8	93	13	1.0	.34	<.020
03...	0950	3.00	32.0	4.3	--	7.7	54,500	30.2	--	37	.60	.08	<.020
MAR 2003													
06...	1035	1.00	--	4.1	59	7.6	35,300	27.8	86	<10	1.1	.25	<.020
06...	1045	6.00	34.0	5.0	--	7.8	50,600	27.6	--	24	.60	.04	<.020
JUN													
16...	1025	1.00	--	2.5	36	6.6	33,600	28.9	85	12	--	--	--
16...	1030	3.00	30.0	4.1	--	7.1	48,500	28.4	--	<10	--	--	--
50050375 LAGUNA TORRECILLA NO. 1 NR CAROLINA, PR (LAT 18 27 36N LONG 065 59 34W)													
OCT 2002													
03...	0905	1.00	--	6.0	93	7.6	46,400	29.4	110	34	.50	<.01	<.020
03...	0915	3.00	24.0	5.3	--	7.8	55,500	29.2	--	36	.50	<.01	<.020
MAR 2003													
06...	1000	1.00	--	6.0	93	7.9	55,000	26.8	100	<10	<.20	.02	<.020
06...	1010	5.00	40.0	6.0	--	7.9	55,000	26.8	--	<10	.40	.02	<.020
JUN													
16...	0955	1.00	--	4.9	75	7.4	46,600	27.8	110	<10	--	--	--
16...	1000	3.00	30.0	5.7	--	7.5	54,800	27.5	--	10	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Nitrite water, unfltrd mg/L as N (00615)	Phos-phorus, water, unfltrd mg/L (00665)	Biomass plank-ton, ash wgt mg/L (81353)	Biomass plank-ton, dry wgt mg/L (81354)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)
50050353 SUAREZ CANAL AT HWY 26 BRIDGE NR CAROLINA, PR (LAT 18 25 47N LONG 065 59 26W)							
OCT 2002							
03...	.01	.18	277	285	3,000	6.3	<.1
03...	<.01	.11	--	--	--	--	--
MAR 2003							
06...	<.01	.22	575	594	64	6.4	<.1
06...	<.01	.15	--	--	--	--	--
JUN							
16...	--	--	--	--	E610	--	--
16...	--	--	--	--	--	--	--
50050355 LAGUNA TORRECILLA NO. 3 NR CAROLINA, PR (LAT 18 26 37N LONG 065 58 51W)							
OCT 2002							
03...	<.01	.13	355	365	2,700	2.6	<.1
03...	<.01	.08	--	--	--	--	--
MAR 2003							
06...	<.01	.18	560	579	600	10.7	<.1
06...	<.01	.07	--	--	--	--	--
JUN							
16...	--	--	--	--	E980	--	--
16...	--	--	--	--	--	--	--
50050375 LAGUNA TORRECILLA NO. 1 NR CAROLINA, PR (LAT 18 27 36N LONG 065 59 34W)							
OCT 2002							
03...	<.01	.06	307	319	170	4.3	<.1
03...	<.01	.06	--	--	--	--	--
MAR 2003							
06...	<.01	<.02	614	637	E2	.6	<.1
06...	<.01	<.02	--	--	--	--	--
JUN							
16...	--	--	--	--	250	--	--
16...	--	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Organic nitrogen, water, unfltrd mg/L (00605)	Biomass phyto-plank-ton, ashfree drymass mg/L (49953)	E coli, m-TEC MF, water, col/ 100 mL (31633)
50050353 SUAREZ CANAL AT HWY 26 BRIDGE NR CAROLINA, PR (LAT 18 25 47N LONG 065 59 26W)						
OCT 2002						
03...	1015	3.9	--	.90	8.400	3,000
03...	1025	--	<1.0	.48	--	--
MAR 2003						
06...	1110	3.5	--	.97	19.200	67
06...	1120	--	.5	.60	--	--
JUN						
16...	1055	7.4	--	--	--	E850
16...	1100	--	--	--	--	--
50050355 LAGUNA TORRECILLA NO. 3 NR CAROLINA, PR (LAT 18 26 37N LONG 065 58 51W)						
OCT 2002						
03...	0940	3.5	--	.66	10.200	2,000
03...	0950	--	<1.0	.52	--	--
MAR 2003						
06...	1035	3.7	--	.85	19.200	620
06...	1045	--	.2	.56	--	--
JUN						
16...	1025	4.1	--	--	--	E610
16...	1030	--	--	--	--	--
50050375 LAGUNA TORRECILLA NO. 1 NR CAROLINA, PR (LAT 18 27 36N LONG 065 59 34W)						
OCT 2002						
03...	0905	5.8	--	--	12.000	170
03...	0915	--	<1.0	--	--	--
MAR 2003						
06...	1000	5.1	--	--	23.600	E3
06...	1010	--	.2	.38	--	--
JUN						
16...	0955	4.3	--	--	--	100
16...	1000	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION

Water-quality partial-record stations are particular sites where chemical-quality, biological and or sediment data are collected systemticaly over a period of years for use in hydrological analyses. The data are collected usually less than quarterly.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)
50048610 BAHIA DE SAN JUAN NO. 6, SAN JUAN PR (LAT 18 26 56N LONG 066 07 56W)													
MAR 2003													
03...	1025	1.00	--	6.7	104	7.9	54,700	27.5	120	<10	.30	.01	<.020
03...	1035	6.00	26.0	6.2	--	7.9	54,700	27.5	--	15	.30	<.01	<.020
JUN													
11...	0945	1.00	--	5.8	91	7.5	52,000	28.2	120	13	.30	<.01	<.020
11...	0955	8.00	24.0	5.1	--	7.4	54,600	28.3	--	29	--	--	--
50049720 LAGUNA SAN JOSE NO. 3 AT SAN JUAN, PR (LAT 18 26 40N LONG 066 02 26W)													
OCT 2002													
02...	0830	1.00	--	4.3	59	7.6	12,000	29.8	71	18	2.5	.49	<.020
02...	0845	5.00	17.0	2.3	--	7.6	13,200	30.2	--	18	1.7	.30	<.020
MAR 2003													
05...	0850	1.00	--	3.3	46	7.8	22,100	27.8	63	<10	1.4	.18	<.020
05...	0900	6.00	23.0	.4	--	7.1	27,200	27.8	--	<10	1.3	.14	<.020
JUN													
12...	0900	1.00	--	4.3	58	7.2	18,800	28.1	75	<10	--	--	--
12...	0910	5.00	18.0	.7	--	7.1	26,500	29.4	--	14	--	--	--
50049755 SJ5300 (LAT 18 25 28N LONG 066 01 11W)													
OCT 2002													
02...	0915	1.00	--	5.7	79	7.7	14,100	29.6	75	13	1.4	.46	<.020
02...	0930	5.00	25.0	4.9	--	7.7	14,100	29.6	--	16	1.4	.47	<.020
MAR 2003													
05...	0940	1.00	--	4.2	57	7.8	24,300	26.9	62	<10	1.1	.04	<.020
05...	0950	5.00	27.0	.1	--	7.2	35,200	27.5	--	16	2.0	.27	<.020
JUN													
12...	0945	1.00	--	5.2	73	7.4	24,100	28.4	70	33	--	--	--
12...	0955	5.00	24.0	4.5	--	7.3	24,500	28.4	--	<10	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Nitrite water, unfltrd mg/L as N (00615)	Total nitro-gen, water, unfltrd mg/L as NO3 (71887)	Phos-phorus, water, unfltrd mg/L (00665)	Biomass plank-ton, ash wgt mg/L (81353)	Biomass plank-ton, dry wgt mg/L (81354)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Fecal strep-tococci KF MF, col/ 100 mL (31673)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)
50048610 BAHIA DE SAN JUAN NO. 6, SAN JUAN PR (LAT 18 26 56N LONG 066 07 56W)									
MAR 2003									
03...	.01	--	.02	325	341	E2	--	E3.0	<.1
03...	.01	--	.02	--	--	--	--	--	--
JUN									
11...	<.01	--	.04	--	--	E5	--	--	--
11...	--	--	--	--	--	--	--	--	--
50049720 LAGUNA SAN JOSE NO. 3 AT SAN JUAN, PR (LAT 18 26 40N LONG 066 02 26W)									
OCT 2002									
02...	.01	--	.17	672	694	130	--	22.6	<.1
02...	<.01	--	.16	--	--	--	--	--	--
MAR 2003									
05...	.01	--	.22	564	584	1,400	--	17.3	<.1
05...	.01	--	.22	--	--	--	--	--	--
JUN									
12...	--	--	--	--	--	E240	--	--	--
12...	--	--	--	--	--	--	--	--	--
50049755 SJ5300 (LAT 18 25 28N LONG 066 01 11W)									
OCT 2002									
02...	<.01	--	.20	541	558	E22	--	14.6	<.1
02...	<.01	--	.19	--	--	--	--	--	--
MAR 2003									
05...	<.01	--	.21	579	600	140	--	13.8	<.1
05...	.01	--	.35	--	--	--	--	--	--
JUN									
12...	--	--	--	--	--	E460	--	--	--
12...	--	--	--	--	--	--	--	--	--

Date	Turbid-ity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Nitrate water unfltrd mg/L as N (00620)	Organic nitro-gen, water, unfltrd mg/L (00605)	Total nitro-gen, water, unfltrd mg/L (00600)	Biomass phyto-plank--ton, ashfree drymass mg/L (49953)	E coli, m-TEC MF, water, col/ 100 mL (31633)
50048610 BAHIA DE SAN JUAN NO. 6, SAN JUAN PR (LAT 18 26 56N LONG 066 07 56W)							
MAR 2003							
03...	11	--	--	.29	--	15.600	E4
03...	--	.6	--	--	--	--	--
JUN							
11...	7.4	--	--	--	--	--	E6
11...	--	--	--	--	--	--	--
50049720 LAGUNA SAN JOSE NO. 3 AT SAN JUAN, PR (LAT 18 26 40N LONG 066 02 26W)							
OCT 2002							
02...	10	--	--	2.0	--	21.500	300
02...	--	<1.0	--	1.4	--	--	--
MAR 2003							
05...	3.7	--	--	1.2	--	20.800	1,600
05...	--	.5	--	1.2	--	--	--
JUN							
12...	7.7	--	--	--	--	--	E240
12...	--	--	--	--	--	--	--
50049755 SJ5300 (LAT 18 25 28N LONG 066 01 11W)							
OCT 2002							
02...	5.7	--	--	.94	--	16.800	E36
02...	--	<1.0	--	.93	--	--	--
MAR 2003							
05...	3.6	--	--	1.1	--	21.200	170
05...	--	2.0	--	1.7	--	--	--
JUN							
12...	5.1	--	--	--	--	--	E380
12...	--	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)
50049830 QDA JUAN MENDEZ NR REPARTO UNIVERSITARIO, SAN JUAN (LAT 18 23 36N LONG 066 02 31W)													
OCT 2002													
07...	1005	--	--	6.6	82	6.8	335	26.0	100	<10	.20	.02	.660
MAR 2003													
07...	1145	--	--	8.7	107	6.8	366	25.5	110	<10	1.2	.84	1.10
JUN													
17...	1105	--	--	2.4	30	7.3	417	26.9	120	<10	--	--	--
50049850 MPN500 (LAT 18 26 07N LONG 066 03 30W)													
OCT 2002													
01...	0740	1.00	10.0	1.0	14	7.1	18,500	28.8	210	18	5.7	4.20	<.020
MAR 2003													
04...	0830	1.00	20.0	.3	5	7.2	41,900	27.1	150	28	3.2	2.00	<.020
JUN													
10...	0930	--	14.0	1.1	16	6.8	37,400	29.3	180	<10	--	--	--

Date	Nitrite water, unfltrd mg/L as N (00615)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)	Biomass plankton, ash wgt mg/L (81353)	Biomass plankton, dry wgt mg/L (81354)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Fecal streptococci KF MF, col/ 100 mL (31673)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)
50049830 QDA JUAN MENDEZ NR REPARTO UNIVERSITARIO, SAN JUAN (LAT 18 23 36N LONG 066 02 31W)									
OCT 2002									
07...	<.01	3.8	.06	--	--	5,800	--	--	--
MAR 2003									
07...	.05	10.2	.18	--	--	38,000	--	--	--
JUN									
17...	--	--	--	--	--	E900,000	--	--	--
50049850 MPN500 (LAT 18 26 07N LONG 066 03 30W)									
OCT 2002									
01...	.01	--	.76	560	578	490,000	--	1.1	E1.2
MAR 2003									
04...	.02	--	.51	596	618	31,000	--	5.7	<.1
JUN									
10...	--	--	--	--	--	290,000	--	--	--

Date	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Nitrate water unfltrd mg/L as N (00620)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Biomass phytoplank-ton, ashfree drymass mg/L (49953)	E coli, m-TEC MF, water, col/ 100 mL (31633)
50049830 QDA JUAN MENDEZ NR REPARTO UNIVERSITARIO, SAN JUAN (LAT 18 23 36N LONG 066 02 31W)							
OCT 2002							
07...	7.2	--	--	.18	.86	--	13,000
MAR 2003							
07...	3.1	--	1.05	.36	2.3	--	51,000
JUN							
17...	5.3	--	--	--	--	--	550,000
50049850 MPN500 (LAT 18 26 07N LONG 066 03 30W)							
OCT 2002							
01...	53	24.0	--	1.5	--	18.000	380,000
MAR 2003							
04...	9.1	2.0	--	1.2	--	22.400	73,000
JUN							
10...	32	--	--	--	--	--	650,000

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION

Water-quality partial-record stations are particular sites where chemical-quality, biological and or sediment data are collected systemticaly over a period of years for use in hydrological analyses. The data are collected usually less than quarterly.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
50048610 BAHIA DE SAN JUAN NO. 6, SAN JUAN PR (LAT 18 26 56N LONG 066 07 56W)													
OCT 2003													
28...	0920	1.00	--	5.5	89	7.5	53,100	30.2	--	--	--	--	--
28...	0930	8.00	24.0	5.3	--	7.5	53,000	29.7	--	--	--	--	--
MAR 2004													
25...	1000	1.00	23.0	7.5	117	7.9	55,100	27.2	6,000	399	1,220	388	57
25...	1015	5.00	--	6.1	--	7.8	57,900	27.3	6,600	425	1,340	410	59
MAY													
27...	0800	1.00	36.0	6.2	95	7.9	49,100	28.3	6,100	402	1,230	424	61
27...	0815	5.00	--	4.8	--	7.9	53,700	28.0	6,600	434	1,330	464	57
JUL													
14...	0830	1.00	--	6.0	97	8.1	56,900	29.8	6,200	433	1,240	390	60
14...	0845	5.00	24.0	5.4	--	8.1	57,100	29.4	6,100	424	1,230	392	58
AUG													
26...	0840	1.00	36.0	3.8	62	7.9	56,100	29.9	6,000	408	1,220	409	55
26...	0855	5.00	--	1.9	--	7.8	56,400	29.8	6,400	442	1,280	440	57
50049720 LAGUNA SAN JOSE NO. 3 AT SAN JUAN, PR (LAT 18 26 40N LONG 066 02 26W)													
OCT 2003													
30...	0810	1.00	--	2.4	32	6.3	19,400	28.4	--	--	--	--	--
30...	0820	5.00	48.0	1.1	--	5.9	40,400	30.6	--	--	--	--	--
MAR 2004													
29...	0930	1.00	36.0	6.4	84	7.0	19,200	25.7	2,100	127	432	129	32
29...	0945	5.00	--	1.6	--	6.4	27,900	27.8	2,500	151	517	155	35
MAY													
21...	0915	1.00	30.0	7.8	102	7.6	12,000	26.9	1,300	87.4	254	84.9	25
21...	0935	5.00	--	7.3	--	7.7	12,000	26.9	1,300	87.1	256	82.4	25
JUL													
15...	0855	1.00	--	7.4	100	8.4	9,660	29.5	980	80.8	190	57.6	21
15...	0915	5.00	31.0	1.3	--	6.9	16,700	30.9	--	--	--	--	--
AUG													
30...	0920	1.00	24.0	7.9	111	8.3	17,400	30.0	1,800	128	356	116	29
30...	0935	5.00	--	.8	--	6.9	36,100	30.9	2,800	190	563	185	39

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue total at 105 deg. C, sus-pended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Total nitro-gen, water, unfltrd mg/L as NO3 (71887)	Phos-phorus, water, unfltrd mg/L (00665)
50048610 BAHIA DE SAN JUAN NO. 6, SAN JUAN PR (LAT 18 26 56N LONG 066 07 56W)													
OCT 2003													
28...	--	120	--	--	--	--	<10	.30	.02	<.020	<.01	--	.05
28...	--	--	--	--	--	--	24	.50	.01	<.020	<.01	--	.05
MAR 2004													
25...	10,200	130	<.20	1.1	.4	2,580	21	.20	<.01	<.020	.02	--	.04
25...	11,000	--	<.20	1.1	.3	<.2	<100	<.20	<.01	<.020	.01	--	.03
MAY													
27...	11,000	124	17,400	1.1	1.0	2,340	30	.30	.04	<.020	.01	--	.03
27...	10,700	--	19,100	1.1	.4	2,560	47	.20	.04	<.020	.02	--	.03
JUL													
14...	10,800	130	19,000	1.1	<20.0	2,600	31	<.20	.01	<.020	.01	--	.04
14...	10,500	--	19,600	1.2	<20.0	2,630	37	<.20	.02	<.020	.01	--	.04
AUG													
26...	9,750	123	18,100	1.1	1.4	2,540	25	--	.03	--	--	--	.03
26...	10,500	--	19,600	1.1	.7	2,740	28	--	.07	--	--	--	.04
50049720 LAGUNA SAN JOSE NO. 3 AT SAN JUAN, PR (LAT 18 26 40N LONG 066 02 26W)													
OCT 2003													
30...	--	87	--	--	--	--	23	2.0	.94	<.020	.01	--	.37
30...	--	--	--	--	--	--	18	2.1	.82	<.020	.01	--	.38
MAR 2004													
29...	3,400	82	6,400	.5	4.3	848	<10	1.3	.58	.040	.02	5.9	.29
29...	3,980	--	7,290	.5	3.7	950	11	1.2	.02	<.020	.01	--	.34
MAY													
21...	2,060	68	3,670	.3	.4	471	15	1.3	.36	.040	.03	5.9	.20
21...	2,070	--	3,660	.3	.3	472	16	1.2	.29	.040	.02	5.5	.18
JUL													
15...	1,480	83	2,810	.2	.3	373	<10	.70	.02	<.020	<.01	--	.14
15...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
30...	2,780	92	5,350	.4	1.6	740	11	--	.49	--	--	--	.29
30...	4,690	--	8,580	.6	8.5	1,170	11	--	2.57	--	--	--	.84

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Biomass plank-ton, ash wgt mg/L (81353)	Biomass plank-ton, dry wgt mg/L (81354)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)
50048610 BAHIA DE SAN JUAN NO. 6, SAN JUAN PR (LAT 18 26 56N LONG 066 07 56W)					
OCT 2003					
28...	326	341	E6	2.6	<.1
28...	--	--	--	--	--
MAR 2004					
25...	313	327	E600	4.1	<.1
25...	--	--	--	--	--
MAY					
27...	285	294	E35	3.8	<.1
27...	--	--	--	--	--
JUL					
14...	374	392	E22	E4.0	<.1
14...	--	--	--	--	--
AUG					
26...	303	311	E76	1.5	<.1
26...	--	--	--	--	--
50049720 LAGUNA SAN JOSE NO. 3 AT SAN JUAN, PR (LAT 18 26 40N LONG 066 02 26W)					
OCT 2003					
30...	283	291	E6,000	7.5	<.1
30...	--	--	--	--	--
MAR 2004					
29...	278	287	E1,400	9.8	E1.4
29...	--	--	--	--	--
MAY					
21...	270	278	3,200	42.7	1.4
21...	--	--	--	--	--
JUL					
15...	283	290	E4	E15.4	<.1
15...	--	--	--	--	--
AUG					
30...	538	558	E1,100	47.7	<.1
30...	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, wat unf by analysis, mg/L (62855)	Total nitrogen, water, unfltrd mg/L (00600)	Biomass phytoplankton, ashfree drymass mg/L (49953)	E coli, m-TEC MF, water, col/100 mL (31633)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)
50048610 BAHIA DE SAN JUAN NO. 6, SAN JUAN PR (LAT 18 26 56N LONG 066 07 56W)												
OCT 2003												
28...	6.9	--	--	--	.28	--	--	14.6	E4	--	--	--
28...	--	<.1	--	--	.49	--	--	--	--	--	--	--
MAR 2004												
25...	7.4	--	--	--	--	--	--	14.0	E800	<2	E11.3	3,730
25...	--	<.1	--	--	--	--	--	--	--	E1	<20.0	3,780
MAY												
27...	5.4	--	--	--	.26	--	--	9.0	58	<2	E15.3	6,560
27...	--	<.1	--	--	.16	--	--	--	--	<2	<30.0	5,050
JUL												
14...	4.5	--	--	--	--	--	--	19.0	E33	E5	<30.0	3,730
14...	7.1	<.1	--	--	--	--	--	--	--	<8	<30.0	5,220
AUG												
26...	3.9	--	--	<.016	--	.21	--	8.2	E80	16	<30.0	3,200
26...	--	--	--	<.160	--	.28	--	--	--	15	<30.0	3,490
50049720 LAGUNA SAN JOSE NO. 3 AT SAN JUAN, PR (LAT 18 26 40N LONG 066 02 26W)												
OCT 2003												
30...	2.6	--	--	--	1.1	--	--	8.0	E6,000	--	--	--
30...	--	.2	--	--	1.3	--	--	--	--	--	--	--
MAR 2004												
29...	3.7	--	.02	--	.72	--	1.3	8.8	7,200	E2	47.0	<70
29...	--	<.1	--	--	1.2	--	--	--	--	<6	59.1	1,620
MAY												
21...	3.5	--	.01	--	.94	--	1.3	8.0	2,800	<4	43.1	834
21...	3.9	.2	.02	--	.91	--	1.2	--	--	<4	43.0	855
JUL												
15...	3.8	<.1	--	--	.68	--	--	6.8	2	2	44.4	663
15...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
30...	4.6	--	--	<.016	--	1.82	--	20.0	E1,900	5	55.0	1,060
30...	--	--	--	<.016	--	3.85	--	--	--	9	49.3	1,720

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
50049755 SJ5300 (LAT 18 25 28N LONG 066 01 11W)													
OCT 2003													
30...	0905	1.00	--	5.1	72	6.8	21,400	29.1	--	--	--	--	--
30...	0915	5.00	60.0	1.8	--	6.0	37,800	30.5	--	--	--	--	--
MAR 2004													
30...	0840	1.00	30.0	8.5	112	7.7	19,900	26.3	2,200	135	447	128	33
30...	0855	4.00	--	3.9	--	7.3	22,800	27.2	2,400	151	482	141	35
MAY													
21...	1100	1.00	24.0	8.6	113	7.7	14,100	27.2	1,400	102	289	98.1	28
21...	1125	5.00	--	6.2	--	7.7	14,200	27.2	1,400	101	289	97.9	27
JUL													
20...	1015	1.00	--	8.9	124	8.5	13,600	30.4	1,300	97.3	264	84.5	25
20...	1030	3.00	44.0	8.5	--	8.5	13,600	30.4	1,300	93.3	263	84.7	26
AUG													
31...	0920	1.00	30.0	6.4	90	8.2	19,100	29.6	2,000	136	406	127	32
31...	0935	4.00	--	.6	--	7.2	26,500	30.6	2,500	175	499	151	36
50049830 QDA JUAN MENDEZ NR REPARTO UNIVERSITARIO, SAN JUAN (LAT 18 23 36N LONG 066 02 31W)													
NOV 2003													
04...	1010	--	--	7.1	88	6.9	339	26.4	--	--	--	--	--
APR 2004													
02...	1010	--	--	12.9	157	6.8	309	24.9	120	32.4	9.18	2.46	1
MAY													
18...	1000	--	--	6.6	80	7.4	340	24.5	100	29.9	6.94	2.09	.9
JUL													
21...	1055	--	--	6.9	87	7.2	140	26.6	110	30.0	7.58	2.28	.9
AUG													
27...	1115	--	--	6.5	82	7.5	356	26.5	110	31.9	8.54	2.14	1

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Cadmium water, unfltrd ug/L (01027)	Chrom-ium, water, unfltrd recover -able, ug/L (01034)	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan-ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen-ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen-olic com-pounds, water, unfltrd ug/L (32730)
50048610 BAHIA DE SAN JUAN NO. 6, SAN JUAN PR (LAT 18 26 56N LONG 066 07 56W)													
OCT 2003													
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 2004													
25...	<.80	E.7	70	.11	320	<1.20	16.2	<.02	<3	E.2	<40	<.20	<16
25...	<.80	<.8	80	.11	140	<1.20	E10.7	<.02	E1	<.3	<40	E.07	<16
MAY													
27...	3.6	<3.2	E10	.10	390	<7.0	34.7	<.02	<3	<1.8	<60	E.10	<16
27...	4.5	4.1	40	.10	350	E4.6	E16.7	E.02	<3	<1.8	<60	<.20	<16
JUL													
14...	2.9	<3.2	<60	.11	410	E5.9	35.1	<.02	<10	<1.8	<60	.13	<16
14...	2.9	E1.6	E40	.11	500	E5.3	E15.3	E.01	<10	<1.8	<60	.15	<112
AUG													
26...	4.4	<3.2	<60	E.06	320	E4.6	25.8	<.02	19	<1.8	<60	<.70	<16
26...	4.4	<3.2	E30	E.06	600	<7.0	25.2	1.01	19	<1.8	<60	<.70	<16
50049720 LAGUNA SAN JOSE NO. 3 AT SAN JUAN, PR (LAT 18 26 40N LONG 066 02 26W)													
OCT 2003													
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 2004													
29...	<.32	<1.6	E40	.04	150	<.48	113	<.02	<5	<1.0	<40	E.10	<16
29...	<.36	<2.4	40	.04	170	1.81	271	E.01	<8	<1.3	<12	E.07	<16
MAY													
21...	<.7	<1.6	E10	.03	120	5.4	78.4	<.02	<5	<.8	E14	<.20	<16
21...	<.7	<1.6	E20	.02	150	6.1	79.9	.04	<5	<.8	E19	<.40	<16
JUL													
15...	.6	1.4	30	E.01	60	3.2	89.2	E.02	<3	<.5	E12	E.07	<16
15...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
30...	1.4	<1.6	<40	.02	100	E2.0	137	<.02	7	<.8	<40	<.30	<16
30...	2.5	<1.6	<40	E.02	E60	E2.3	963	<.02	9	<1.0	<40	.45	<16

Date	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue total at 105 deg. C, sus-pended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Total nitro-gen, water, unfltrd mg/L as NO3 (71887)	Phos-phorus, water, unfltrd mg/L (00665)
50049755 SJ5300 (LAT 18 25 28N LONG 066 01 11W)													
OCT 2003													
30...	--	91	--	--	--	--	<10	1.7	.74	<.020	<.01	--	.36
30...	--	--	--	--	--	--	11	2.1	.76	<.020	<.01	--	.38
MAR 2004													
30...	3,570	80	6,900	<4.2	2.1	857	<10	1.2	.20	.050	.02	5.5	.21
30...	3,870	--	7,110	.5	2.2	898	16	1.2	.18	.020	.01	5.4	.24
MAY													
21...	2,420	68	4,360	.3	.4	565	<10	1.0	.08	<.020	.01	--	.16
21...	2,370	--	4,400	.3	.4	569	17	.90	.05	<.020	<.01	--	.16
JUL													
20...	2,060	82	3,980	.3	.3	538	<10	--	--	--	--	--	--
20...	2,130	--	4,030	.3	.3	543	12	--	--	--	--	--	--
AUG													
31...	3,310	88	5,970	.5	<.2	824	<10	--	.03	--	--	--	.18
31...	4,140	--	6,000	.4	E.1	827	<10	--	.07	--	--	--	.18
50049830 QDA JUAN MENDEZ NR REPARTO UNIVERSITARIO, SAN JUAN (LAT 18 23 36N LONG 066 02 31W)													
NOV 2003													
04...	--	110	--	--	--	--	<10	<.20	.03	.670	.01	--	.06
APR 2004													
02...	25.6	112	32.3	<.2	38.5	9.5	<10	--	--	--	--	--	--
MAY													
18...	21.5	101	31.7	<.2	32.5	11.7	<10	.30	.05	.720	.01	4.5	.04
JUL													
21...	22.1	100	29.7	<.2	36.0	9.1	<10	--	--	--	--	--	--
AUG													
27...	24.6	112	32.8	<.2	40.4	8.1	<10	--	.03	--	--	--	.07

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Biomass plank-ton, ash wgt mg/L (81353)	Biomass plank-ton, dry wgt mg/L (81354)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)
50049755 SJ5300 (LAT 18 25 28N LONG 066 01 11W)					
OCT 2003					
30...	288	296	E9	8.0	<.1
30...	--	--	--	--	--
MAR 2004					
30...	291	299	E1,000	11.5	<.1
30...	--	--	--	--	--
MAY					
21...	280	289	3,300	E35.5	<.1
21...	--	--	--	--	--
JUL					
20...	281	292	E920	E8.9	<.1
20...	--	--	--	--	--
AUG					
31...	2,730	2,740	E2	24.4	<.1
31...	--	--	--	--	--
50049830 QDA JUAN MENDEZ NR REPARTO UNIVERSITARIO, SAN JUAN (LAT 18 23 36N LONG 066 02 31W)					
NOV 2003					
04...	--	--	E16,000	--	--
APR 2004					
02...	--	--	E1,100	--	--
MAY					
18...	--	--	5,500	--	--
JUL					
21...	--	--	E76,000	--	--
AUG					
27...	--	--	2,200	--	--

Date	Turbid-ity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, tons/d (70302)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Organic nitro-gen, water, unfltrd mg/L (00605)	Total nitro-gen, wat unf by anal ysis, mg/L (62855)	Total nitro-gen, water, unfltrd mg/L (00600)	Biomass phyto-plank-ton, ashfree drymass mg/L (49953)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recover-able, ug/L (01007)
50049755 SJ5300 (LAT 18 25 28N LONG 066 01 11W)												
OCT 2003												
30...	2.0	--	--	--	--	.96	--	--	8.0	E58	--	--
30...	--	<.1	--	--	--	1.3	--	--	--	--	--	--
MAR 2004												
30...	6.7	--	--	.03	--	1.0	--	1.2	8.2	E800	<4	54.4
30...	--	.2	--	.01	--	1.0	--	1.2	--	--	<4	53.2
MAY												
21...	28	--	--	--	--	.92	--	--	9.0	2,600	2	47.1
21...	--	.2	--	--	--	.85	--	--	--	--	3	42.9
JUL												
20...	--	--	--	--	--	--	--	--	11.0	E880	<6	47.1
20...	--	--	--	--	--	--	--	--	--	--	<6	46.3
AUG												
31...	3.1	--	--	--	<.016	--	.81	--	12.4	E1,500	E3	52.2
31...	--	--	--	--	<.016	--	.93	--	--	--	E3	52.9
50049830 QDA JUAN MENDEZ NR REPARTO UNIVERSITARIO, SAN JUAN (LAT 18 23 36N LONG 066 02 31W)												
NOV 2003												
04...	9.9	--	--	.66	--	--	--	--	--	11,000	--	--
APR 2004												
02...	2.9	--	--	--	--	--	--	--	--	E1,300	<2	115
MAY												
18...	5.6	--	--	.71	--	.25	--	1.0	--	25,000	<2	138
JUL												
21...	--	--	.56	--	--	--	--	--	--	5,300	<2	125
AUG												
27...	<2.0	--	.62	--	.543	--	.67	--	--	1,200	E1	121

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Boron, water, unfltrd recover -able, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chrom- ium, water, unfltrd recover -able, ug/L (01034)	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)
50049755 SJ5300 (LAT 18 25 28N LONG 066 01 11W)													
OCT 2003													
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 2004													
30...	1,390	<.9	<1.6	20	.04	110	<.48	69.1	<.02	<5	<1.0	<12	<.20
30...	1,470	<.9	<1.6	E50	.05	230	<.48	146	<.02	<5	<1.0	<12	.39
MAY													
21...	1,020	E.5	<1.6	E10	.03	220	4.2	122	<.02	<3	E.2	E11	<.40
21...	1,000	E.6	<1.6	E20	.02	140	4.2	130	E.02	E2	.4	E13	E.38
JUL													
20...	898	1.0	<1.6	<40	E.01	E80	3.6	56.5	<.02	<8	<.8	E21	E.09
20...	914	.8	<1.6	<40	<.20	E60	3.8	53.6	<.02	<8	<.8	E25	E.09
AUG													
31...	1,200	1.3	<1.6	<40	<.04	E80	E2.6	101	<.02	E3	<1.0	<40	<.20
31...	1,220	1.4	<1.6	<40	E.01	E80	E3.3	128	.64	E3	<1.0	<40	E.11
50049830 QDA JUAN MENDEZ NR REPARTO UNIVERSITARIO, SAN JUAN (LAT 18 23 36N LONG 066 02 31W)													
NOV 2003													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 2004													
02...	35	<.2	<.8	<4	<.01	840	<1.0	207	.14	<3	<.3	E3	<.20
MAY													
18...	39	<.2	<.8	<4	<.01	810	<1.0	196	.11	<3	<.3	4	E.14
JUL													
21...	33	<.2	E.6	<4	<.01	860	1.2	136	.16	<3	<.3	6	.14
AUG													
27...	28	<.2	<.8	<4	<.01	460	<1.0	107	.16	<3	<.3	E3	<.10

Date	Phen- olic com- pounds, water, unfltrd ug/L (32730)
50049755 SJ5300 (LAT 18 25 28N LONG 066 01 11W)	
OCT 2003	
30...	--
30...	--
MAR 2004	
30...	<32
30...	<32
MAY	
21...	<16
21...	<16
JUL	
20...	<16
20...	<16
AUG	
31...	<16
31...	<16
50049830 QDA JUAN MENDEZ NR REPARTO UNIVERSITARIO, SAN JUAN (LAT 18 23 36N LONG 066 02 31W)	
NOV 2003	
04...	--
APR 2004	
02...	<16
MAY	
18...	<16
JUL	
21...	<16
AUG	
27...	<16

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
50049850 MPN500 (LAT 18 26 07N LONG 066 03 30W)													
OCT 2003													
27...	0940	1.00	9.00	.5	8	6.7	29,100	29.6	--	--	--	--	--
MAR 2004													
24...	1000	1.00	11.0	1.2	16	6.9	20,900	27.1	2,200	162	424	129	33
MAY													
17...	1030	1.00	7.00	3.2	42	6.4	4,430	28.8	590	70.3	99.7	37.2	15
JUL													
12...	1010	1.00	6.00	.6	9	7.1	12,700	29.3	1,300	118	252	82.4	25
AUG													
24...	0945	1.00	7.00	8.6	122	7.1	21,500	29.9	2,000	154	383	128	29

Date	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)
50049850 MPN500 (LAT 18 26 07N LONG 066 03 30W)													
OCT 2003													
27...	--	150	--	--	--	--	<10	3.4	2.40	<.020	.01	--	.58
MAR 2004													
24...	3,500	209	3,700	.3	13.7	490	14	6.0	5.20	<.020	.01	--	.98
MAY													
17...	811	168	1,390	.2	12.7	173	<20	--	--	--	--	--	--
JUL													
12...	2,090	200	3,720	.3	15.6	499	19	6.6	4.90	<.020	<.01	--	1.00
AUG													
24...	2,950	221	5,600	.5	17.2	734	26	--	4.52	--	--	--	.86

Date	Biomass plankton, ash wgt mg/L (81353)	Biomass plankton, dry wgt mg/L (81354)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)
50049850 MPN500 (LAT 18 26 07N LONG 066 03 30W)					
OCT 2003					
27...	635	661	360,000	.2	<.1
MAR 2004					
24...	446	465	520,000	14.0	<.1
MAY					
17...	265	278	2,200,000	E.7	<.1
JUL					
12...	612	646	E8,000,000	E8.9	E.9
AUG					
24...	541	569	120,000	8.6	E.3

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Turbidity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, wat unf by analysis, mg/L (62855)	Total nitrogen, water, unfltrd mg/L (00600)	Biomass phytoplankton, ashfree drymass mg/L (49953)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recoverable, ug/L (01007)	Boron, water, unfltrd recoverable, ug/L (01022)
50049850 MPN500 (LAT 18 26 07N LONG 066 03 30W)												
OCT 2003												
27...	14	3.0	--	--	1.0	--	--	25.8	350,000	--	--	--
MAR 2004												
24...	26	15.0	--	--	.80	--	--	19.3	440,000	E2	77.7	1,390
MAY												
17...	17	--	--	--	--	--	--	13.6	E1,300,000	M	62.3	388
JUL												
12...	37	22.0	--	--	1.7	--	--	34.2	E2,000,000	<4	68.7	902
AUG												
24...	7.3	--	--	<.016	--	5.91	--	28.4	E310,000	E2	69.7	1,220

Date	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, unfltrd recoverable, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recoverable, ug/L (01045)	Lead, water, unfltrd recoverable, ug/L (01051)	Manganese, water, unfltrd recoverable, ug/L (01055)	Mercury water, unfltrd recoverable, ug/L (71900)	Selenium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recoverable, ug/L (01077)	Zinc, water, unfltrd recoverable, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phenolic compounds, water, unfltrd ug/L (32730)
50049850 MPN500 (LAT 18 26 07N LONG 066 03 30W)													
OCT 2003													
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 2004													
24...	<.32	<1.6	50	.04	420	.68	145	.03	<5	<1.0	E30	.81	<16
MAY													
17...	<.2	E.8	M	E.01	670	1.5	161	.03	<3	<.3	17	1.78	E9
JUL													
12...	.5	E.8	<20	.01	510	5.8	172	.03	<5	<.8	26	E1.12	<16
AUG													
24...	.9	<1.6	<40	E.03	400	E2.3	145	.03	E3	E.6	<40	.93	<16

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION

Water-quality partial-record stations are particular sites where chemical-quality, biological and or sediment data are collected systemticaly over a period of years for use in hydrological analyses. The data are collected usually less than quarterly.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
50049960 RIO PUERTO NUEVO AT MOUTH, SAN JUAN, PR (LAT 18 25 42N LONG 066 04 43W)													
OCT 2003													
27...	0910	1.00	18.0	.8	13	6.6	34,700	30.1	--	--	--	--	--
MAR 2004													
24...	0925	4.00	10.0	.8	11	7.0	55,900	25.5	270	37.2	44.1	14.7	9
MAY													
17...	0905	1.00	24.0	4.5	56	7.0	2,080	25.2	--	--	--	--	--
17...	0910	4.00	--	2.6	--	7.2	52,100	26.7	--	--	--	--	--
JUL													
12...	0910	34.0	--	3.9	50	7.3	2,970	27.8	300	41.1	48.5	16.2	9
AUG													
24...	0850	1.00	24.0	8.2	107	7.2	6,400	28.1	590	68.1	102	33.6	13
50050060 CANO SAN ANTONIO AT MOUTH, SAN JUAN PR (LAT 18 27 29N LONG 066 06 31W)													
OCT 2003													
28...	0820	1.00	--	6.6	105	7.7	53,100	29.6	--	--	--	--	--
28...	0830	38.0	54.0	3.3	--	7.4	53,300	29.6	--	--	--	--	--
MAR 2004													
26...	0830	1.00	50.0	7.1	111	7.9	58,600	26.9	6,600	427	1,350	435	60
26...	0840	34.0	--	6.0	--	7.8	59,100	26.6	6,700	431	1,370	442	61
MAY													
26...	0845	1.00	84.0	7.1	109	7.9	53,100	27.4	6,100	386	1,250	395	60
26...	0905	38.0	--	3.9	--	8.4	55,100	26.8	6,400	399	1,300	406	61
JUL													
13...	0945	1.00	--	6.6	88	8.1	5,320	28.9	6,300	392	1,290	406	59
13...	1010	38.0	38.0	4.6	--	8.0	56,400	28.3	6,400	400	1,310	411	60
AUG													
25...	0900	1.00	66.0	4.6	77	8.0	63,300	29.4	210	13.5	43.5	14.4	11
25...	0915	36.0	--	.6	--	7.8	68,800	29.0	220	14.1	44.7	15.1	11
50050105 QDA SAN ANTON NR URB. COUNTRY CLUB, CAROLINA PR (LAT 18 24 01N LONG 066 59 31W)													
NOV 2003													
04...	0810	--	--	6.1	76	7.0	356	26.4	--	--	--	--	--
APR 2004													
02...	0815	1.00	--	9.0	109	7.2	409	24.4	140	43.2	9.00	2.91	1
MAY													
18...	1200	1.00	--	7.3	91	7.8	372	26.1	130	39.4	6.94	2.62	.8
JUL													
21...	0940	--	--	7.2	91	7.8	369	26.9	120	37.1	7.80	2.63	.9
AUG													
27...	0940	--	--	5.8	73	7.5	388	27.3	120	34.0	7.54	2.98	1

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue total at 105 deg. C, sus-pended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Total nitro-gen, water, unfltrd mg/L as NO3 (71887)	Phos-phorus, water, unfltrd mg/L (00665)
50049960 RIO PUERTO NUEVO AT MOUTH, SAN JUAN, PR (LAT 18 25 42N LONG 066 04 43W)													
OCT 2003													
27...	--	130	--	--	--	--	<10	2.0	1.20	.280	.14	10.1	.34
MAR 2004													
24...	347	90	672	<.2	12.9	98.7	<10	1.5	.89	.330	.05	8.1	.25
MAY													
17...	--	141	--	--	--	--	--	9.8	8.40	<.020	.01	--	1.50
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
12...	371	--	700	<.2	13.8	105	52	1.0	.56	.330	.05	5.9	.16
AUG													
24...	739	156	1,510	.2	25.9	208	10	--	2.28	--	--	--	.57
50050060 CANO SAN ANTONIO AT MOUTH, SAN JUAN PR (LAT 18 27 29N LONG 066 06 31W)													
OCT 2003													
28...	--	120	--	--	--	--	<10	.40	.01	<.020	<.01	--	.04
28...	--	--	--	--	--	--	<10	.40	.03	<.020	<.01	--	.04
MAR 2004													
26...	11,200	125	20,600	1.2	<2.0	2,780	16	<.20	.03	<.020	.01	--	.04
26...	11,400	--	20,400	1.2	<2.0	2,770	20	<.20	.03	<.020	.01	--	.02
MAY													
26...	10,700	123	19,200	1.1	.4	2,620	44	.30	.03	<.020	.02	--	.03
26...	11,100	--	19,800	1.1	.4	2,710	35	.40	.05	<.020	.01	--	.03
JUL													
13...	10,700	120	19,000	1.2	.4	2,660	31	<.20	.02	<.020	.01	--	.05
13...	11,000	--	19,400	1.2	.3	2,700	25	<.20	.03	<.020	.01	--	.05
AUG													
25...	363	122	19,100	1.1	.6	2,640	44	--	.06	--	--	--	.05
25...	375	--	19,300	1.1	.5	2,660	115	--	.11	--	--	--	.03
50050105 QDA SAN ANTON NR URB. COUNTRY CLUB, CAROLINA PR (LAT 18 24 01N LONG 066 59 31W)													
NOV 2003													
04...	--	120	--	--	--	--	10	1.1	.64	.620	.08	7.6	.15
APR 2004													
02...	27.9	116	38.4	<.2	26.1	13.9	<10	--	--	--	--	--	--
MAY													
18...	20.0	116	33.2	<.2	18.6	12.5	<10	.40	.19	.930	.07	5.9	.05
JUL													
21...	22.6	120	30.9	<.2	23.7	11.4	<10	--	--	--	--	--	--
AUG													
27...	24.6	120	35.8	<.2	24.9	12.3	<10	--	.82	--	--	--	.17

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Biomass plank-ton, ash wgt mg/L (81353)	Biomass plank-ton, dry wgt mg/L (81354)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)
50049960 RIO PUERTO NUEVO AT MOUTH, SAN JUAN, PR (LAT 18 25 42N LONG 066 04 43W)					
OCT 2003					
27...	--	--	E460,000	--	--
MAR 2004					
24...	--	--	E120,000	--	--
MAY					
17...	--	--	42,000	--	--
17...	--	--	--	--	--
JUL					
12...	--	--	--	--	--
AUG					
24...	--	--	35,000	--	--
50050060 CANO SAN ANTONIO AT MOUTH, SAN JUAN PR (LAT 18 27 29N LONG 066 06 31W)					
OCT 2003					
28...	304	317	E11	3.5	<.1
28...	--	--	--	--	--
MAR 2004					
26...	308	318	E4	2.8	<.1
26...	--	--	--	--	--
MAY					
26...	314	325	50	E3.0	<.1
26...	--	--	--	--	--
JUL					
13...	323	342	170	E1.5	<.1
13...	--	--	--	--	--
AUG					
25...	293	308	170	4.3	<.1
25...	--	--	--	--	--
50050105 QDA SAN ANTON NR URB. COUNTRY CLUB, CAROLINA PR (LAT 18 24 01N LONG 066 59 31W)					
NOV 2003					
04...	--	--	26,000	--	--
APR 2004					
02...	--	--	E1,800	--	--
MAY					
18...	--	--	22,000	--	--
JUL					
21...	--	--	25,000	--	--
AUG					
27...	--	--	55,000	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Turbid-ity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, tons/d (70302)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Organic nitro-gen, water, unfltrd mg/L (00605)	Total nitro-gen, wat unf by anal ysis, mg/L (62855)	Total nitro-gen, water, unfltrd mg/L (00600)	Biomass phyto-plank-ton, ashfree drymass mg/L (49953)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recover-able, ug/L (01007)
50049960 RIO PUERTO NUEVO AT MOUTH, SAN JUAN, PR (LAT 18 25 42N LONG 066 04 43W)													
OCT 2003													
27...	0910	4.8	--	--	.14	--	.80	--	2.3	--	340,000	--	--
MAR 2004													
24...	0925	12	--	--	.28	--	.61	--	1.8	--	E130,000	<4	59.3
MAY													
17...	0905	--	12.0	--	--	--	1.4	--	--	--	53,000	--	--
17...	0910	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
12...	0910	84	--	--	.28	--	.44	--	1.3	--	--	<2	85.6
12...	0910	--	--	--	--	--	--	--	--	--	54,000	--	--
AUG													
24...	0850	4.0	--	--	--	.259	--	3.28	--	--	E50,000	E2	94.6
50050060 CANO SAN ANTONIO AT MOUTH, SAN JUAN PR (LAT 18 27 29N LONG 066 06 31W)													
OCT 2003													
28...	0820	<2.0	--	--	--	--	.39	--	--	13.0	E6	--	--
28...	0830	--	<.1	--	--	--	.37	--	--	--	--	--	--
MAR 2004													
26...	0830	2.9	--	--	--	--	--	--	--	9.8	E2	5	<20.0
26...	0840	--	<.1	--	--	--	--	--	--	--	--	12	<20.0
MAY													
26...	0845	2.0	--	--	--	--	.27	--	--	11.0	60	<8	<30.0
26...	0905	--	.2	--	--	--	.35	--	--	--	--	<8	<30.0
JUL													
13...	0945	<2.0	--	--	--	--	--	--	--	18.8	120	<8	<30.0
13...	1010	<2.0	<.1	--	--	--	--	--	--	--	--	<8	<30.0
AUG													
25...	0900	2.6	--	--	--	<.016	--	.29	--	14.8	170	<190	<30.0
25...	0915	--	--	--	--	<.016	--	.26	--	--	--	E4	<30.0
50050105 QDA SAN ANTON NR URB. COUNTRY CLUB, CAROLINA PR (LAT 18 24 01N LONG 066 59 31W)													
NOV 2003													
04...	0810	6.5	--	--	.54	--	.46	--	1.7	--	33,000	--	--
APR 2004													
02...	0815	2.8	--	--	--	--	--	--	--	--	2,300	<2	85.7
MAY													
18...	1200	12	--	--	.86	--	.21	--	1.3	--	43,000	<2	94.3
JUL													
21...	0940	--	--	7.93	--	--	--	--	--	--	24,000	<2	69.5
AUG													
27...	0940	5.5	--	8.27	--	.695	--	1.92	--	--	130,000	E1	76.0

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Boron, water, unfltrd recover -able, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chrom- ium, water, unfltrd recover -able, ug/L (01034)	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)
50049960 RIO PUERTO NUEVO AT MOUTH, SAN JUAN, PR (LAT 18 25 42N LONG 066 04 43W)													
OCT 2003													
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 2004													
24...	217	<.2	E.7	10	<.04	740	2.0	179	E.01	<5	<.3	17	.35
MAY													
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
12...	202	<.2	1.8	M	M	2,300	<1.0	218	E.02	<3	<.3	12	<.40
AUG													
24...	364	.3	<.8	<10	E.01	340	E.9	460	<.02	<3	<.3	<12	.45
50050060 CANO SAN ANTONIO AT MOUTH, SAN JUAN PR (LAT 18 27 29N LONG 066 06 31W)													
OCT 2003													
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 2004													
26...	3,980	<.80	<1.6	60	.11	100	<1.20	<12.0	<.02	6	.3	E28	<.10
26...	4,040	<.80	<1.6	100	.10	E50	<1.20	<12.0	.02	13	E.2	<40	<.10
MAY													
26...	7,300	4.6	<3.2	80	.11	<140	<7.0	<18.0	<.02	<10	<1.8	62	E.08
26...	7,580	4.3	7.5	90	.10	220	E5.5	<18.0	E.01	<10	<1.8	62	E.09
JUL													
13...	4,800	3.2	<5.6	E40	.11	E80	10.0	<18.0	<.02	<10	<1.8	<60	.18
13...	4,300	3.3	<5.6	<80	.12	E80	10.2	<18.0	<.02	<10	<1.8	E46	E.10
AUG													
25...	4,300	4.2	<3.2	<60	E.07	E110	<7.0	<18.0	<.02	<260	<1.8	<60	.12
25...	4,200	3.8	<3.2	<60	E.07	E120	<7.0	32.0	.91	<10	<1.8	<60	.12
50050105 QDA SAN ANTON NR URB. COUNTRY CLUB, CAROLINA PR (LAT 18 24 01N LONG 066 59 31W)													
NOV 2003													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 2004													
02...	47	<.2	<.8	M	<.01	320	<1.0	91.0	<.02	<3	<.3	<4	<.20
MAY													
18...	46	<.2	<.8	M	<.01	450	<1.0	126	<.02	<3	<.3	6	E.11
JUL													
21...	38	<.2	E.6	M	<.01	420	<1.0	117	<.02	<3	<.3	8	E.10
AUG													
27...	45	<.2	<.8	M	<.01	420	<1.0	119	<.02	E2	<.3	10	.28

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Phenolic compounds, water, unfltrd ug/L (32730)
50049960 RIO PUERTO NUEVO AT MOUTH, SAN JUAN, PR (LAT 18 25 42N LONG 066 04 43W)	
OCT 2003	
27...	--
MAR 2004	
24...	<16
MAY	
17...	--
17...	--
17...	<16
JUL	
12...	<16
AUG	
24...	<16
50050060 CANO SAN ANTONIO AT MOUTH, SAN JUAN PR (LAT 18 27 29N LONG 066 06 31W)	
OCT 2003	
28...	--
28...	--
MAR 2004	
26...	<32
26...	<32
MAY	
26...	<16
26...	<16
JUL	
13...	<16
13...	<16
AUG	
25...	<16
25...	<16
50050105 QDA SAN ANTON NR URB. COUNTRY CLUB, CAROLINA PR (LAT 18 24 01N LONG 066 59 31W)	
NOV 2003	
04...	--
APR 2004	
02...	<16
MAY	
18...	<16
JUL	
21...	<16
AUG	
27...	<16

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
50050310 QUEBRADA BLASINA AT SABANA GARDENS, SAN JUAN, PR (LAT 18 25 13N LONG 066 58 00W)													
OCT 2003													
31...	0815	--	--	1.8	23	7.0	7,970	27.3	--	--	--	--	--
APR 2004													
01...	0845	3.00	27.0	.6	9	7.2	45,300	28.8	1,400	186	221	69.6	7
MAY													
19...	1010	1.00	30.0	2.8	36	7.0	6,510	27.3	690	83.0	118	36.6	15
JUL													
16...	0830	1.00	30.0	3.5	47	7.3	6,400	29.1	680	72.6	120	37.7	17
SEP													
02...	0925	1.00	18.0	.9	12	7.2	14,200	29.7	1,500	128	284	90.2	25
50050340 LAGUNA PINONES NO. 2 NR CAROLINA, PR (LAT 18 26 32N LONG 065 57 03W)													
OCT 2003													
31...	0850	1.00	18.0	7.2	111	7.2	44,100	29.2	--	--	--	--	--
APR 2004													
01...	0930	1.00	18.0	7.7	112	7.9	46,500	25.3	8,300	523	1,710	511	70
01...	0945	1.50	--	6.3	--	7.9	45,000	27.1	--	--	--	--	--
MAY													
19...	1115	1.00	18.0	6.2	96	8.0	44,700	29.4	--	--	--	--	--
JUL													
16...	0930	1.00	8.00	5.4	84	8.2	42,100	30.3	4,900	326	995	318	47
SEP													
02...	1000	1.00	18.0	4.5	71	8.3	51,300	29.4	6,200	424	1,250	425	56
50050353 SUAREZ CANAL AT HWY 26 BRIDGE NR CAROLINA, PR (LAT 18 25 47N LONG 065 59 26W)													
NOV 2003													
03...	0945	1.00	--	5.9	81	7.5	17,600	29.2	--	--	--	--	--
03...	0955	14.0	38.0	1.6	--	6.7	43,100	30.0	--	--	--	--	--
MAR 2004													
30...	0935	1.00	31.0	6.7	90	7.1	21,600	26.8	2,400	146	497	141	34
30...	0945	1.00	--	6.2	84	7.3	21,400	27.0	2,400	147	500	143	35
30...	1000	10.0	--	1.4	--	6.9	44,300	27.7	4,900	296	1,000	285	49
30...	1010	10.00	--	1.3	--	6.9	44,400	27.7	4,900	297	1,010	290	49
MAY													
28...	0745	1.00	36.0	7.6	102	7.7	9,430	29.0	950	73.5	186	65.9	22
28...	0800	10.0	46	1.8	--	7.9	36,700	28.3	2,900	186	597	188	40
JUL													
20...	0915	1.00	--	6.4	90	8.1	16,600	30.2	1,600	111	315	101	29
20...	0930	7.00	--	3.7	--	7.8	38,700	30.4	4,200	279	857	277	44
AUG													
31...	0835	1.00	60	5.3	75	7.8	20,600	29.6	2,100	141	436	136	33
31...	0850	11.00	--	3.1	--	7.8	43,100	30.4	4,700	301	966	296	49

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Total nitrogen, water, unfltrd mg/L as NO3 (71887)	Phosphorus, water, unfltrd mg/L (00665)
50050310 QUEBRADA BLASINA AT SABANA GARDENS, SAN JUAN, PR (LAT 18 25 13N LONG 066 58 00W)													
OCT 2003													
31...	--	160	--	--	--	--	<10	1.6	.99	.200	.09	8.0	.28
APR 2004													
01...	602	148	1,110	.2	18.8	140	<10	1.2	.82	.460	.07	7.3	.22
MAY													
19...	899	163	1,740	.3	17.7	218	12	1.1	.72	.800	.20	8.4	.16
JUL													
16...	998	150	1,840	.2	17.9	241	16	--	.26	--	--	--	.14
SEP													
02...	2,200	160	3,680	.3	19.8	460	<10	--	.71	--	--	--	.27
50050340 LAGUNA PINONES NO. 2 NR CAROLINA, PR (LAT 18 26 32N LONG 065 57 03W)													
OCT 2003													
31...	--	150	--	--	--	--	<10	1.0	.01	<.020	<.01	--	.08
APR 2004													
01...	14,600	114	15,400	1.0	E.1	2,160	13	.80	.02	<.020	.01	--	.06
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
19...	--	150	--	--	--	--	--	1.2	.31	<.020	.01	--	.09
JUL													
16...	7,620	140	14,200	.9	3.6	1,820	37	--	.03	--	--	--	.04
SEP													
02...	10,100	122	17,800	1.0	1.3	2,290	20	--	.02	--	--	--	.05
50050353 SUAREZ CANAL AT HWY 26 BRIDGE NR CAROLINA, PR (LAT 18 25 47N LONG 065 59 26W)													
NOV 2003													
03...	--	77	--	--	--	--	<10	1.7	.80	.030	.01	7.7	.30
03...	--	--	--	--	--	--	20	3.0	2.30	<.020	<.01	--	.51
MAR 2004													
30...	3,800	77	7,410	.5	2.7	931	<10	.80	.22	.050	.02	3.8	.20
30...	3,920	--	7,220	.5	2.7	915	11	.90	.14	.050	.02	4.2	.19
30...	7,850	--	13,900	.9	3.8	1,750	22	1.6	.85	<.020	.02	--	.33
30...	7,860	--	15,800	.9	4.2	2,010	29	1.8	1.10	<.020	.02	--	.35
MAY													
28...	1,550	69	2,690	.2	.7	344	<10	1.0	.22	<.020	.01	--	.16
28...	5,000	--	8,920	.6	.5	1,130	23	1.2	.42	<.020	.02	--	.18
JUL													
20...	2,610	84	4,820	.4	<.2	656	13	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	6,540	--	12,000	.8	.8	1,610	31	--	--	--	--	--	--
AUG													
31...	3,480	83	6,560	.4	.6	859	<10	--	.04	--	--	--	.14
31...	7,720	--	14,800	.9	.5	1,930	11	--	.07	--	--	--	.07

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Biomass plank-ton, ash wgt mg/L (81353)	Biomass plank-ton, dry wgt mg/L (81354)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)
50050310 QUEBRADA BLASINA AT SABANA GARDENS, SAN JUAN, PR (LAT 18 25 13N LONG 066 58 00W)					
OCT 2003					
31...	--	--	E18	--	--
APR 2004					
01...	--	--	E3,000	--	--
MAY					
19...	--	--	E9,100	--	--
JUL					
16...	--	--	E23	--	--
SEP					
02...	--	--	12,000	--	--
50050340 LAGUNA PINONES NO. 2 NR CAROLINA, PR (LAT 18 26 32N LONG 065 57 03W)					
OCT 2003					
31...	616	641	E8	E12.5	E1.1
APR 2004					
01...	320	334	E4	1.6	1.4
01...	--	--	--	--	--
MAY					
19...	289	302	E4	E5.3	.8
JUL					
16...	772	808	E4	E16.9	E1.2
SEP					
02...	600	621	E2	9.1	.9
50050353 SUAREZ CANAL AT HWY 26 BRIDGE NR CAROLINA, PR (LAT 18 25 47N LONG 065 59 26W)					
NOV 2003					
03...	282	292	E16,000	19.4	<.1
03...	--	--	--	--	--
MAR 2004					
30...	289	300	E190	12.1	<.1
30...	--	--	--	--	--
30...	--	--	--	--	--
30...	--	--	--	--	--
MAY					
28...	268	276	2,300	34.9	<.1
28...	--	--	--	--	--
JUL					
20...	279	289	E40	E5.3	<.1
20...	--	--	--	--	--
AUG					
31...	267	274	E37	E4.1	E.2
31...	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Turbid-ity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Residue water, fltrd, tons/d (70302)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Organic nitro-gen, water, unfltrd mg/L (00605)	Total nitro-gen, wat unf by anal ysis, mg/L (62855)	Total nitro-gen, water, unfltrd mg/L (00600)	Biomass phyto-plank-ton, ashfree drymass mg/L (49953)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recover-able, ug/L (01007)
50050310 QUEBRADA BLASINA AT SABANA GARDENS, SAN JUAN, PR (LAT 18 25 13N LONG 066 58 00W)												
OCT 2003												
31...	6.2	--	--	.11	--	.61	--	1.8	--	E19	--	--
APR 2004												
01...	5.8	--	--	.39	--	.38	--	1.7	--	E4,000	E1	68.7
MAY												
19...	5.4	--	--	.60	--	.38	--	1.9	--	E9,000	<4	93.4
JUL												
16...	--	--	--	--	.443	--	.97	--	--	E15	<4	67.4
SEP												
02...	<2.0	--	--	--	.166	--	1.47	--	--	E31,000	<4	82.2
50050340 LAGUNA PINONES NO. 2 NR CAROLINA, PR (LAT 18 26 32N LONG 065 57 03W)												
OCT 2003												
31...	5.5	.3	--	--	--	.99	--	--	25.2	E18	--	--
APR 2004												
01...	4.5	--	--	--	--	.78	--	--	14.2	E8	<10	27.1
01...	--	<.1	--	--	--	--	--	--	--	--	--	--
MAY												
19...	14	.3	--	--	--	.89	--	--	13.2	E4	--	--
JUL												
16...	--	--	--	--	.021	--	1.28	--	36.5	E11	<11	E27.4
SEP												
02...	2.9	--	--	--	<.016	--	.75	--	21.2	E2	<8	E23.1
50050353 SUAREZ CANAL AT HWY 26 BRIDGE NR CAROLINA, PR (LAT 18 25 47N LONG 065 59 26W)												
NOV 2003												
03...	2.9	--	--	.02	--	.90	--	1.7	10.2	E15,000	--	--
03...	--	3.0	--	--	--	.70	--	--	--	--	--	--
MAR 2004												
30...	6.5	--	--	.03	--	.58	--	.85	10.6	360	<4	52.2
30...	4.5	--	--	.03	--	.76	--	.95	--	--	E3	51.9
30...	--	8.0	--	--	--	.75	--	--	--	--	<8	32.9
30...	--	7.0	--	--	--	.70	--	--	--	--	E4	43.0
MAY												
28...	3.4	--	--	--	--	.78	--	--	8.0	4,000	<2	42.0
28...	--	1.0	--	--	--	.78	--	--	--	--	<2	29.2
JUL												
20...	--	--	--	--	--	--	--	--	10.0	E80	<6	43.1
20...	--	--	--	--	--	--	--	--	--	--	<11	E27.0
AUG												
31...	<2.0	--	--	--	<.016	--	.62	--	6.8	E650	E2	50.3
31...	--	--	--	--	E.008	--	.39	--	--	--	E5	22.7

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Boron, water, unfltrd recover -able, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chrom- ium, water, unfltrd recover -able, ug/L (01034)	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)
50050310 QUEBRADA BLASINA AT SABANA GARDENS, SAN JUAN, PR (LAT 18 25 13N LONG 066 58 00W)													
OCT 2003													
31...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 2004													
01...	252	<.2	<.8	M	E.01	250	1.6	161	<.02	<3	<.3	<20	<.40
MAY													
19...	430	<.4	E.5	E10	E.01	330	4.1	149	<.02	<5	E.1	16	<.20
JUL													
16...	427	<.4	E.5	<10	E.01	210	3.7	120	<.02	<3	<.5	E10	<.20
SEP													
02...	1,050	E.6	<1.6	<20	E.01	270	<3.0	551	<.02	<5	<.8	E11	.23
50050340 LAGUNA PINONES NO. 2 NR CAROLINA, PR (LAT 18 26 32N LONG 065 57 03W)													
OCT 2003													
31...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 2004													
01...	3,620	<.56	<4.0	50	.11	130	<.84	77.0	<.02	<13	E.2	<40	<.20
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
19...	--	--	--	--	--	--	--	--	<.02	--	--	--	<.80
JUL													
16...	3,380	2.6	E1.3	<60	E.05	500	E5.4	366	<.02	<8	<1.8	E41	<.60
SEP													
02...	3,470	3.3	E2.9	E40	E.06	310	<8.0	74.2	<.02	<10	<2.1	<60	E.16
50050353 SUAREZ CANAL AT HWY 26 BRIDGE NR CAROLINA, PR (LAT 18 25 47N LONG 065 59 26W)													
NOV 2003													
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 2004													
30...	1,470	<.9	<1.6	E30	.05	320	<.48	79.4	<.02	<5	<1.0	<12	E.06
30...	1,500	<.9	<1.6	20	.05	70	<.48	75.0	<.02	<5	<1.0	<12	<.20
30...	2,840	<1.5	<3.2	70	.09	80	<.78	239	E.01	<10	<1.8	<12	<.20
30...	2,880	<1.5	<3.2	60	.10	190	<.84	303	<.02	<10	<1.8	<40	<.40
MAY													
28...	955	E.3	8.3	M	E.01	250	2.4	122	<.02	<3	<.5	E4	<.40
28...	2,210	6.6	<2.4	E20	.05	180	6.2	144	<.02	<3	<1.3	55	<.40
JUL													
20...	1,060	.9	2.0	<40	<.04	E60	E2.7	36.9	<.02	<8	<.8	<40	.13
20...	2,760	2.5	<2.4	<60	E.03	<140	8.1	62.7	<.02	<16	<1.8	<60	.16
AUG													
31...	1,290	1.3	<1.6	<40	<.08	E50	E3.5	41.3	<.02	E5	<1.0	<40	E.08
31...	2,670	1.8	E1.7	<40	E.04	130	<7.0	44.0	.66	8	<1.8	<40	.14

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Phenolic compounds, water, unfltrd ug/L (32730)
50050310 QUEBRADA BLASINA AT SABANA GARDENS, SAN JUAN, PR (LAT 18 25 13N LONG 066 58 00W)	
OCT 2003	
31...	--
APR 2004	
01...	<16
MAY	
19...	<16
JUL	
16...	<16
SEP	
02...	<16
50050340 LAGUNA PINONES NO. 2 NR CAROLINA, PR (LAT 18 26 32N LONG 065 57 03W)	
OCT 2003	
31...	--
APR 2004	
01...	<16
01...	--
MAY	
19...	<16
JUL	
16...	<16
SEP	
02...	<16
50050353 SUAREZ CANAL AT HWY 26 BRIDGE NR CAROLINA, PR (LAT 18 25 47N LONG 065 59 26W)	
NOV 2003	
03...	--
03...	--
MAR 2004	
30...	<32
30...	<32
30...	<32
30...	<32
30...	--
MAY	
28...	<16
28...	<16
JUL	
20...	<16

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sampling depth, feet (00003)	Transparency Secchi disc, inches (00077)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
50050355 LAGUNA TORRECILLA NO. 3 NR CAROLINA, PR (LAT 18 26 37N LONG 065 58 51W)													
NOV 2003													
03...	0910	1.00	--	4.5	63	7.0	23,300	29.3	--	--	--	--	--
03...	0920	3.00	27.0	3.1	--	7.3	43,700	29.6	--	--	--	--	--
MAR 2004													
31...	1015	1.00	24.0	7.0	97	7.4	27,500	26.8	3,100	207	624	191	42
31...	1030	3.00	--	4.0	--	7.5	50,600	27.1	5,000	326	1,010	313	53
MAY													
25...	1100	1.00	42.0	5.4	72	6.6	14,000	27.7	1,400	101	282	91.6	27
25...	1135	7.00	--	3.8	--	6.8	49,300	27.1	2,700	183	551	178	39
JUL													
19...	1000	1.00	--	4.0	61	7.8	42,200	30.1	3,100	204	619	197	42
19...	1015	5.00	36.0	5.6	--	8.0	51,200	30.4	5,400	352	1,100	350	54
SEP													
01...	1040	1.00	36.0	3.0	46	7.8	39,900	29.8	3,900	251	802	247	44
01...	1050	7.00	--	2.5	--	7.9	54,100	29.5	6,100	388	1,240	393	55
50050375 LAGUNA TORRECILLA NO. 1 NR CAROLINA, PR (LAT 18 27 36N LONG 065 59 34W)													
NOV 2003													
03...	0835	1.00	--	4.0	58	7.2	32,800	28.4	--	--	--	--	--
03...	0845	2.00	24.0	4.0	--	7.3	35,900	28.6	--	--	--	--	--
MAR 2004													
31...	0900	1.00	24.0	6.5	96	7.7	42,300	26.7	4,400	294	895	296	49
31...	0930	2.00	--	5.8	--	7.7	53,300	26.3	100,000	38,300	1,240	410	14
MAY													
25...	0950	1.00	18.0	6.1	82	7.4	17,800	27.5	1,800	129	368	126	31
25...	1015	1.50	--	5.9	--	7.4	19,000	27.4	1,900	131	373	128	31
JUL													
19...	0845	1.00	--	5.7	89	8.0	47,800	29.3	5,100	333	1,040	330	52
19...	0900	2.00	30.0	6.1	--	8.1	50,100	29.1	5,900	382	1,200	383	56
SEP													
01...	0945	1.00	36.0	4.3	70	8.0	57,000	29.1	6,400	403	1,320	413	60
01...	1000	3.00	--	4.2	--	8.0	56,400	29.1	6,400	404	1,310	410	58

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue total at 105 deg. C, sus-pended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Total nitro-gen, water, unfltrd mg/L as NO3 (71887)	Phos-phorus, water, unfltrd mg/L (00665)
50050355 LAGUNA TORRECILLA NO. 3 NR CAROLINA, PR (LAT 18 26 37N LONG 065 58 51W)													
NOV 2003													
03...	--	97	--	--	--	--	<10	2.5	1.40	<.020	.01	--	.41
03...	--	--	--	--	--	--	24	1.5	.58	<.020	.01	--	.17
MAR 2004													
31...	5,330	87	9,960	.7	<1.2	1,240	21	--	--	--	--	--	--
31...	8,550	--	15,700	1.0	<1.4	1,990	<10	.50	.03	<.020	.01	--	.09
MAY													
25...	2,360	72	4,300	.3	1.8	560	10	1.1	.47	.070	.01	5.2	.18
25...	4,690	--	10,700	.7	1.2	1,390	30	1.2	.32	.040	.01	5.5	.12
JUL													
19...	5,290	96	9,340	.7	.5	1,190	27	--	.09	--	--	--	.04
19...	9,210	--	16,600	1.0	.4	2,180	30	--	.03	--	--	--	.02
SEP													
01...	6,370	96	11,900	.8	.8	1,580	10	--	.04	--	--	--	.03
01...	9,890	--	18,300	1.1	.4	2,590	17	--	.03	--	--	--	.04
50050375 LAGUNA TORRECILLA NO. 1 NR CAROLINA, PR (LAT 18 27 36N LONG 065 59 34W)													
NOV 2003													
03...	--	100	--	--	--	--	<10	1.1	.34	.050	.02	5.1	.14
03...	--	--	--	--	--	--	16	1.0	.33	.040	.02	4.6	.13
MAR 2004													
31...	7,550	106	13,200	.9	E.1	1,720	22	.50	.02	<.020	<.01	--	.07
31...	10,400	--	18,900	1.1	.2	2,470	17	.30	.03	<.020	.01	--	.04
MAY													
25...	3,070	80	5,450	.4	2.2	716	15	.80	.20	.110	.02	4.0	.10
25...	3,120	--	5,590	.4	2.1	728	21	1.0	.18	.110	.02	4.9	.11
JUL													
19...	8,570	120	15,900	1.0	.5	2,070	23	--	.02	--	--	--	.01
19...	9,880	--	18,300	1.1	.2	2,550	43	--	.03	--	--	--	<.01
SEP													
01...	11,000	120	19,500	1.1	E.1	2,660	22	--	.03	--	--	--	.01
01...	10,700	--	19,600	1.2	E.1	2,680	32	--	.04	--	--	--	.02

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Biomass plank-ton, ash wgt mg/L (81353)	Biomass plank-ton, dry wgt mg/L (81354)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)
50050355 LAGUNA TORRECILLA NO. 3 NR CAROLINA, PR (LAT 18 26 37N LONG 065 58 51W)					
NOV 2003					
03...	283	295	E31,000	E32.4	<.1
03...	--	--	--	--	--
MAR 2004					
31...	294	307	E580	7.0	<.1
31...	--	--	--	--	--
MAY					
25...	273	281	E6,100	E12.9	<.1
25...	--	--	--	--	--
JUL					
19...	304	317	E850	E2.1	<.1
19...	--	--	--	--	--
SEP					
01...	298	308	E130	4.3	E.2
01...	--	--	--	--	--
50050375 LAGUNA TORRECILLA NO. 1 NR CAROLINA, PR (LAT 18 27 36N LONG 065 59 34W)					
NOV 2003					
03...	298	310	380	E17.6	<.1
03...	--	--	--	--	--
MAR 2004					
31...	298	311	260	4.3	E.2
31...	--	--	--	--	--
MAY					
25...	280	290	510	E19.2	<.1
25...	--	--	--	--	--
JUL					
19...	323	339	E40	E2.9	E.2
19...	--	--	--	--	--
SEP					
01...	327	340	E2	<.1	<.1
01...	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Turbid-ity, wat unf lab, Hach 2100AN NTU (99872)	Sulfide water unfltrd mg/L (00745)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Organic nitro-gen, water, unfltrd mg/L (00605)	Total nitro-gen, wat unf by anal ysis, mg/L (62855)	Total nitro-gen, water, unfltrd mg/L (00600)	Biomass phyto-plank-ton, ashfree drymass mg/L (49953)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recover-able, ug/L (01007)	Boron, water, unfltrd recover-able, ug/L (01022)
50050355 LAGUNA TORRECILLA NO. 3 NR CAROLINA, PR (LAT 18 26 37N LONG 065 58 51W)												
NOV 2003												
03...	5.5	--	--	--	1.1	--	--	11.8	E20,000	--	--	--
03...	--	1.0	--	--	.92	--	--	--	--	--	--	--
MAR 2004												
31...	3.2	--	--	--	--	--	--	12.4	730	<6	45.8	1,950
31...	--	<.1	--	--	.47	--	--	--	--	<8	E19.3	3,140
MAY												
25...	2.5	--	.06	--	.63	--	1.2	7.6	6,900	<4	44.5	1,020
25...	--	<.1	.03	--	.88	--	1.2	--	--	<6	25.2	2,620
JUL												
19...	--	--	--	.030	--	.46	--	13.0	E1,000	E4	35.1	2,280
19...	--	--	--	.024	--	.26	--	--	--	<8	<40.0	4,160
SEP												
01...	<2.0	--	--	E.011	--	.30	--	9.8	E150	E5	32.0	2,280
01...	--	--	--	<.016	--	.23	--	--	--	E6	<30.0	3,460
50050375 LAGUNA TORRECILLA NO. 1 NR CAROLINA, PR (LAT 18 27 36N LONG 065 59 34W)												
NOV 2003												
03...	5.3	--	.03	--	.76	--	1.2	12.0	340	--	--	--
03...	--	<.1	.02	--	.67	--	1.0	--	--	--	--	--
MAR 2004												
31...	6.5	--	--	--	.48	--	--	12.6	200	<8	30.1	2,970
31...	--	<.1	--	--	.27	--	--	--	--	E5	<40.0	3,900
MAY												
25...	30	--	.09	--	.60	--	.91	10.0	2,200	4	37.5	1,300
25...	--	.2	.09	--	.82	--	1.1	--	--	5	34.2	1,300
JUL												
19...	--	--	--	.064	--	.29	--	16.0	E50	E6	<50.0	3,240
19...	--	--	--	.022	--	.14	--	--	--	E4	<40.0	4,190
SEP												
01...	5.1	--	--	.019	--	.14	--	13.2	E2	8	<30.0	4,120
01...	--	--	--	.019	--	.14	--	--	--	9	<30.0	3,660

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATION—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Cadmium water, unfltrd ug/L (01027)	Chrom-ium, water, unfltrd recover -able, ug/L (01034)	Copper, water, unfltrd recover -able, ug/L (01042)	Cyanide water unfltrd mg/L (00720)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan-ese, water, unfltrd recover -able, ug/L (01055)	Mercury water, unfltrd recover -able, ug/L (71900)	Selen-ium, water, unfltrd ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	MBAS, water, unfltrd mg/L (38260)	Phen-olic com-pounds, water, unfltrd ug/L (32730)
50050355 LAGUNA TORRECILLA NO. 3 NR CAROLINA, PR (LAT 18 26 37N LONG 065 58 51W)													
NOV 2003													
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 2004													
31...	<1.3	<2.4	E40	.06	50	<.66	57.2	<.02	<8	<1.6	<12	E.08	<32
31...	<1.5	<3.2	110	.11	140	<.84	49.6	<.02	<10	<1.8	61	.13	<32
MAY													
25...	E.6	2.6	30	.03	160	E2.3	187	<.02	<5	<.8	E19	<.10	<16
25...	2.1	<2.4	50	.06	260	E3.8	101	<.02	<8	<1.3	62	<.20	<16
JUL													
19...	2.2	<2.4	<60	E.02	E70	7.0	41.7	<.02	<8	<1.3	<60	.12	<16
19...	3.0	<3.2	<80	E.06	210	8.8	58.4	<.02	<10	<1.8	<80	<.10	<16
SEP													
01...	2.7	<2.4	<40	<.08	E70	E4.9	36.9	E.02	E7	<1.6	<40	E.07	<16
01...	4.4	<3.2	<60	E.06	310	E4.2	28.6	.31	E9	<1.8	<60	.17	<16
50050375 LAGUNA TORRECILLA NO. 1 NR CAROLINA, PR (LAT 18 27 36N LONG 065 59 34W)													
NOV 2003													
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 2004													
31...	<1.5	<3.2	E80	.10	120	<.78	49.2	<.02	<10	<1.8	<12	E.06	--
31...	<1.1	<3.2	90	.11	E170	<1.20	E16.9	<.02	E6	<1.3	E58	.55	<32
MAY													
25...	12.1	<1.6	E20	.03	220	7.8	88.7	<.02	3	.3	E14	<.40	<16
25...	E.7	<1.6	20	.03	380	5.9	101	E.01	3	.3	E16	<.40	<16
JUL													
19...	9.5	<3.2	<100	E.04	<220	47.8	E17.0	<.02	<10	<1.8	E52	.14	<16
19...	4.1	<3.2	<80	E.04	360	3.4	<24.0	<.02	<10	E.9	<80	.16	<16
SEP													
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
01...	5.3	<3.2	E30	E.06	470	<8.0	<18.0	.36	12	<2.1	<60	E.08	<16

Ground-Water Records for Puerto Rico

RIO GUAJATACA BASIN

182422067015100. Local number, 165.

LOCATION.--Lat 18°24'22", long 67°01'51", Hydrologic Unit 21010003, 5.6 mi northeast of Moca plaza, 4.7 mi southeast of Aguadilla U.S. Naval Reservation radio antenna, and 1.63 mi northwest of La Virgen del Rosario Church, Name: Saltos 1 Well, Isabela.

AQUIFER.--Cibao Formation. Aguada Limestone.

WELL CHARACTERISTICS.--Drilled production water-table well, diameter 16 in (0.4 m), cased 16 in (0.4 m) 0-40 ft (0-12.2 m), cased 12 in (0.3 m) 40-200 ft (12.2-61 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 689 ft (210 m), above mean sea level. Measuring point: Hole on pump base, 0.5 ft (0.15 m), above land-surface datum. Prior to October 6, 1988, hole on top of pipe on top of pump base, 0.8 ft (0.24 m), above land-surface datum. Prior to November 1985, hole on top of pump base, 1 ft (0.3 m), above land-surface datum.

REMARKS.--Recording observation well. Formerly published as 182421067015000. Well is affected by nearby pumping.

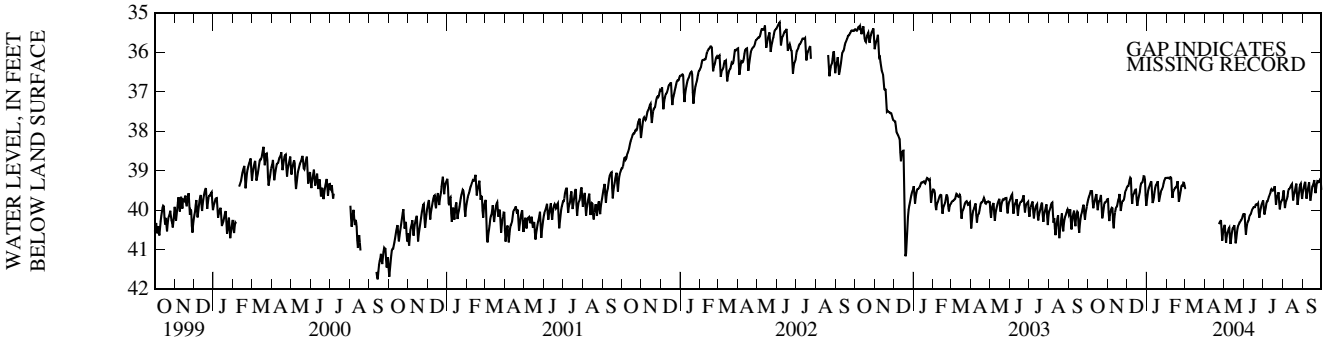
PERIOD OF RECORD.--January 1982 to March 1985, November 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 35.17 ft (10.7 m), below land-surface datum, June 6, 2002; lowest water level measured, 70.6 ft (21.5 m), below land-surface datum, June 18, 1982.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39.76	39.71	39.44	39.81	39.19	39.42	---	40.44	40.08	39.78	39.70	39.63
2	39.69	39.72	39.38	39.70	39.17	39.45	---	40.38	40.10	39.71	39.53	39.51
3	39.64	40.39	39.38	39.55	39.18	39.40	---	40.35	40.09	40.18	39.46	39.45
4	39.61	40.15	39.38	39.45	39.16	---	---	40.91	40.72	40.03	40.03	39.33
5	39.52	40.08	39.26	39.41	39.20	---	---	40.73	40.51	39.99	39.85	39.31
6	39.51	39.99	39.20	39.38	39.18	---	---	40.58	40.37	39.87	39.79	39.24
7	39.53	39.95	39.14	39.30	39.15	---	---	40.57	40.30	39.78	39.74	39.80
8	39.50	39.92	39.25	39.29	39.17	---	---	40.49	40.29	39.77	39.70	39.60
9	40.03	39.97	39.93	39.24	39.19	---	---	40.44	40.23	39.76	39.59	39.49
10	39.86	40.64	39.73	39.86	39.77	---	---	40.43	40.15	39.67	39.46	39.44
11	39.82	40.26	39.58	39.76	39.59	---	---	40.94	40.11	39.62	39.47	39.31
12	39.74	40.10	39.61	39.74	39.51	---	---	40.76	40.10	39.61	39.44	39.27
13	39.67	40.01	39.53	39.60	39.50	---	---	40.65	40.06	39.53	39.41	39.84
14	39.60	39.92	39.48	39.46	39.44	---	---	40.50	39.99	39.46	39.37	39.67
15	39.58	39.91	39.47	39.40	39.42	---	---	40.45	39.96	39.46	39.34	39.60
16	40.09	39.89	39.47	39.32	39.41	---	---	40.42	39.93	39.50	39.32	39.42
17	39.90	39.75	39.96	39.35	39.42	---	---	40.42	39.90	39.50	39.84	39.36
18	39.77	39.73	39.81	39.30	39.28	---	---	40.33	39.93	39.47	39.65	39.37
19	39.76	39.66	39.75	39.22	39.24	---	---	40.88	39.90	39.44	39.62	39.26
20	39.74	39.51	39.61	39.83	39.84	---	---	40.79	39.86	39.33	39.53	39.20
21	39.64	40.10	39.60	39.73	39.73	---	---	40.63	39.84	39.95	39.44	39.65
22	39.58	39.93	39.46	39.65	39.64	---	---	40.49	39.86	39.77	39.36	39.48
23	40.24	39.84	39.32	39.55	39.54	---	40.38	40.40	39.84	39.66	39.28	39.39
24	40.16	39.78	39.31	39.50	39.45	---	40.31	40.37	39.80	39.63	39.93	39.25
25	40.07	39.75	39.30	39.46	39.31	---	40.30	40.34	40.29	39.57	39.79	39.26
26	39.91	39.76	39.28	39.45	39.42	---	40.27	40.30	40.08	39.51	39.66	39.26
27	39.81	39.71	39.16	39.37	39.33	---	40.22	40.27	40.02	40.08	39.52	39.31
28	39.80	39.60	39.11	39.27	39.26	---	40.85	40.25	39.91	39.87	39.36	39.24
29	39.79	39.50	39.17	39.24	39.34	---	40.68	40.23	39.86	39.80	39.34	39.19
30	39.77	39.49	39.27	39.20	---	---	40.53	40.17	39.80	39.75	39.30	39.19
31	39.73	---	39.96	39.16	---	---	---	40.11	---	39.75	39.79	---
MEAN	39.77	39.89	39.46	39.47	39.38	---	---	40.48	40.06	39.70	39.57	39.41

WTR YR 2004 MEAN 39.74 HIGHEST 39.04 SEPT 15, 2004 LOWEST 40.97 MAY 11, 2004



RIO GUAJATACA BASIN—Continued

182647066552400. Local number, 202.

LOCATION.--Lat 18°26'47", long 66°55'24", Hydrologic Unit 21010002, 2.22 mi southeast of Quebradillas plaza, 1.29 mi north of José de Diego School , and 1.99 mi northwest of El Calvario Church, Name: Carmelo Barreto García Well, Quebradillas.

AQUIFER.--Aguada Limestone.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 20 in (0.51 m), cased 20 in (0.51 m), 0-296 ft (0-90.2 m), diameter 20 in (0.51 m), cased 20 in (0.51 m), 0-550 ft (0-168 m), perforated 270-529 ft (82.3-161 m). Depth 550 ft (168 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 475 ft (145 m), above mean sea level, from topographic map. Measuring point: Hole in horizontal steel plate, 1.11 ft (0.34 m), above land-surface datum. Priot to February 18, 1998, hole on side of casing, 1.5 ft (0.46 m), above land-surface datum. Prior to July 25, 1986, top of shelter floor, 3.3 ft (1 m), above land-surface datum.

REMARKS.--Recording observation well.

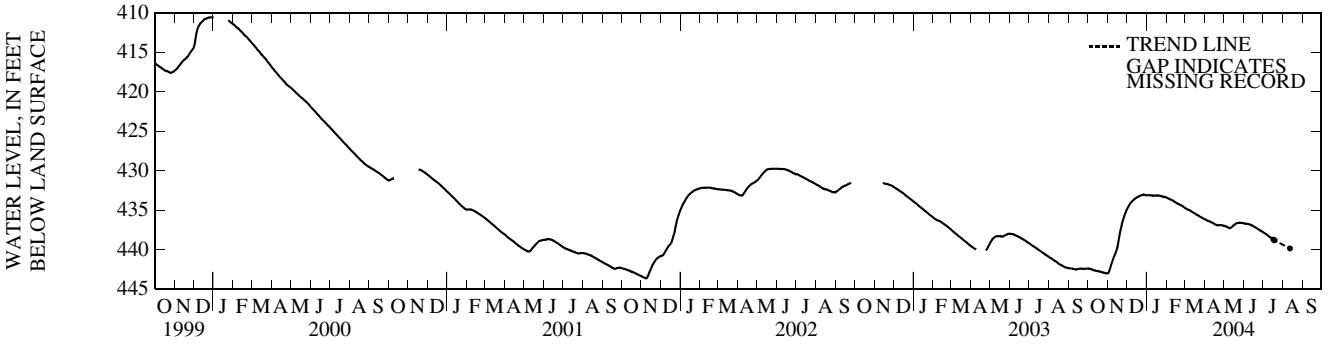
PERIOD OF RECORD.--November 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 401.9 ft (122 m), below land-surface datum, February 6, 1999; lowest water level recorded, 453.9 ft (138 m), below land-surface datum, May 14, 15, 16, 1995.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	442.35	442.97	434.93	433.09	433.37	434.69	436.12	436.92	436.63	437.75	---	---
2	442.35	442.94	434.73	433.08	433.41	434.75	436.14	436.96	436.67	437.79	---	---
3	442.37	442.81	434.61	433.06	433.45	434.78	436.18	436.98	436.67	437.85	---	---
4	442.40	442.58	434.47	433.06	433.47	434.82	436.25	437.03	436.68	437.90	---	---
5	442.39	442.34	434.31	433.08	433.53	434.88	436.29	437.04	436.69	437.97	---	---
6	442.44	442.05	434.18	433.08	433.56	434.91	436.31	437.09	436.68	438.02	---	---
7	442.48	441.80	434.04	433.08	433.59	434.95	436.34	437.15	436.69	438.06	---	---
8	442.49	441.56	434.01	433.11	433.64	434.93	436.36	437.18	436.73	438.14	---	---
9	442.52	441.33	433.92	433.10	433.70	435.02	436.41	437.22	436.74	438.21	---	---
10	442.58	441.06	433.80	433.08	433.70	435.07	436.43	437.26	436.76	438.25	---	---
11	442.59	440.85	433.69	433.13	433.74	435.11	436.48	437.24	436.79	438.32	---	---
12	442.60	440.64	433.67	433.16	433.79	435.16	436.54	437.19	436.84	438.41	---	---
13	442.63	440.47	433.59	433.13	433.89	435.22	436.58	437.15	436.87	438.43	---	---
14	442.65	440.28	433.52	433.11	433.91	435.29	436.59	437.07	436.89	438.47	---	---
15	442.68	440.05	433.47	433.10	433.97	435.32	436.64	437.01	436.95	438.54	---	---
16	442.68	439.79	433.43	433.09	434.03	435.35	436.69	436.92	436.98	438.62	---	---
17	442.69	439.34	433.36	433.12	434.10	435.41	436.76	436.87	437.04	438.67	---	---
18	442.68	438.89	433.31	433.12	434.10	435.49	436.80	436.78	437.10	438.72	---	---
19	442.73	438.38	433.27	433.10	434.14	435.52	436.82	436.73	437.13	---	---	---
20	442.76	437.92	433.23	433.12	434.19	435.57	436.86	436.71	437.17	---	---	---
21	442.76	437.53	433.21	433.14	434.24	435.61	436.89	436.64	437.23	---	---	---
22	442.78	437.20	433.14	433.16	434.29	435.65	436.90	436.60	437.30	---	---	---
23	442.82	436.87	433.08	433.18	434.32	435.72	436.88	436.58	437.36	---	---	---
24	442.87	436.59	433.08	433.21	434.36	435.78	436.86	436.58	437.40	---	---	---
25	442.87	436.32	433.06	433.23	434.38	435.84	436.86	436.57	437.44	---	---	---
26	442.87	436.07	433.05	433.27	434.48	435.86	436.86	436.55	437.49	---	---	---
27	442.90	435.81	432.99	433.25	434.49	435.90	436.85	436.56	437.55	---	---	---
28	442.95	435.55	432.98	433.26	434.52	435.96	436.89	436.58	437.59	---	---	---
29	442.97	435.33	433.02	433.30	434.63	436.00	436.91	436.60	437.65	---	---	---
30	442.97	435.14	433.07	433.30	---	436.04	436.91	436.59	437.70	---	---	---
31	442.98	---	433.08	433.33	---	436.09	---	436.61	---	---	---	---
MEAN	442.67	439.35	433.59	433.15	433.97	435.38	436.61	436.87	437.05	---	---	---

WTR YR 2004 MEAN 436.63 HIGHEST 432.94 DEC 27, 2003 LOWEST 443.02 OCT 29, 30, 2003



RIO GUAJATACA BASIN—Continued

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	442.73	DEC 11	433.66	FEB 12	433.75	APR 26	436.88	JUL 19	438.79	AUG 12	439.44

WATER YEAR 2004 HIGHEST 433.66 DEC 11, 2003 LOWEST 442.73 OCT 16, 2003

RIO CAMUY BASIN

182723066511200. Local number, 1026.

LOCATION.--Lat 18°27'23", long 66°51'12", Hydrologic Unit 21010002, 1.6 mi south of the intersection of Hwy 119 with Hwy 2, 1.35 mi east of Hwy 119, and 0.01 mi east of Hwy 486, Name: Zanja 4 Well, Camuy.

AQUIFER.--Aguada Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (0.3 m). Depth 585 ft (178 m).

DATUM.--Elevation of land-surface datum is about 360 ft (110 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of the 4 in (0.1 m) casing, 3 ft (0.91 m), above land-surface datum.

REMARKS.--Observation well.

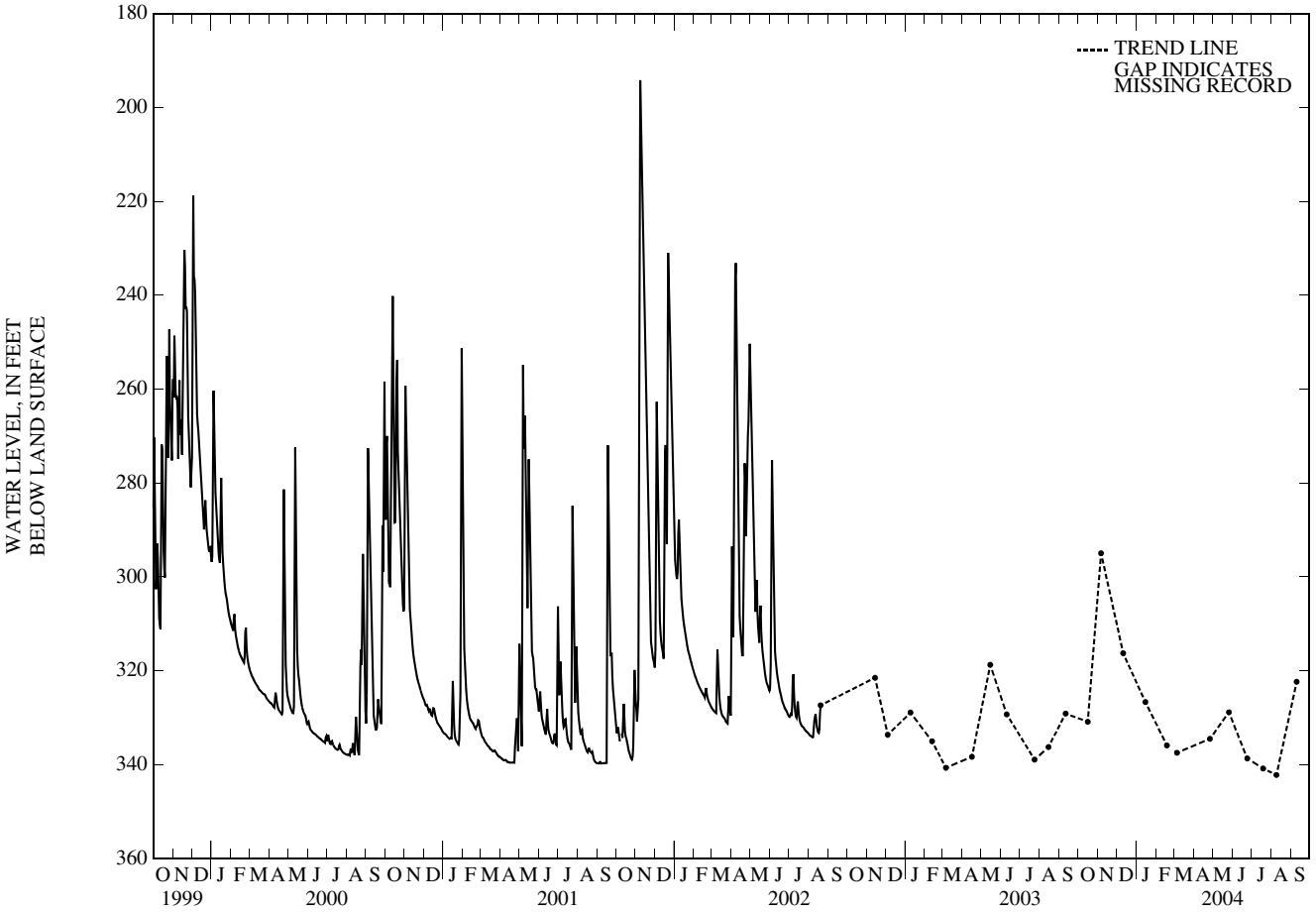
PERIOD OF RECORD.--February 25, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 161.8 ft (49.3 m), below land-surface datum, September 22, 1998; lowest water level measured, 342.21 ft (104 m), below land-surface datum, August 9, 2004.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	330.89	DEC 11	316.28	FEB 18	335.91	APR 26	334.51	JUN 24	338.68	AUG 09	342.21
NOV 06	294.98	JAN 15	326.67	MAR 05	337.49	MAY 26	328.85	JUL 19	341.08	SEP 10	322.35

WATER YEAR 2004 HIGHEST 294.98 NOV 06, 2003 LOWEST 342.21 AUG 09, 2004



RIO GRANDE DE ARECIBO BASIN

182737066370900. Local number, 204.

LOCATION.--Lat 18°27'37", long 66°37'09", Hydrologic Unit 21010002, 5.26 mi west of Barceloneta plaza, 1.58 mi north of Hwy 2 km 63.7, and 3.67 mi southwest of Escuela Agustín Balseiro, Name: Gilberto Rivera Well, Arecibo.

AQUIFER.--Aymamón Limestone.

WELL CHARACTERISTICS.--Abandoned unused water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m). Depth 57 ft (17.4 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is 48 ft (14.63 m), above mean sea level. Measuring point: Top of shelter floor, 3.06 ft (0.93 m), above land-surface datum. Prior to August 8, 2003, air hole on pump base, 0.5 ft (0.15 m), above land-surface datum.

REMARKS.--Recording observation well. Well is affected by marine tides.

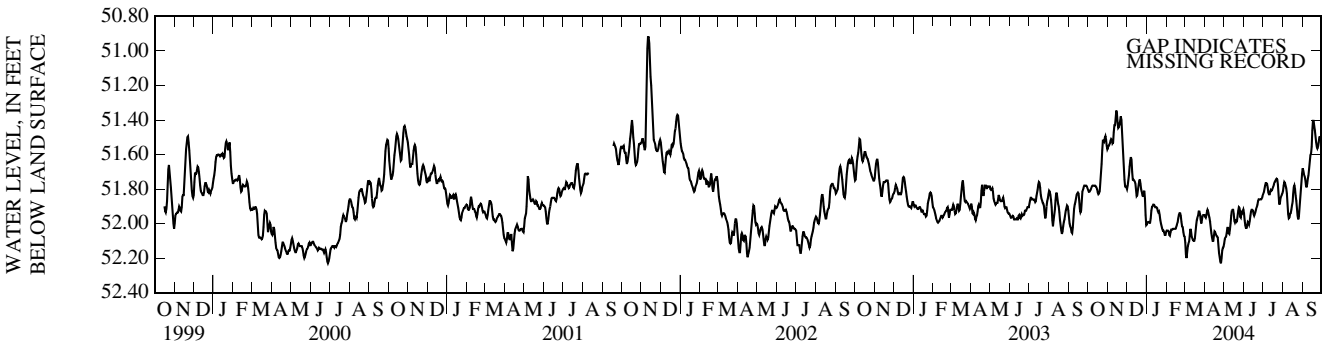
PERIOD OF RECORD.--October 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 50 ft (15.2 m), below land-surface datum, May 14, 1986; lowest water level recorded, 53.1 ft (16.2 m), below land-surface datum, January 29, 1995.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51.80	51.57	51.80	52.01	52.04	52.08	51.95	52.13	51.92	51.83	51.82	51.68
2	51.81	51.55	51.80	52.00	52.04	52.14	51.97	52.10	51.96	51.83	51.80	51.68
3	51.82	51.55	51.76	51.99	52.04	52.22	51.96	52.08	52.00	51.81	51.76	51.71
4	51.81	51.54	51.74	51.99	52.04	52.18	51.94	52.08	52.02	51.79	51.76	51.72
5	51.81	51.53	51.70	51.99	52.05	52.15	51.92	52.07	52.03	51.77	51.77	51.73
6	51.80	51.51	51.64	52.00	52.08	52.11	51.92	52.04	52.02	51.76	51.79	51.76
7	51.79	51.51	51.63	51.99	52.06	52.12	51.94	52.01	52.00	51.77	51.80	51.79
8	51.78	51.52	51.60	51.95	52.04	52.09	51.96	52.04	51.98	51.77	51.85	51.79
9	51.78	51.55	51.66	51.90	52.03	52.04	51.97	52.07	52.01	51.81	51.93	51.75
10	51.78	51.51	51.74	51.91	52.04	52.02	52.01	52.05	52.00	51.83	51.96	51.73
11	51.78	51.43	51.75	51.89	52.03	52.07	52.04	52.02	51.97	51.83	51.98	51.71
12	51.78	51.43	51.74	51.89	52.03	52.08	52.07	51.98	51.94	51.83	51.95	51.65
13	51.78	51.43	51.76	51.89	52.03	52.09	52.09	51.93	51.92	51.80	51.94	51.63
14	51.79	51.35	51.75	51.90	52.03	52.10	52.11	51.92	51.92	51.81	51.94	51.58
15	51.79	51.34	51.78	51.91	52.03	52.10	52.09	51.92	51.92	51.81	51.90	51.61
16	51.81	51.39	51.83	51.90	52.03	52.10	52.05	51.92	51.93	51.80	51.89	51.50
17	51.83	51.44	51.85	51.91	52.01	52.07	52.04	51.97	51.96	51.79	51.86	51.42
18	51.83	51.45	51.82	51.91	52.00	52.02	52.06	52.00	51.95	51.78	51.80	51.39
19	51.82	51.43	51.79	51.94	51.99	52.00	52.06	51.99	51.94	51.76	51.78	51.42
20	51.81	51.43	51.77	51.93	51.95	51.96	52.08	51.98	51.92	51.76	51.78	51.45
21	51.72	51.38	51.74	51.93	51.95	51.97	52.07	52.00	51.91	51.75	51.82	51.47
22	51.69	51.38	51.75	51.97	51.93	51.94	52.09	51.97	51.90	51.74	51.86	51.52
23	51.62	51.42	51.79	51.99	51.95	51.92	52.16	51.94	51.88	51.74	51.88	51.54
24	51.53	51.50	51.81	52.01	51.96	51.94	52.18	51.91	51.86	51.75	51.94	51.57
25	51.51	51.57	51.82	52.02	52.02	51.95	52.21	51.90	51.86	51.80	51.97	51.56
26	51.53	51.66	51.85	52.04	52.01	52.00	52.23	51.92	51.86	51.86	51.98	51.55
27	51.52	51.71	51.84	52.04	52.03	52.00	52.23	52.00	51.86	51.91	51.94	51.51
28	51.49	51.78	51.80	52.04	52.07	51.96	52.17	51.93	51.86	51.86	51.89	51.49
29	51.50	51.79	51.82	52.06	52.07	51.95	52.14	51.94	51.86	51.85	51.84	51.51
30	51.53	51.78	51.89	52.07	---	51.95	52.14	51.94	51.85	51.84	51.79	51.52
31	51.57	---	52.01	52.06	---	51.95	---	51.92	---	51.83	51.74	---
MEAN	51.72	51.51	51.78	51.97	52.02	52.04	52.06	51.99	51.93	51.80	51.86	51.60

WTR YR 2004 MEAN 51.86 HIGHEST 51.28 NOV 14, 2003 LOWEST 52.32 MAR 04, 2004



RIO GRANDE DE ARECIBO BASIN—Continued

182616066364100. Local number, 1052.

LOCATION.--Lat 18°26'16", long 66°36'41", Hydrologic Unit 21010002, 3 mi west of the intersection of Hwy 140 with Hwy 2 at Cruce Dávila, 0.32 mi southwest of Hwy 22, 0.15 mi north of Hwy 2, and 0.22 mi northeast of the intersection of Hwy 2 with Hwy 639, Name: Encantado Well, Arecibo.

AQUIFER.--Aguada Limestone.AQUIFER.--Tertiary Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 20 in (0.51 m).

DATUM.--Elevation of land-surface datum is about 312 ft (95 m), above mean sea level, from topographic map. Measuring point: On shelter floor 3.4 ft (1.04 m), above land-surface datum.

REMARKS.--Observation well. Well is affected by marine tides.

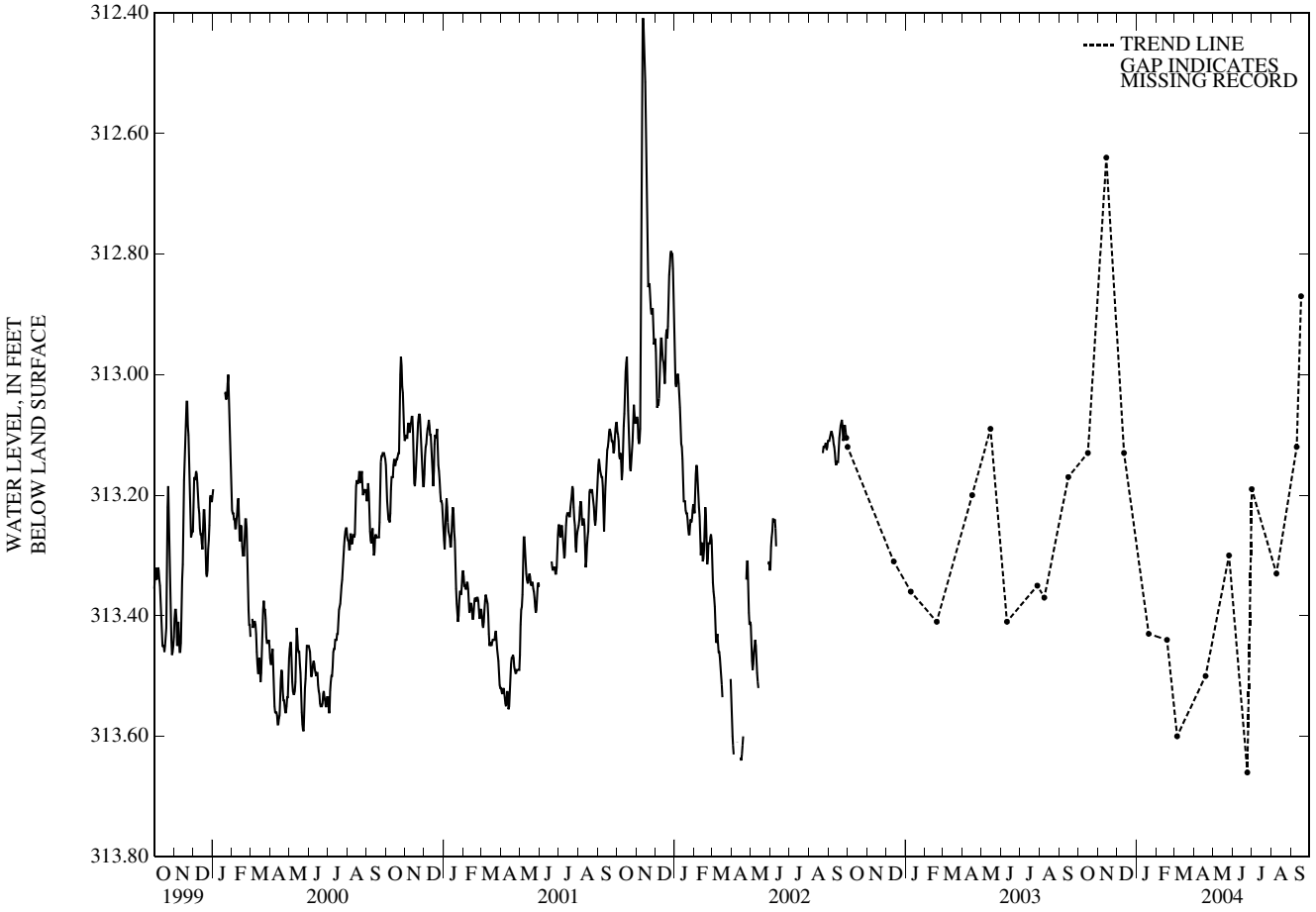
PERIOD OF RECORD.--August 23, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 312.23 ft (95.2 m), below land-surface datum, September 13, 14, 1996; lowest water level recorded, 313.84 ft (95.7 m), below land-surface datum, April 3, 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	313.13	JAN 20	313.43	APR 19	313.50	JUL 01	313.19	SEP 10	313.12	SEP 17	312.87
NOV 14	312.64	FEB 18	313.44	MAY 26	313.31	AUG 09	313.33				
DEC 12	313.13	MAR 05	313.60	JUN 24	313.26						

WATER YEAR 2004 HIGHEST 312.64 NOV 14, 2003 LOWEST 313.60 MAR 05, 2004



RIO GRANDE DE ARECIBO BASIN—Continued

182626066345100. Local number, 1053.

LOCATION.--Lat 18°26'26", long 66°34'51", Hydrologic Unit 21010002, 1.45 mi south of Hwy 682, 1.15 mi northwest of the intersection of Hwy 140 with Hwy 2 (Cruce Dávila), 0.48 mi north of Hwy 2, and approximately 100 ft (30.48 m) south of Hwy 22, Name: Tiburones Well, Barceloneta.

AQUIFER.--Aymamón Limestone.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 12 in (0.3 m). Depth 320 ft (97.5 m).

INSTRUMENTATION.--Pressure transducer with integrated electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 295 ft (89.9 m), above mean sea level, from topographic map. Measuring point: Hole on floor of instrument shelter, 3.15 ft (0.96 m), above land-surface datum. Prior to October 27, 1997, top of 4 in (0.1 m) PVC cap, above shelter floor, 3.4 ft (1.04 m), above land-surface datum.

REMARKS.--Recording observation well. Well is affected by marine tides.

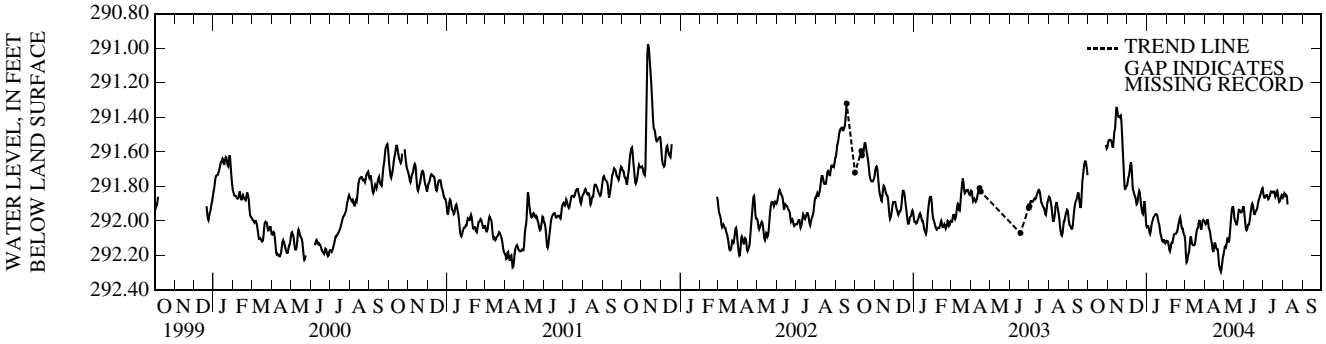
PERIOD OF RECORD.--May 14, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 290.88 ft (88.66 m), below land-surface datum, September 13, 14, 1996; lowest water level measured, 292.35 ft (89.1 m), below land-surface datum, April 25, 26, 2004.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	291.56	291.80	292.04	292.11	292.09	292.00	292.19	291.91	291.81	291.86	---
2	---	291.54	291.79	292.03	292.12	292.15	292.02	292.16	291.95	291.86	291.87	---
3	---	291.53	291.76	292.03	292.11	292.24	292.02	292.14	291.99	291.86	291.84	---
4	---	291.53	291.74	292.03	292.13	292.24	292.01	292.15	292.04	291.87	291.84	---
5	---	291.53	291.74	292.05	292.15	292.23	291.99	292.15	292.05	291.86	291.85	---
6	---	291.53	291.69	292.08	292.18	292.19	291.99	292.11	292.06	291.85	291.86	---
7	---	291.54	291.67	292.07	292.17	292.19	292.03	292.09	292.04	291.85	291.84	---
8	---	291.56	291.65	292.05	292.15	292.16	292.05	292.11	292.01	291.85	291.87	---
9	---	291.58	291.71	292.01	292.12	292.11	292.05	292.14	292.03	291.87	291.94	---
10	---	291.56	291.80	292.01	292.13	292.08	292.08	292.09	292.01	291.88	---	---
11	---	291.49	291.83	291.99	292.12	292.11	292.11	292.05	291.98	291.86	---	---
12	---	291.47	291.82	291.98	292.09	292.13	292.12	292.00	291.95	291.86	---	---
13	---	291.47	291.86	291.97	292.08	292.14	292.15	291.95	291.92	291.83	---	---
14	---	291.36	291.85	291.97	292.07	292.14	292.18	291.92	291.90	291.83	---	---
15	---	291.33	291.87	291.96	292.08	292.14	292.18	291.92	291.90	291.83	---	---
16	---	291.36	291.90	291.96	292.07	292.14	292.14	291.92	291.92	291.84	---	---
17	---	291.39	291.91	291.96	292.07	292.13	292.12	291.97	291.96	291.83	---	---
18	---	291.40	291.89	291.97	292.06	292.09	292.14	292.00	291.96	291.83	---	---
19	---	291.39	291.86	292.00	292.04	292.07	292.15	292.00	291.96	291.83	---	---
20	---	291.41	291.83	292.01	292.01	292.04	292.17	292.01	291.94	291.86	---	---
21	---	291.38	291.82	292.02	292.01	292.05	292.16	292.03	291.94	291.86	---	---
22	---	291.40	291.85	292.06	291.97	292.03	292.17	292.01	291.93	291.84	---	---
23	---	291.45	291.89	292.08	291.99	291.99	292.24	291.98	291.91	291.82	---	---
24	---	291.54	291.93	292.09	292.01	292.00	292.27	291.94	291.88	291.83	---	---
25	---	291.62	291.94	292.11	292.05	292.02	292.27	291.93	291.88	291.86	---	---
26	---	291.71	291.97	292.12	292.04	292.05	292.30	291.94	291.86	291.89	---	---
27	---	291.77	291.95	292.12	292.05	292.05	292.29	291.95	291.85	291.89	---	---
28	---	291.82	291.89	292.10	292.08	292.01	292.26	291.95	291.84	291.88	---	---
29	291.55	291.82	291.88	292.12	292.08	291.99	292.22	291.95	291.82	291.87	---	---
30	291.57	291.80	291.94	292.13	---	292.00	292.20	291.94	291.81	291.85	---	---
31	291.59	---	292.01	292.13	---	292.00	---	291.92	---	291.85	---	---
MEAN	---	291.53	291.84	292.04	292.08	292.10	292.14	292.02	291.94	291.85	---	---

WTR YR 2004 MEAN 291.94 HIGHEST 291.28 NOV 15, 2003 LOWEST 292.35 APR 25, 26, 2004



RIO GRANDE DE ARECIBO BASIN—Continued

182639066385200. Local number, 1056.

LOCATION.--Lat 18°26'39", long 66°38'52", Hydrologic Unit 21010002, 0.19 mi south of Hwy 2, 1.14 mi west of intersection of Hwy 2 with Hwy 22, 1.18 mi east southeast of Escuela Federico Degetau, Name: Santana 1 Well, Arecibo.

AQUIFER.--Upper Aquifer.

WELL CHARACTERISTICS.--Abandoned production well, diameter 12 in (0.3 m), open screened 175-220 ft (53.34-60.96 m). Depth 220 ft (60.96 m).

DATUM.--Elevation of land-surface datum is about 131 ft (39.92 m), above mean sea level, from topographic map. Measuring point: Lower point 13/8 in slanted access pipe, 0.5 ft (0.15 m), above land-surface datum.

REMARKS.--Observation well.

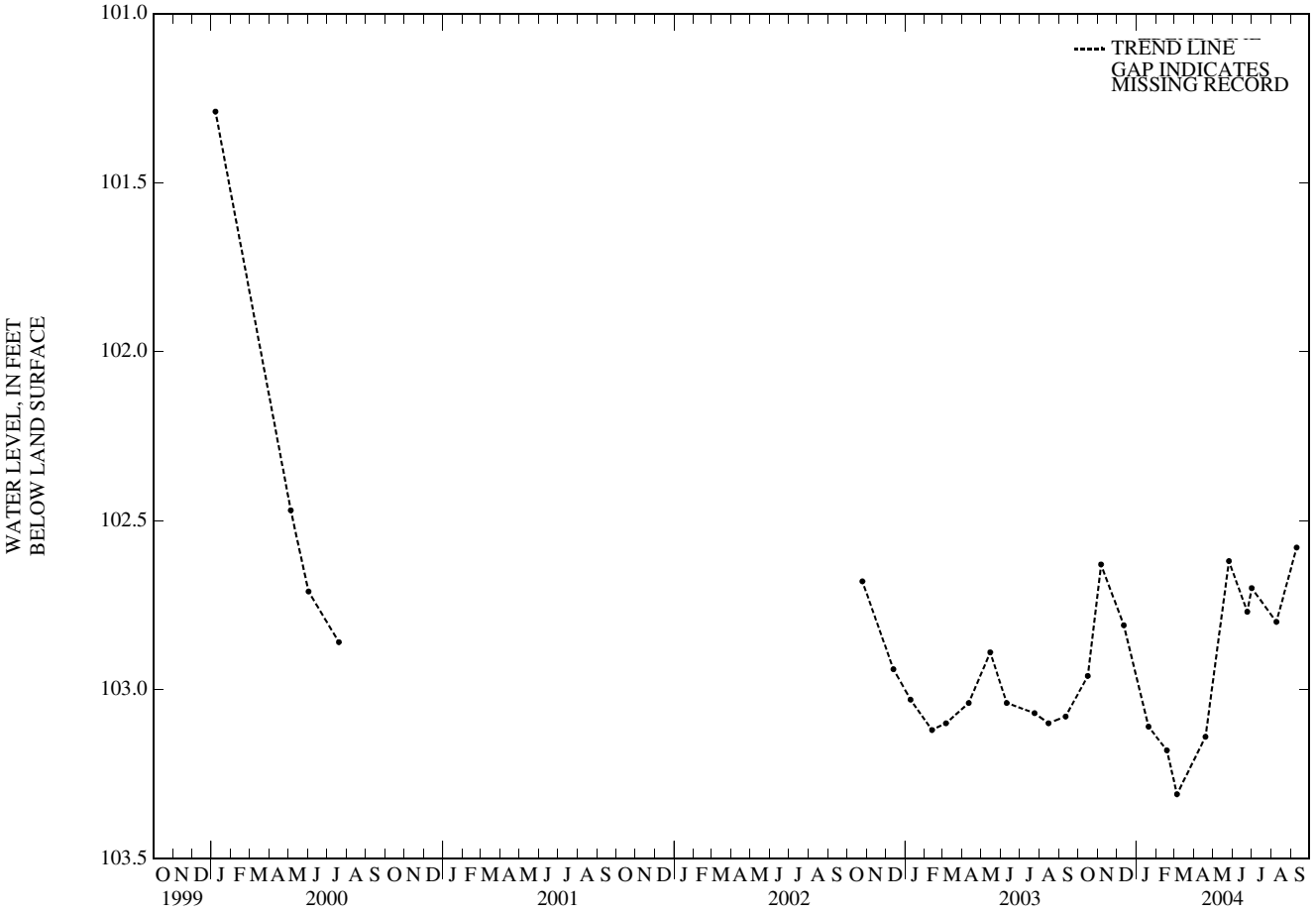
PERIOD OF RECORD.--August 10, 1995 to July 20, 2000, discontinued, October 2002 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 101.29 ft (30.87 m), below land-surface datum, January 7, 2000; lowest water level measured, 107.54 ft (32.78 m), below land-surface datum, June 3, 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	102.96	DEC 12	102.81	FEB 18	103.18	APR 19	103.14	JUN 24	102.77	AUG 09	102.80
NOV 06	102.63	JAN 20	103.11	MAR 05	103.31	MAY 26	102.62	JUL 01	102.70	SEP 10	102.58

WATER YEAR 2004 HIGHEST 102.58 SEPT 10, 2004 LOWEST 103.31 MAR 05, 2004



RIO GRANDE DE ARECIBO BASIN—Continued

182209066340600. Local number, 1057.

LOCATION.--Lat 18°22'09", long 66°34'06", Hydrologic Unit 21010002, 0.2 north of the intersection of Hwy 140 with Hwy 642, 1.15 mi south of the intersection of Hwy 140 with Hwy 641, and approximately 100 ft (30.48 m) west of Hwy 140, Name: Florida 1 Well, Florida.

AQUIFER.--Cibao Formation.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 12 in (0.3 m), Depth 200 ft (61 m).

INSTRUMENTATION.--Pressure transducer with integrated data logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 607 ft (185 m), above mean sea level from topographic map. Measuring point: Hole in concrete base 1.1 ft (0.33 m), above land-surface datum. Prior to September 20, 1996, shelter floor 4 ft (1.22 m), above land-surface datum.

REMARKS.--Recording observation well.

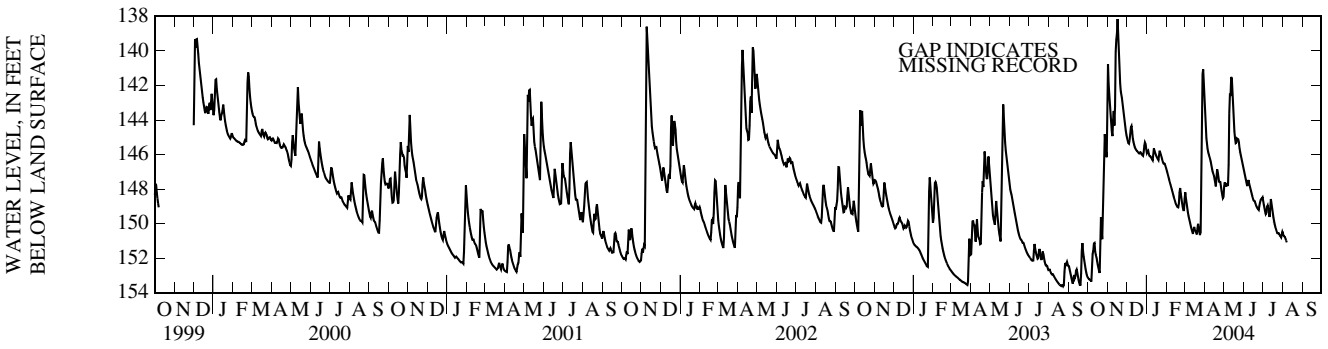
PERIOD OF RECORD.--August 12, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 137.07 ft (41.8 m), below land-surface datum, November 8, 2001; lowest water level recorded, 157.63 ft (48 m), below land-surface datum, August 14, 1996.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	153.12	140.11	144.95	145.84	146.84	148.00	143.56	148.30	146.93	148.57	150.51	---
2	153.18	141.42	145.11	145.98	146.98	148.38	144.20	147.39	147.11	148.81	150.63	---
3	153.24	142.39	145.27	145.67	147.11	148.68	144.83	147.83	147.28	149.01	150.77	---
4	153.24	142.65	145.40	145.88	147.25	148.96	145.29	147.90	147.44	149.20	150.72	---
5	153.25	143.31	145.35	146.03	147.41	149.21	145.54	147.52	147.60	149.38	150.82	---
6	153.32	143.79	144.99	146.13	147.56	149.44	145.76	147.88	147.75	149.52	150.94	---
7	153.39	144.41	144.57	146.07	147.67	149.64	145.94	147.69	147.90	149.22	151.04	---
8	151.85	145.00	144.30	146.17	147.81	149.80	146.05	147.86	147.37	148.86	151.14	---
9	151.68	144.88	144.43	146.25	147.96	149.96	146.17	145.35	147.58	149.06	---	---
10	151.47	143.07	144.90	146.30	148.08	150.12	146.32	141.86	147.76	149.30	---	---
11	150.84	143.88	145.21	146.37	148.22	150.27	146.50	143.22	147.88	149.52	---	---
12	151.42	144.77	145.32	145.59	148.38	150.40	146.71	141.88	148.03	149.71	---	---
13	151.83	141.68	145.51	145.70	148.51	150.53	146.92	141.13	148.18	148.44	---	---
14	151.82	138.42	145.60	145.84	148.62	150.66	147.06	142.05	148.34	148.71	---	---
15	152.07	140.26	145.68	145.95	148.75	150.09	147.13	143.03	148.48	148.99	---	---
16	152.30	137.68	145.75	146.05	148.88	150.29	147.31	143.57	148.61	149.27	---	---
17	152.47	138.63	145.79	146.14	148.96	150.49	147.54	144.41	148.72	149.54	---	---
18	152.64	139.98	145.83	146.23	149.01	150.38	147.75	144.90	148.65	149.77	---	---
19	152.81	140.92	145.88	146.29	149.07	150.57	147.94	145.22	148.77	149.94	---	---
20	152.90	141.61	145.92	146.36	149.04	150.68	146.81	145.45	148.90	150.14	---	---
21	149.30	142.14	145.96	145.72	148.66	149.91	146.90	145.14	148.99	150.25	---	---
22	149.97	142.57	145.83	145.84	147.76	150.12	147.15	144.99	149.07	150.37	---	---
23	150.65	142.56	145.91	145.95	148.12	150.37	147.44	145.21	149.14	150.49	---	---
24	151.15	142.91	145.96	146.07	148.42	150.61	147.69	145.04	149.19	150.61	---	---
25	147.35	143.21	146.02	146.21	148.67	150.71	147.46	145.51	149.22	150.52	---	---
26	147.90	143.56	146.06	146.36	148.94	150.36	147.73	145.76	148.73	150.58	---	---
27	144.63	143.86	146.09	146.47	149.13	145.90	147.99	145.94	148.84	150.66	---	---
28	145.01	144.16	145.63	146.56	149.31	142.32	148.24	146.14	148.44	150.70	---	---
29	145.91	144.46	145.36	146.48	149.12	140.36	148.44	146.36	148.69	150.77	---	---
30	145.83	144.76	145.21	146.60	---	141.78	148.62	146.56	148.38	150.84	---	---
31	146.48	---	145.56	146.70	---	142.87	---	146.75	---	150.43	---	---
MEAN	150.74	142.44	145.46	146.12	148.28	148.77	146.77	145.41	148.27	149.72	---	---

WTR YR 2004 MEAN 147.30 HIGHEST 137.48 NOV 16, 2003 LOWEST 153.39 OCT 7, 2003



RIO GRANDE DE MANATI BASIN

182544066341500. Local number, 205.

LOCATION.--Lat 18°25'44", long 66°34'15", Hydrologic Unit 21010002, 300 ft (91.4 m) west of Hwy 140, 0.5 mi southwest of Cruce Dávila, and 1.3 mi southwest of intersection of Hwy 140 with Hwy 22, Name: Cruce Dávila NC-5 Well, Barceloneta.

AQUIFER.--Montebello/Cibao Limestone.

WELL CHARACTERISTICS.--Deep test well, diameter 2.5 in (0.06 m) 0-1,070 ft (0-326.1 m), open screened 1,070-2,564 ft (326.1-781.5 m). Depth 2,564 ft (781.5 m).

DATUM.--Elevation of land-surface datum is about 312 ft (95.1 m), above mean sea level, from topographic map. Measuring point: Top of black PVC pipe, 1.25 ft (0.38 m), above land-surface datum.

REMARKS.--Observation well.

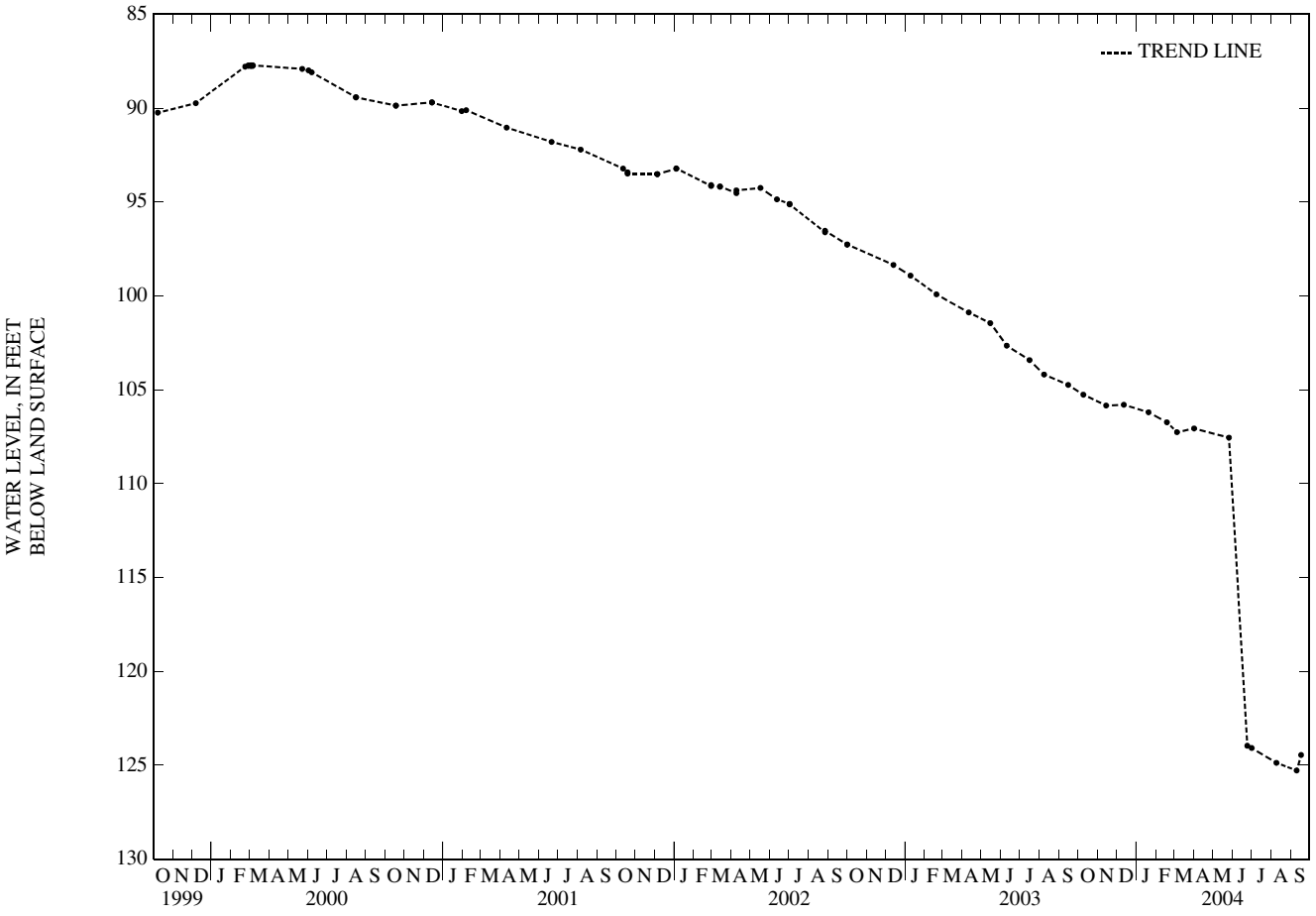
PERIOD OF RECORD.--December 1986 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 9.16 ft (2.79 m), below land-surface datum, August 18, 1987; lowest water level measured, 125.28 ft (38.18 m), below land-surface datum, September 10, 2004.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 09	105.26	DEC 12	105.73	MAR 05	107.26	JUN 24	123.96	SEP 10	125.28	SEP 17	124.45
NOV 14	105.84	JAN 20	106.20	APR 01	107.06	JUL 01	124.08				
DEC 12	105.80	FEB 18	106.73	MAY 26	107.55	AUG 09	124.87				

WATER YEAR 2004 HIGHEST 105.26 OCT 09, 2003 LOWEST 125.28 SEP 10, 2004



RIO GRANDE DE MANATI BASIN—Continued

182549066304300. Local number, 166.

LOCATION.--Lat 18°25'49", long 66°30'43", Hydrologic Unit 21010002, 0.95 mi east of the Río Grande de Manatí Hwy 2 bridge, 0.4 mi southwest of Central Monserrate, 1.07 mi east of the intersection of Hwy 666 with Hwy 2, 1.2 mi west of the intersection of Hwy 685 with Hwy 2, 0.01 mi north of Hwy 2, Name: PRASA 166 USGS Observation Manatí Well, Manatí.

AQUIFER.--Alluvial deposits.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 20 in (0.51 m), cased 0-100 ft (0-39.49 m), diameter 14 in (0.36 m), cased 0-140 ft (0-42.7 m), slotted 80-90 ft (24.7-27.4 m), and 130-140 ft (39.6-42.7 m). Depth 101 ft (30.8 m).

DATUM.--Elevation of land-surface datum is about 29.5 ft (9 m), above mean-sea level, from topographic map. Measuring point: A hole in the side of the 20 in (0.51 m) diameter well casing, 1.65 ft (0.5 m) above land-surface datum. Prior to May 31, 1996, top of 14 in (0.36 m) casing, 0.8 ft (0.24 m), above land-surface datum.

REMARKS.--Observation well. Formerly published as 182542066305200. Station was flooded by Río Grande de Manatí in September 1998 and November 2001.

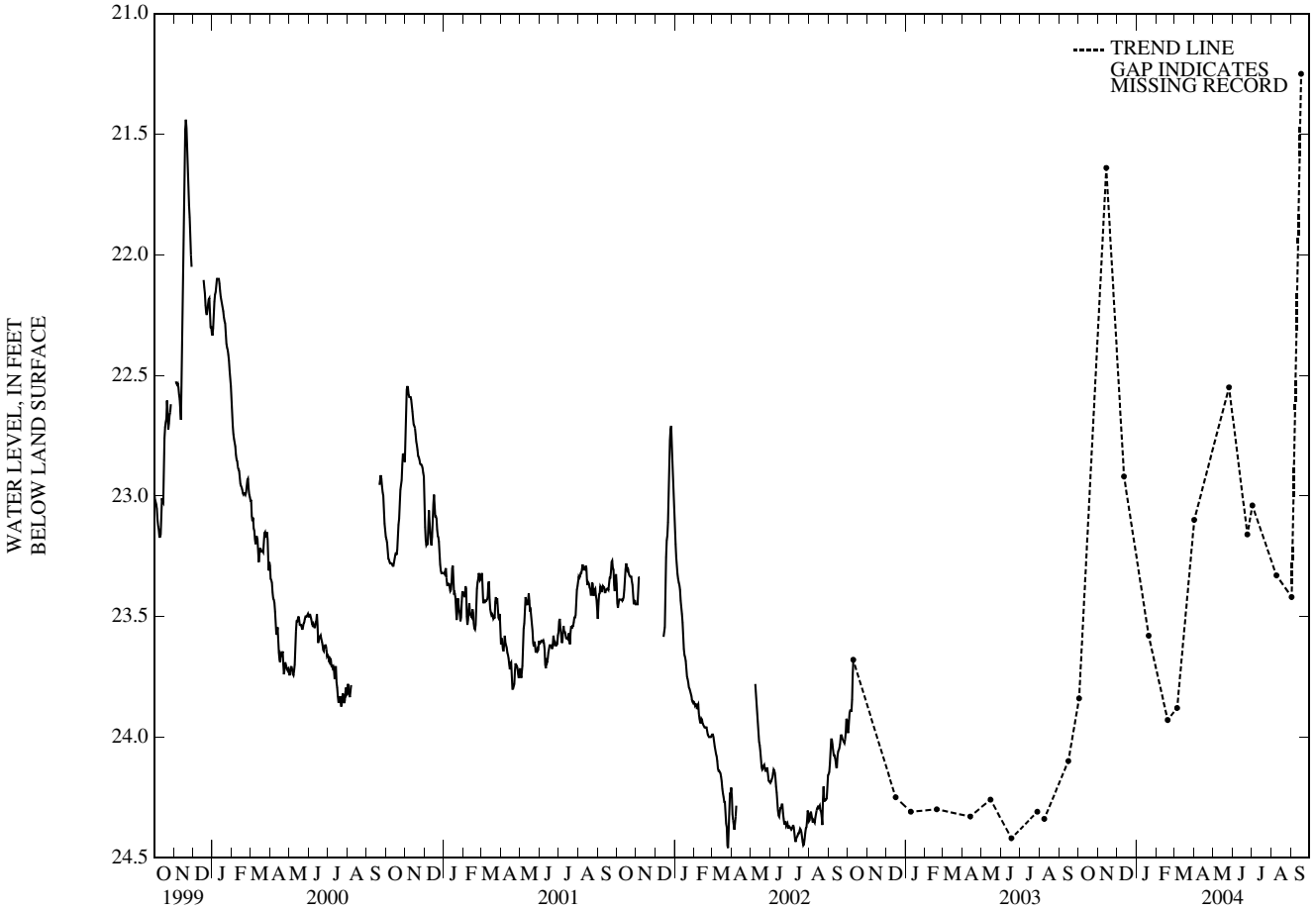
PERIOD OF RECORD.--January 1982 to December 1984, discontinued, May 31, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.25 ft (6.48 m), below land-surface datum, September 17, 2004; lowest water level measured, 26.36 ft (8.04 m), below land-surface datum, February 3, 1983.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	23.84	JAN 20	23.58	APR 01	23.10	JUL 02	23.04	SEP 02	23.42	SEP 17	21.25
NOV 14	21.64	FEB 19	23.93	MAY 26	22.55	AUG 09	23.33				
DEC 12	22.92	MAR 05	23.88	JUN 24	23.16						

WATER YEAR 2004 HIGHEST 21.25 SEP 17, 2004 LOWEST 23.93 FEB 19, 2004



RIO GRANDE DE MANATI BASIN—Continued

182506066280200. Local number, 1076.

LOCATION.--Lat 18°25'06", long 66°28'02", Hydrologic Unit 21010002, 0.72 mi southwest of the intersection of Hwy 686 with Hwy 670, 0.73 mi southeast of intersection of Hwy 149 with Hwy 670, and 0.78 mi northeast of Escuela Sabana Seca, Name: Piezometer Hill 2, Manatí.

AQUIFER.--Aymamón Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), screened 360-410 ft (110-125 m). Depth 410 ft (125 m).

INSTRUMENTATION.--Pressure transducer with integrated electronic data logger--60 minutes interval.

DATUM.--Elevation of land-surface datum is about 312 ft (95 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 3.76 ft (1.15 m), above land-surface datum.

REMARKS.--Recording observation well.

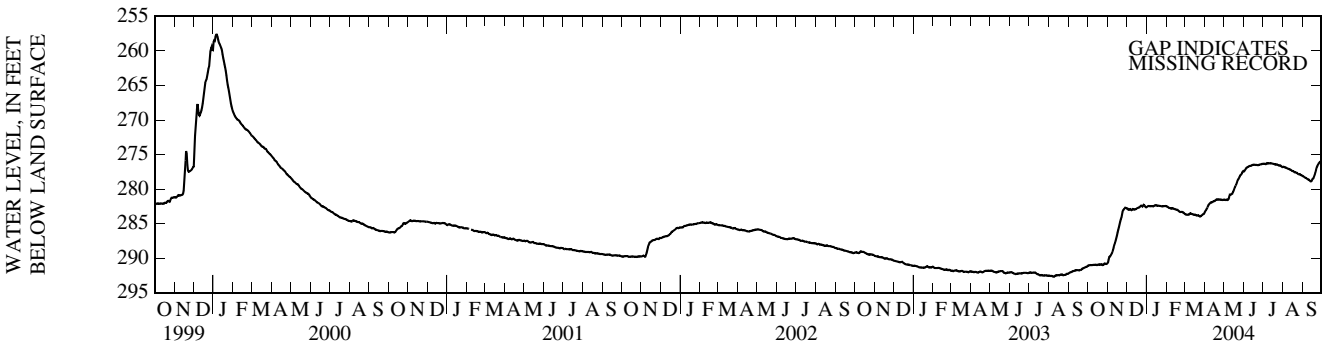
PERIOD OF RECORD.--May 28, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 249.79 ft (76.1 m), below land-surface datum, December 5, 1998; lowest water level recorded, 293.09 ft (89.3 m), below land-surface datum, September 5, 6, 1996.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	291.10	290.67	282.81	282.64	282.51	283.61	283.39	281.52	277.41	276.31	276.82	278.12
2	291.03	290.62	282.78	282.58	282.52	283.69	283.17	281.49	277.45	276.32	276.77	278.11
3	291.02	289.80	282.91	282.50	282.54	283.68	283.00	281.58	277.25	276.33	276.78	278.19
4	291.04	289.84	283.02	282.45	282.66	283.71	282.92	281.60	277.13	276.30	276.90	278.25
5	290.98	289.75	282.99	282.45	282.72	283.74	282.75	281.55	276.95	276.41	276.81	278.33
6	291.00	289.57	282.94	282.48	282.74	283.71	282.56	281.54	276.91	276.37	276.91	278.38
7	291.02	289.41	282.89	282.49	282.72	283.74	282.34	281.62	276.84	276.23	276.95	278.41
8	291.01	289.21	283.06	282.49	282.80	283.65	282.16	281.48	276.77	276.26	276.98	278.48
9	290.96	289.02	283.07	282.46	282.85	283.48	282.08	281.40	276.78	276.34	277.05	278.57
10	290.97	288.58	282.94	282.45	282.78	283.52	281.99	280.76	276.68	276.26	277.07	278.61
11	290.99	288.21	282.83	282.50	282.76	283.58	281.89	280.88	276.62	276.23	277.10	278.63
12	290.96	287.96	282.97	282.53	282.83	283.61	281.91	280.81	276.63	276.28	277.15	278.71
13	290.94	287.66	282.97	282.42	282.87	283.64	281.93	280.78	276.64	276.27	277.19	278.83
14	290.96	287.29	282.95	282.36	282.89	283.71	281.81	280.65	276.56	276.26	277.22	278.89
15	291.00	286.92	282.92	282.33	282.92	283.71	281.73	280.53	276.50	276.29	277.33	278.91
16	291.00	286.53	282.89	282.34	282.96	283.70	281.74	280.30	276.49	276.31	277.40	278.74
17	290.95	286.05	282.77	282.41	283.04	283.69	281.74	280.12	276.46	276.33	277.38	278.48
18	290.88	285.74	282.72	282.43	282.95	283.77	281.65	279.81	276.48	276.35	277.40	278.52
19	290.93	285.34	282.71	282.36	283.05	283.85	281.51	279.60	276.50	276.39	277.53	278.28
20	290.99	284.97	282.67	282.41	283.16	283.82	281.47	279.42	276.50	276.45	277.57	278.05
21	290.93	284.50	282.66	282.43	283.25	283.80	281.52	279.24	276.46	276.46	277.54	277.76
22	290.86	284.26	282.56	282.45	283.29	283.79	281.56	278.90	276.57	276.39	277.64	277.40
23	290.90	284.05	282.43	282.45	283.34	283.86	281.52	278.64	276.51	276.44	277.60	276.97
24	291.02	283.52	282.38	282.46	283.32	283.97	281.48	278.49	276.51	276.46	277.70	276.76
25	291.02	283.07	282.56	282.52	283.26	283.97	281.55	278.37	276.55	276.58	277.82	276.58
26	290.90	283.00	282.51	282.52	283.34	283.93	281.53	278.17	276.39	276.58	277.85	276.31
27	290.75	282.90	282.29	282.49	283.38	283.86	281.51	277.97	276.50	276.56	277.87	276.28
28	290.80	282.75	282.28	282.44	283.38	283.71	281.55	277.94	276.34	276.57	277.81	276.11
29	290.85	282.66	282.43	282.47	283.54	283.67	281.62	277.78	276.43	276.61	277.91	276.04
30	290.83	282.78	282.56	282.44	---	283.64	281.54	277.58	276.38	276.76	278.01	276.02
31	290.80	---	282.66	282.43	---	283.54	---	277.34	---	276.79	277.96	---
MEAN	290.95	286.55	282.75	282.46	282.98	283.72	281.97	279.93	276.67	276.40	277.36	277.86

WTR YR 2004 MEAN 281.64 HIGHEST 275.93 SEPT 30, 2004 LOWEST 91.17 OCT 1, 2003



RIO GRANDE DE MANATI BASIN—Continued

182308066260400. Local number, 210.

LOCATION.--Lat 18°23'01", long 66°25'52", Hydrologic Unit 21010002, 4.88 mi southeast of Manatí plaza, 5.24 mi southwest of Vega Baja plaza, and 2.25 mi west of Escuela Evaristo Camacho, Name: Gelo Martínez Well, Vega Baja.

AQUIFER.--Lares Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 8 in (0.2 m), cased 8 in (0.2 m). Depth 83 ft (25.3 m).

DATUM.--Elevation of land-surface datum is about 574 ft (174.9 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor, 3.3 ft (1.01 m), above land-surface datum. Prior to January 14, 1993, hole on side of casing, 2 ft (0.61 m), above land-surface datum.

REMARKS.--Observation well.

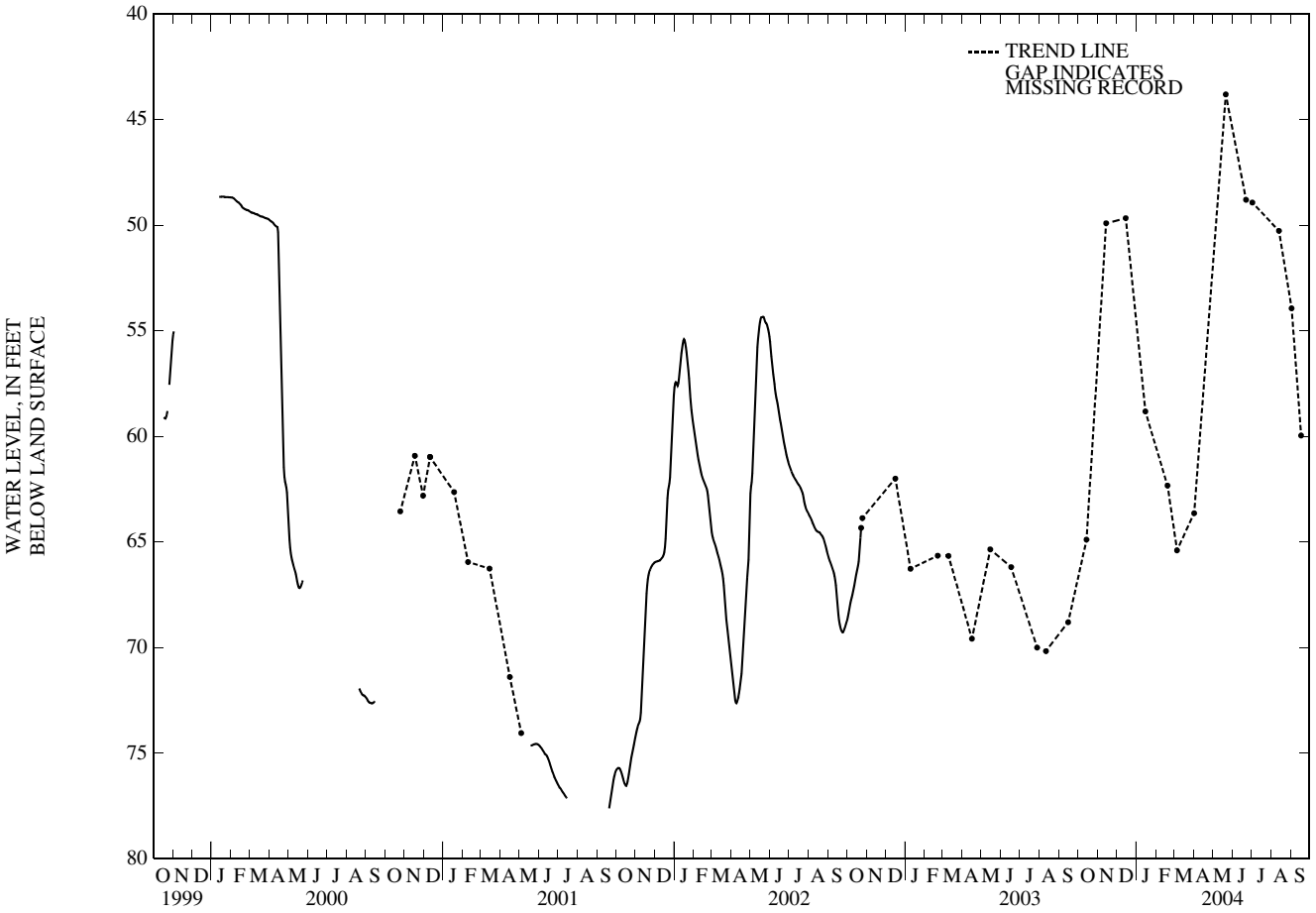
PERIOD OF RECORD.--October 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 40.56 ft (12.4 m), below land-surface datum, May 22, 1986; lowest water level recorded, 85.5 ft (26.1 m), below land-surface datum, October 14, 15, 1994.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	64.89	JAN 15	58.82	APR 01	63.64	JUL 02	48.93	SEP 02	58.94	SEP 17	59.96
NOV 14	49.91	FEB 19	62.53	MAY 21	43.81	AUG 13	50.27				
DEC 15	49.67	MAR 05	65.40	JUN 22	48.80						

WATER YEAR 2004 HIGHEST 43.81 MAY 21, 2004 LOWEST 65.40 MAR 05, 2004



RIO CIBUCO BASIN

182712066251700. Local number, 1102.

LOCATION.--Lat 18°27'12", long 66°25'17", Hydrologic Unit 21010002, 0.6 mi north of the intersection of Hwy 687 with Hwy 2, 0.55 mi southeast of the eastern shoreline of Laguna Tortuguero, 0.32 mi east of Laguna Rica, and 0.12 mi west of Hwy 687, Name: Piezometer Tortuguero 3, Vega Baja.

AQUIFER.--Aymamón Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), screened 68-218 ft (20.7-66.4 m). Depth 218 ft (66.4 m).

INSTRUMENTATION.--Pressure transducer with integrated electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 30 ft (9 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 3.42 ft (1.04 m), above land-surface datum.

REMARKS.--Recording observation well.

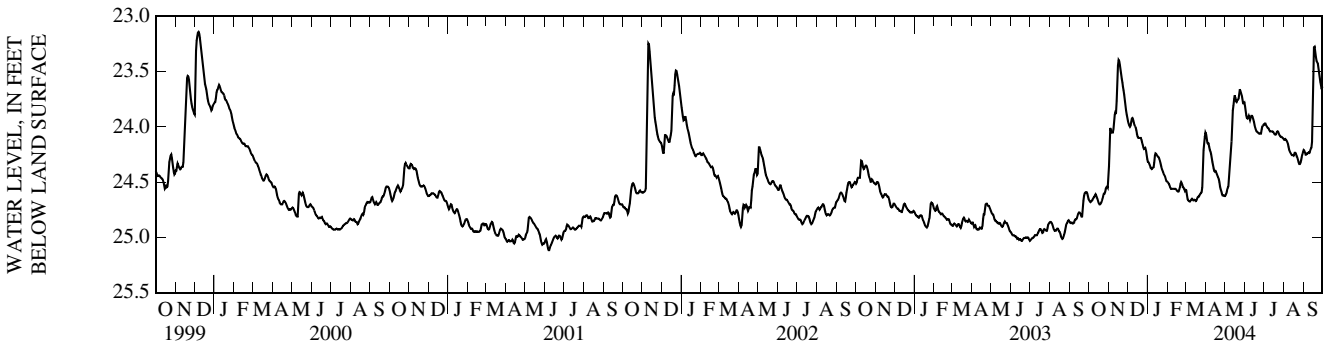
PERIOD OF RECORD.--May 31, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 23.13 ft (7.05 m), below land-surface datum, December 7, 8, 1999; lowest water level recorded, 25.26 ft (7.7 m), below land-surface datum, June 21, 22, 23, 1996.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.66	24.36	23.94	24.31	24.49	24.56	24.05	24.63	23.79	23.98	24.11	24.21
2	24.67	24.35	23.96	24.32	24.51	24.59	24.08	24.62	23.83	23.98	24.12	24.21
3	24.68	24.00	23.98	24.32	24.51	24.64	24.13	24.61	23.87	23.96	24.11	24.22
4	24.68	24.02	24.00	24.34	24.52	24.66	24.16	24.59	23.92	23.98	24.11	24.24
5	24.67	24.04	24.00	24.35	24.54	24.67	24.14	24.56	23.92	23.99	24.12	24.26
6	24.67	24.06	23.98	24.37	24.56	24.67	24.16	24.55	23.93	24.00	24.13	24.24
7	24.66	24.04	23.93	24.38	24.56	24.68	24.20	24.53	23.90	24.01	24.14	24.24
8	24.64	24.06	23.92	24.38	24.56	24.67	24.21	24.41	23.90	24.01	24.16	24.24
9	24.64	23.98	23.92	24.37	24.56	24.66	24.23	24.39	23.94	24.02	24.20	24.23
10	24.63	23.92	23.95	24.37	24.56	24.65	24.26	24.25	23.94	24.04	24.21	24.23
11	24.61	23.86	23.97	24.36	24.56	24.65	24.30	24.18	23.90	24.04	24.23	24.24
12	24.61	23.87	23.99	24.28	24.56	24.66	24.33	24.08	23.90	24.04	24.24	24.20
13	24.63	23.87	24.00	24.24	24.56	24.67	24.36	23.88	23.90	24.04	24.25	24.20
14	24.64	23.66	24.01	24.24	24.56	24.66	24.39	23.82	23.92	24.04	24.26	24.18
15	24.66	23.49	24.05	24.25	24.57	24.66	24.41	23.79	23.94	24.04	24.25	24.09
16	24.68	23.40	24.08	24.26	24.58	24.67	24.40	23.71	23.97	24.05	24.26	23.68
17	24.70	23.39	24.10	24.27	24.58	24.67	24.40	23.72	24.00	24.06	24.26	23.30
18	24.70	23.42	24.10	24.27	24.59	24.66	24.42	23.75	24.01	24.07	24.24	23.26
19	24.70	23.46	24.10	24.28	24.58	24.64	24.43	23.79	24.04	24.07	24.23	23.29
20	24.69	23.51	24.10	24.30	24.56	24.63	24.45	23.76	24.04	24.07	24.24	23.35
21	24.68	23.54	24.10	24.32	24.54	24.63	24.46	23.76	24.05	24.05	24.25	23.38
22	24.66	23.59	24.10	24.35	24.49	24.63	24.48	23.75	24.05	24.04	24.27	23.42
23	24.64	23.61	24.13	24.37	24.51	24.60	24.52	23.74	24.06	24.04	24.28	23.41
24	24.61	23.66	24.15	24.39	24.51	24.61	24.56	23.66	24.06	24.05	24.31	23.44
25	24.60	23.68	24.17	24.40	24.54	24.59	24.57	23.66	24.06	24.07	24.33	23.50
26	24.61	23.74	24.20	24.42	24.55	24.59	24.59	23.69	24.06	24.08	24.34	23.53
27	24.57	23.78	24.20	24.44	24.55	24.50	24.62	23.70	24.06	24.09	24.33	23.58
28	24.55	23.83	24.19	24.44	24.58	24.25	24.62	23.73	23.99	24.09	24.32	23.61
29	24.54	23.88	24.19	24.46	24.58	24.17	24.62	23.77	24.00	24.09	24.28	23.64
30	24.54	23.90	24.23	24.48	---	24.13	24.62	23.80	23.98	24.10	24.26	23.68
31	24.56	---	24.27	24.50	---	24.05	---	23.77	---	24.10	24.24	---
MEAN	24.64	23.80	24.06	24.35	24.55	24.57	24.37	24.02	23.96	24.04	24.23	23.84

WTR YR 2004 MEAN 24.20 HIGHEST 23.26 SEPT 18, 2004 LOWEST 24.72 OCT 18, 2003



RIO CIBUCO BASIN—Continued

182615066235300. Local number, 211.

LOCATION.--Lat 18°26'07", long 66°23'32", Hydrologic Unit 21010002, 4.46 mi southeast of Manatí plaza, 5.48 mi southwest of Vega Baja plaza, and 1.22 mi east of Hwy 155 km 58.3, Name: Rosario 2 Well, Vega Baja.

AQUIFER.--Aguada Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 14 in (0.36 m) 0-200 ft (0-61 m), diameter 12 in (0.3 m), 200-250 ft (61-76.2 m), cased 12 in (0.3 m) 0-250 ft (0-76.2 m), perforated 210-250 ft (64-76.2 m), diameter 10 in (0.25 m) 250-270 ft (76.2-82.3 m), open hole; concrete sealed 0-200 ft (0-61 m). Depth 268 ft. (81.7 m), sounded on May 16, 2002.

DATUM.--Elevation of land-surface datum is about 230 ft (70.1 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor, 3.1 ft (0.94 m), above land-surface datum. Prior to April 11, 1994, hole on side of casing, 1.15 ft (0.35 m), above land-surface datum.

REMARKS.--Observation well.

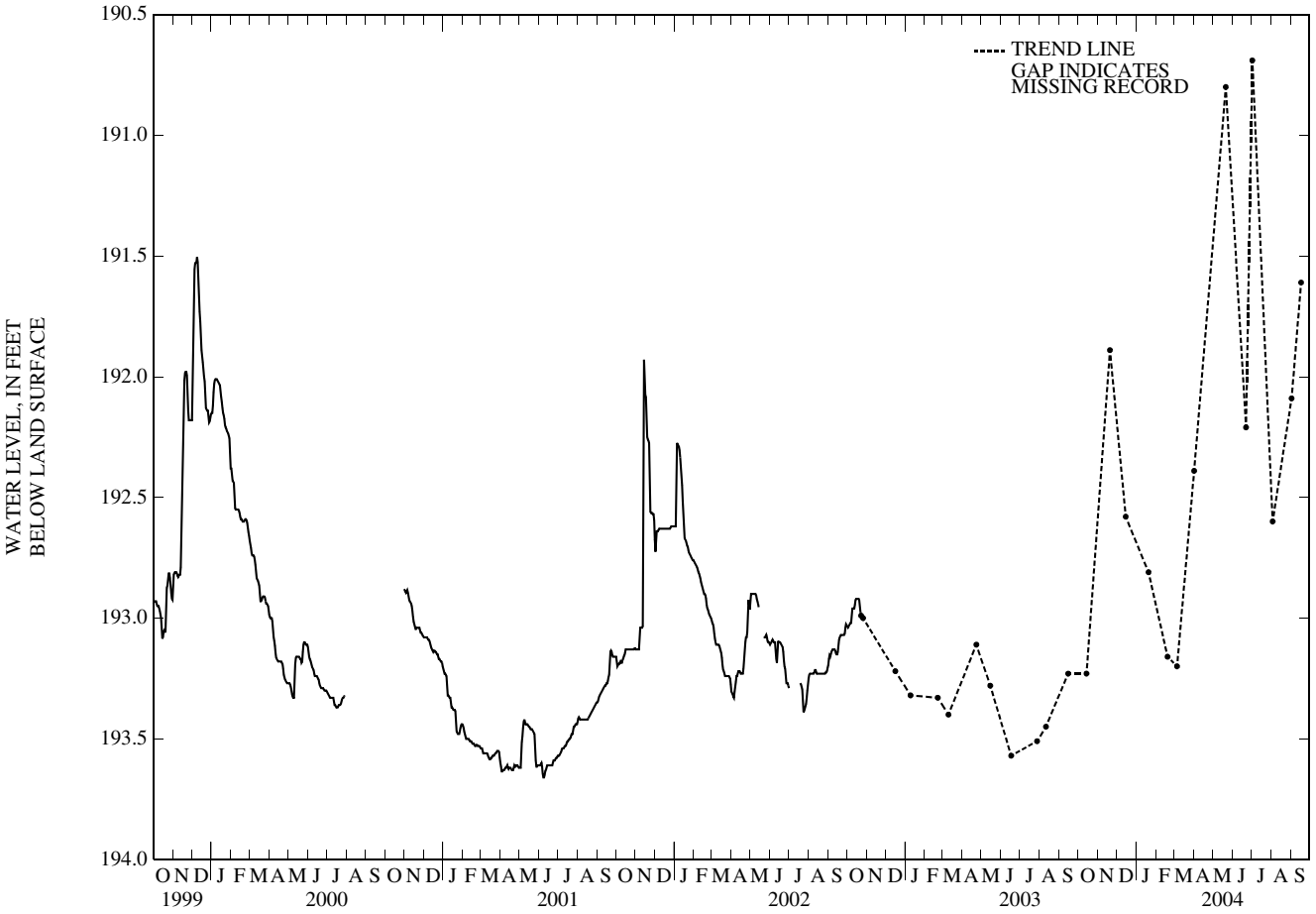
PERIOD OF RECORD.--October 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 190.69 ft (58.12 m), below land-surface datum, July 02, 2004; lowest water level recorded, 194.1 ft (59.2 m), below land-surface datum, Mar. 31, April 1 to 7, 1995.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	193.23	JAN 20	192.81	APR 01	192.39	JUL 02	190.69	SEP 02	192.09	SEP 17	191.84
NOV 20	191.89	FEB 19	193.16	MAY 21	190.80	AUG 03	192.60				
DEC 15	192.58	MAR 05	193.20	JUN 22	192.37						

WATER YEAR 2004 HIGHEST 190.69 JUL 02, 2004 LOWEST 193.23 OCT 14, 2003



RIO CIBUCO BASIN—Continued

182647066201700. Local number, 70.

LOCATION.--Lat 18°26'47", long 66°20'17", Hydrologic Unit 21010002, 1.52 mi north of Vega Alta plaza, 4.78 mi southwest of Dorado plaza, and 2.01 mi northwest of Escuela Industrial para Mujeres Penitenciary, Name: Sabana Hoyos 2, Vega Alta.

AQUIFER.--Limestone of Tertiary Age.

WELL CHARACTERISTICS.--Drilled unused water table well, diameter 8 in (0.2 m), cased 0-90 ft (0-27.4 m), perforated.

INSTRUMENTATION.--Pressure transducer attached to a Data Collector Platform (DCP)--60-minutes interval real time transmissions.

DATUM.--Elevation of land-surface datum is about 49 ft (14.9 m), above mean sea level, from topographic map. Measuring point: Top of casing wooden cover, 1.2 ft (0.36 m), above land-surface datum.

REMARKS.--Recording observation well. Only monthly tapedown measurements published on water years 2000 and 2001, and from October 1 to December 23, 2001.

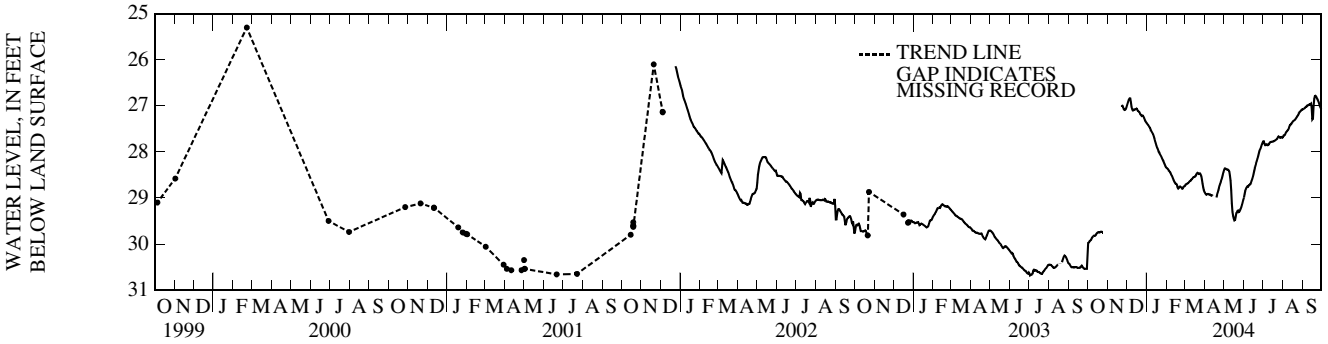
PERIOD OF RECORD.--February 1960 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 21.33 ft (6.5 m), below land-surface datum, October 26, 1976; lowest water level recorded, 31.12 ft (9.48 m), below land-surface datum, May 12, 13, 1995.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29.98	---	27.02	27.37	28.34	28.74	28.88	28.42	29.02	27.80	27.70	27.09
2	29.98	---	26.97	27.39	28.36	28.71	28.91	28.37	28.96	27.75	27.65	27.07
3	29.96	---	26.93	27.41	28.36	28.71	28.93	28.35	28.87	27.79	27.64	27.07
4	29.94	---	26.88	27.42	28.39	28.69	28.93	28.37	28.82	27.85	27.64	27.06
5	29.92	---	26.84	27.46	28.41	28.69	28.92	28.37	28.80	27.86	27.62	27.05
6	29.92	---	26.84	27.47	28.43	28.68	28.91	28.39	28.75	27.85	27.58	27.02
7	29.88	---	26.84	27.49	28.44	28.66	28.92	28.38	28.76	27.82	27.56	27.02
8	29.85	---	27.00	27.54	28.47	28.65	28.93	28.39	28.76	27.85	27.55	27.01
9	29.84	---	27.04	27.56	28.51	28.63	28.92	28.41	28.73	27.86	27.52	26.98
10	29.82	---	27.09	27.59	28.53	28.63	28.93	28.44	28.71	27.84	27.52	27.00
11	29.82	---	27.11	27.61	28.56	28.61	28.95	28.59	28.72	27.83	27.47	26.97
12	29.82	---	27.08	27.64	28.60	28.58	28.95	28.66	28.69	27.79	27.43	26.97
13	29.82	---	27.08	27.69	28.63	28.58	28.94	29.00	28.65	27.79	27.40	26.97
14	29.79	---	27.08	27.75	28.66	28.55	28.91	29.24	28.61	27.78	27.42	26.96
15	29.76	---	27.08	27.79	28.69	28.55	---	29.37	28.57	27.79	27.37	26.94
16	29.76	---	27.06	27.84	28.70	28.54	---	29.41	28.51	27.77	27.36	27.14
17	29.75	---	27.06	27.89	28.69	28.54	---	29.49	28.44	27.78	27.34	27.45
18	29.74	---	27.10	27.92	28.75	28.52	---	29.49	28.38	27.77	27.33	27.10
19	29.75	---	27.12	27.95	28.80	28.49	29.03	29.47	28.33	27.76	27.32	26.90
20	29.75	---	27.12	27.99	28.79	28.45	28.95	29.35	28.28	27.76	27.31	26.80
21	29.74	---	27.14	28.02	28.77	28.46	28.91	29.32	28.22	27.74	27.29	26.78
22	29.73	26.98	27.17	28.05	28.75	28.47	28.86	29.31	28.18	27.74	27.27	26.79
23	29.74	27.00	27.20	28.08	28.76	28.49	28.81	29.25	28.13	27.72	27.25	26.81
24	29.74	27.00	27.21	28.10	28.77	28.46	28.74	29.30	28.07	27.71	27.23	26.84
25	29.74	27.00	27.23	28.13	28.78	28.48	28.72	29.31	28.01	27.66	27.21	26.87
26	---	27.06	27.19	28.16	28.82	28.49	28.66	29.28	27.96	27.67	27.19	26.90
27	---	27.09	27.24	28.19	28.77	28.55	28.62	29.25	27.94	27.68	27.15	26.93
28	---	27.09	27.25	28.22	28.76	28.65	28.58	29.22	27.91	27.70	27.13	27.00
29	---	27.08	27.29	28.26	28.75	28.73	28.51	29.18	27.86	27.69	27.12	27.01
30	---	27.06	27.33	28.28	---	28.81	28.47	29.12	27.82	27.67	27.11	27.07
31	---	---	27.35	28.33	---	28.85	---	29.07	---	27.68	27.07	---
MEAN	---	---	27.09	27.83	28.62	28.60	---	28.95	28.45	27.77	27.38	26.99

WTR YR 2004 MEAN 28.14 HIGHEST 26.74 SEPT 20, 2004 LOWEST 30.00 OCT 1, 2003



RIO CIBUCO BASIN—Continued

182330066185700. Local number, 213.

LOCATION.--Lat 18°23'30", long 66°18'57", Hydrologic Unit 21010002, 1.82 mi southeast of Vega Alta plaza, 4.23 mi west of Toa Alta plaza, and 1.27 mi northwest off the intersection of Hwy 820 with Hwy 823, Name: Pampano 2 Well, Vega Alta.

AQUIFER.--Río Indio Limestone-Lares Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 20 in (0.51 m), cased 20 in (0.51 m) 0-130 ft (0-39.6 m), diameter 14 in (0.36 m), cased 12 in (0.3 m) 0-220 ft (0-67.1 m); open hole 220-330 ft (67.6-101 m). Depth 330 ft (101 m).

DATUM.--Elevation of land-surface datum is about 394 ft (120 m), above mean sea level, from topographic map. Measuring point: Top of plexiglass plate, 9.34 ft (2.84 m), above land-surface datum. Prior to April 27, 1993, hole on side of casing, 2.95 ft (0.9 m), above land-surface datum.

REMARKS.--Observation well.

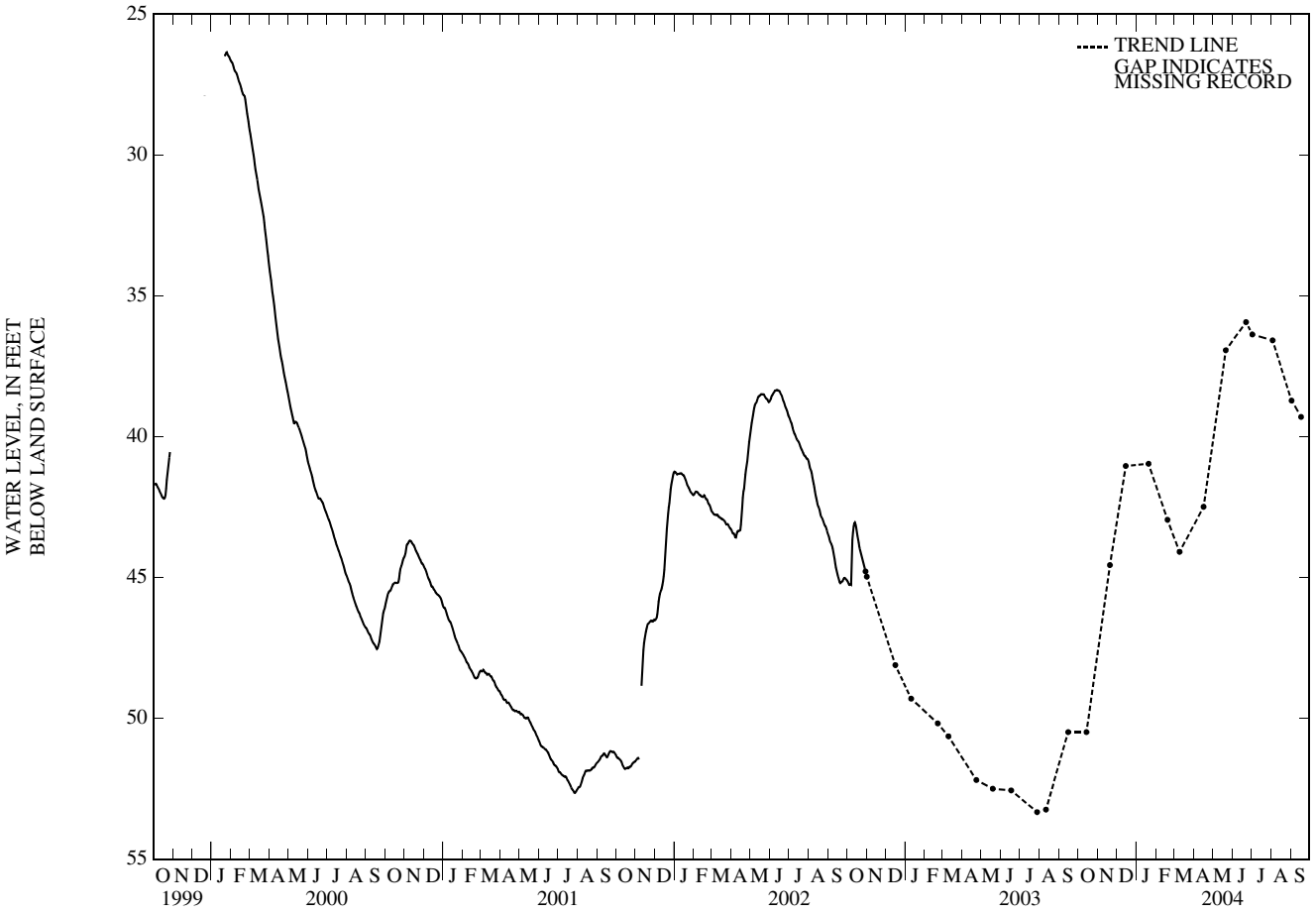
PERIOD OF RECORD.--October 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 26.27 ft (8.01 m), below land-surface datum, January 25, 2000; lowest water level recorded, 65.68 ft (20 m), below land-surface datum, August 20, 1995.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	50.49	JAN 20	40.96	APR 16	42.49	JUL 02	36.37	SEP 02	38.72	SEP 17	39.30
NOV 20	44.70	FEB 19	42.95	MAY 21	36.93	AUG 03	36.58				
DEC 15	41.04	MAR 09	44.09	JUN 22	35.93						

WATER YEAR 2004 HIGHEST 35.93 JUN 22, 2004 LOWEST 50.49 OCT 14, 2003



RIO DE LA PLATA BASIN

182526066165001. Local number, 1127.

LOCATION.--Lat 18°25'26", long 66°16'50", Hydrologic Unit 21010005, 1.03 mi north of Hwy 2, 0.93 mi west of the intersection of Hwy 659 with Hwy 693, and 0.03 mi north of Hwy 659, Name: Piezometer Santa Rosa USGS 2, Dorado.

AQUIFER.--Aguada Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), cased 4 in (0.1 m) 0-140 ft (0-42.7 m), screened 120-130 ft (36.6-39.6 m). Depth 140 ft (42.7 m).

DATUM.--Elevation of land-surface datum is about 91.8 ft (28 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 3.31 ft (1.01 m), above land-surface datum.

REMARKS.--Observation well.

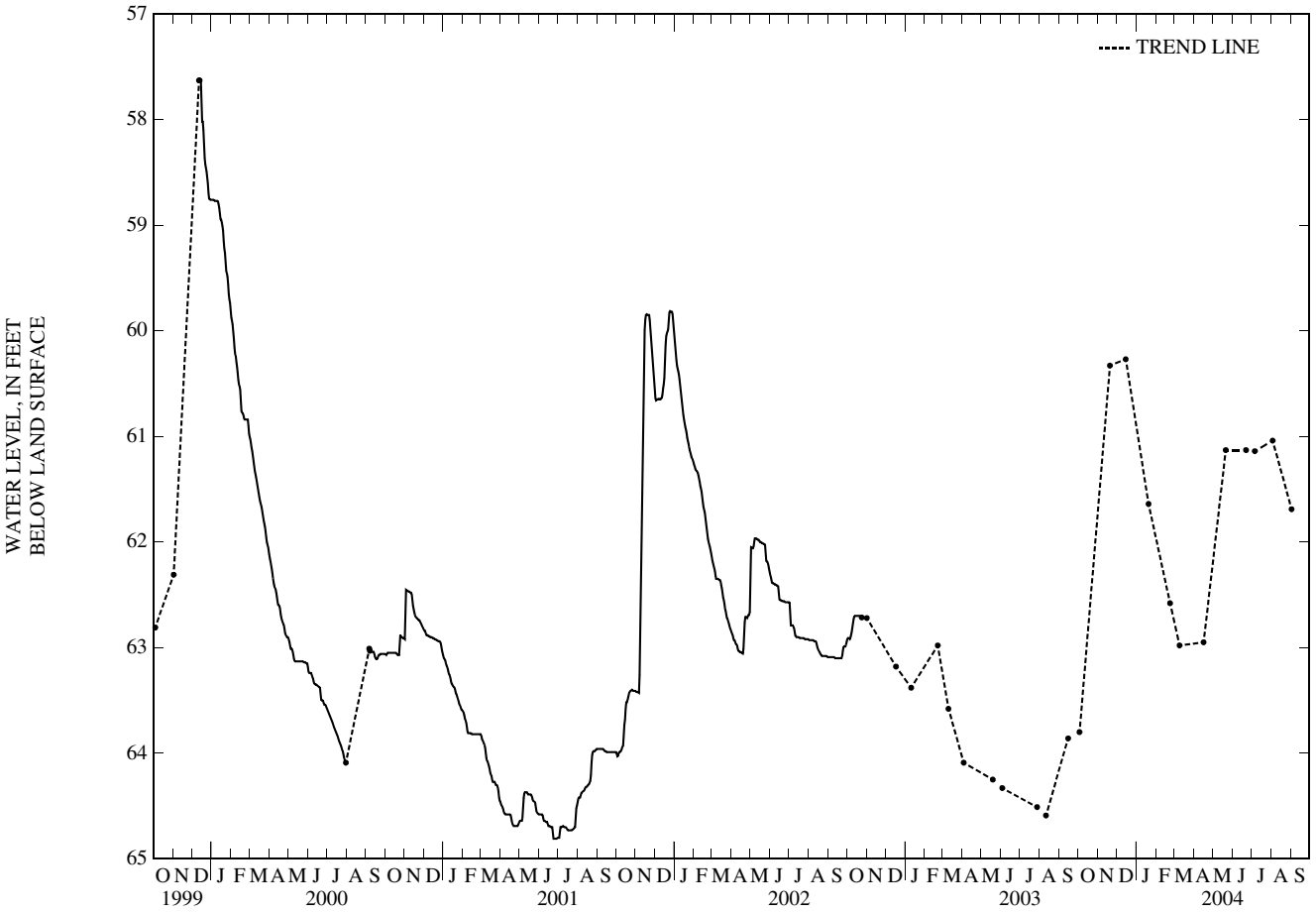
PERIOD OF RECORD.--February 2, 1995 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 57.63 ft (17.56 m), below land-surface datum, December 11-14, 1999; lowest water level recorded, 64.9 ft (19.8 m), below land-surface datum, May 2-5, 10-15, 1995.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 03	63.80	DEC 15	60.27	FEB 23	62.58	APR 16	62.95	JUN 22	61.13	AUG 03	61.04
NOV 20	60.33	JAN 20	61.64	MAR 09	62.98	MAY 21	61.13	JUL 06	61.14	SEP 02	61.69

WATER YEAR 2004 HIGHEST 60.27 DEC 15, 2003 LOWEST 63.80 OCT 03, 2003



RIO DE LA PLATA BASIN—Continued

182548066164401. Local number, 1128.

LOCATION.--Lat 18°25'48", long 66°16'44", Hydrologic Unit 2101005, 1.47 mi north of Hwy 2, 0.6 mi south of Hwy 695, 0.04 mi south of the intersection of Hwy 694 with 659, and 0.02 mi east of Hwy 659, Name: Piezometer Maguayo USGS 2, Dorado.

AQUIFER.--Aguada Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), cased 4 in (0.1 m) 0-110 ft (0-33.5 m), screened 95-105 ft (29-32 m). Depth 115 ft (35.1 m), sounded on August 3, 2004.

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 39.4 ft (12 m), above mean sea level, from topographic map. Measuring point: On shelter floor, 3.66 ft (1.12 m), above land-surface datum. Prior to April 12, 2002, metal bar on pulley, 3.8 ft (1.16 m), above land-surface datum.

REMARKS.--Recording observation well.

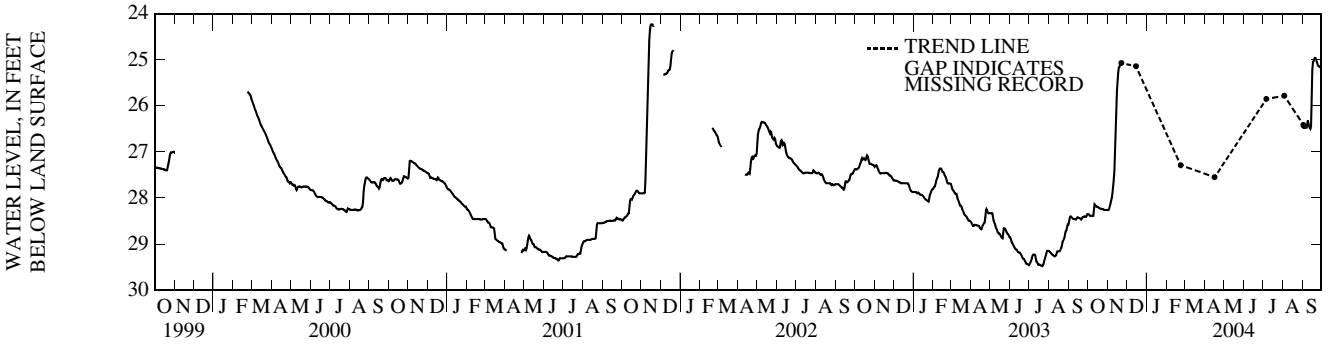
PERIOD OF RECORD.--June 22, 1995 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 24.02 ft (7.32 m), below land-surface datum, December 11, 12, 1998; lowest water level recorded, 29.49 ft (8.99 m), below land-surface datum, July 21, 2003.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.35	28.26	---	---	---	---	---	---	---	---	---	---
2	28.35	28.26	---	---	---	---	---	---	---	---	---	26.40
3	28.36	28.26	---	---	---	---	---	---	---	---	---	26.43
4	28.39	28.20	---	---	---	---	---	---	---	---	---	26.45
5	28.39	28.16	---	---	---	---	---	---	---	---	---	26.47
6	28.39	28.08	---	---	---	---	---	---	---	---	---	26.47
7	28.39	28.02	---	---	---	---	---	---	---	---	---	26.48
8	28.39	27.97	---	---	---	---	---	---	---	---	---	26.47
9	28.39	27.82	---	---	---	---	---	---	---	---	---	26.33
10	28.39	27.66	---	---	---	---	---	---	---	---	---	26.31
11	28.14	27.55	---	---	---	---	---	---	---	---	---	26.45
12	28.14	27.27	---	---	---	---	---	---	---	---	---	26.46
13	28.17	26.91	---	---	---	---	---	---	---	---	---	26.50
14	28.19	26.37	---	---	---	---	---	---	---	---	---	26.50
15	28.19	25.80	---	---	---	---	---	---	---	---	---	26.41
16	28.19	25.54	---	---	---	---	---	---	---	---	---	25.39
17	28.19	25.37	---	---	---	---	---	---	---	---	---	25.04
18	28.22	25.17	---	---	---	---	---	---	---	---	---	25.07
19	28.22	25.16	---	---	---	---	---	---	---	---	---	25.01
20	28.23	25.13	---	---	---	---	---	---	---	---	---	24.97
21	28.23	25.11	---	---	---	---	---	---	---	---	---	24.95
22	28.24	25.11	---	---	---	---	---	---	---	---	---	24.97
23	28.24	25.03	---	---	---	---	---	---	---	---	---	25.02
24	28.24	---	---	---	---	---	---	---	---	---	---	25.06
25	28.25	---	---	---	---	---	---	---	---	---	---	25.10
26	28.26	---	---	---	---	---	---	---	---	---	---	25.15
27	28.26	---	---	---	---	---	---	---	---	---	---	25.13
28	28.26	---	---	---	---	---	---	---	---	---	---	25.16
29	28.26	---	---	---	---	---	---	---	---	---	---	25.16
30	28.26	---	---	---	---	---	---	---	---	---	---	25.18
31	28.26	---	---	---	---	---	---	---	---	---	---	---
MEAN	28.27	---	---	---	---	---	---	---	---	---	---	---

WTR YR 2004 MEAN 26.98 HIGHEST 24.93 SEPT 21, 2004 LOWEST 28.39 OCT 3-10, 2003



RIO DE LA PLATA BASIN—Continued

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 03	28.36	FEB 23	27.29	APR 16	27.55	JUL 06	25.85	AUG 03	25.78	SEP 02	26.40
DEC 15	25.14										

WATER YEAR 2004 HIGHEST 25.14 DEC 15, 2003 LOWEST 28.36 OCT 03, 2003

RIO DE LA PLATA BASIN—Continued

182620066163403. Local number, 1130.

LOCATION.--Lat 18°26'20", long 66°16'34", Hydrologic Unit 2101005, 1.85 mi south of Dorado plaza, 0.7 mi southwest of Laboratorio Dorado, 0.65 mi northwest of the intersection of Hwy 695 with Hwy 693, and 0.09 mi north of Hwy 695, Name: Piezometer Higuillar USGS 4, Dorado.

AQUIFER.--Aguada Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), cased 4 in (0.1 m) 0-100 ft (0-30.5 m), screened 80-90 ft (24.4-27.4 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 49.2 ft (15 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 3.6 ft (1.1 m), above land-surface datum.

REMARKS.--Recording observation well. From October 1 2001 to February 19, 2002, tapedowns measurements only.

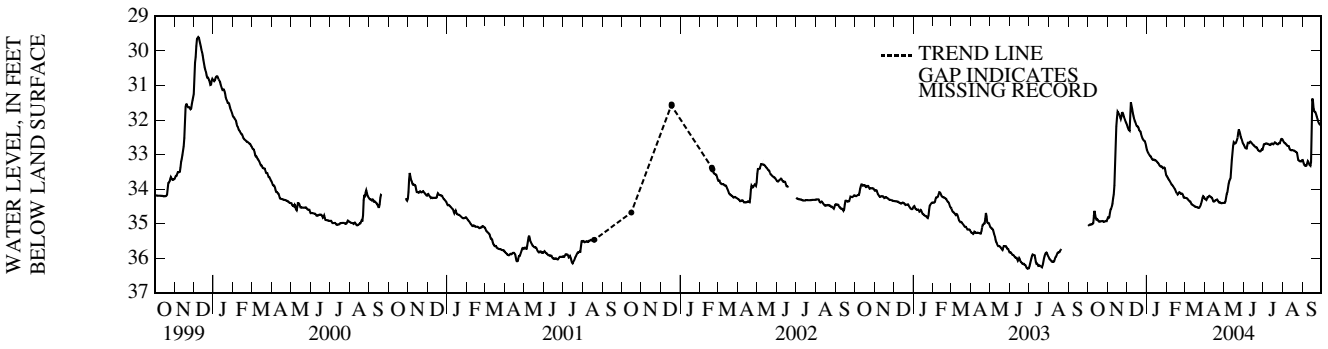
PERIOD OF RECORD.--January 23, 1995 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 29.58 ft (9.02 m), below land-surface datum, December 8, 9, 1999; lowest water level recorded, 36.33 ft (11.07 m), below land-surface datum, June 29, 2003.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35.07	34.81	32.11	32.83	33.60	34.25	34.29	34.40	32.72	32.86	32.57	33.13
2	35.06	34.84	32.17	32.88	33.64	34.25	34.29	34.40	32.73	32.73	32.61	33.19
3	35.05	34.84	32.24	32.93	33.64	34.26	34.31	34.40	32.80	32.69	32.65	33.24
4	35.03	34.79	32.27	32.97	33.72	34.26	34.32	34.33	32.81	32.70	32.67	33.29
5	35.02	34.60	32.31	32.99	33.72	34.28	34.24	34.18	32.83	32.69	32.67	33.33
6	35.02	34.59	32.31	33.04	33.76	34.31	34.24	34.11	32.82	32.67	32.69	33.33
7	35.03	34.55	31.43	33.05	33.80	34.33	34.24	34.09	32.67	32.68	32.72	33.33
8	35.01	34.47	31.55	33.05	33.82	34.35	34.18	33.85	32.65	32.69	32.74	33.31
9	35.01	34.37	31.62	33.12	33.87	34.36	34.21	33.85	32.67	32.69	32.76	33.20
10	34.97	34.17	31.74	33.13	33.87	34.37	34.21	33.69	32.66	32.71	32.74	33.18
11	34.57	34.14	31.84	33.17	33.91	34.43	34.24	33.78	32.62	32.71	32.77	33.26
12	34.69	33.65	31.92	33.13	33.93	34.45	34.25	33.59	32.63	32.72	32.85	33.28
13	34.81	33.14	32.00	33.16	33.97	34.46	34.25	33.26	32.66	32.73	32.86	33.33
14	34.88	32.21	32.02	33.17	34.00	34.47	34.34	33.05	32.68	32.70	32.88	33.32
15	34.88	32.15	32.09	33.16	34.00	34.48	34.37	32.87	32.70	32.67	32.87	33.13
16	34.86	31.74	32.14	33.18	34.10	34.50	34.36	32.63	32.72	32.69	32.87	31.46
17	34.91	31.78	32.19	33.20	34.10	34.51	34.35	32.66	32.74	32.70	32.87	31.30
18	34.94	31.80	32.18	33.22	34.15	34.52	34.32	32.67	32.74	32.71	32.88	31.60
19	34.94	31.84	32.20	33.25	34.17	34.51	34.32	32.69	32.79	32.65	32.89	31.72
20	34.94	31.88	32.25	33.26	34.11	34.53	34.31	32.65	32.79	32.65	32.89	31.77
21	34.94	31.94	32.34	33.31	34.10	34.54	34.30	32.63	32.79	32.67	32.92	31.77
22	34.93	32.00	32.29	33.33	34.09	34.54	34.35	32.54	32.80	32.68	32.92	31.79
23	34.93	31.80	32.38	33.35	34.13	34.55	34.38	32.48	32.86	32.69	32.94	31.88
24	34.92	31.79	32.44	33.35	34.14	34.53	34.39	32.25	32.88	32.71	32.95	31.93
25	34.94	31.79	32.50	33.34	34.12	34.48	34.37	32.30	32.90	32.70	33.16	31.99
26	34.95	31.87	32.55	33.39	34.14	34.47	34.40	32.36	32.90	32.66	33.16	32.07
27	34.94	31.93	32.57	33.41	34.16	34.36	34.41	32.46	32.92	32.67	33.18	32.10
28	34.94	31.97	32.61	33.37	34.24	34.31	34.41	32.53	32.89	32.67	33.20	32.13
29	34.93	32.03	32.60	33.38	34.25	34.19	34.40	32.54	32.85	32.57	33.19	32.14
30	34.92	32.08	32.63	33.40	---	34.22	34.40	32.64	32.85	32.55	33.19	32.16
31	34.94	---	32.73	33.57	---	34.23	---	32.67	---	32.55	33.20	---
MEAN	34.93	32.99	32.20	33.20	33.97	34.40	34.31	33.18	32.77	32.68	32.89	32.56

WTR YR 2004 MEAN 33.34 HIGHEST 31.08 OCT 01, 2003 LOWEST 35.08 SEPT 16, 17, 2004



RIO DE LA PLATA BASIN—Continued

182654066150600. Local number, 1133.

LOCATION.--Lat 18°26'54", long 66°15'06", Hydrologic Unit 21010005, 0.92 mi southeast of the Dorado bridge, 0.66 mi east of Hwy 693, 0.09 mi north of the intersection of Hwy 165 with Hwy 867, and 0.01 mi east of Hwy 165, Name: Piezometer USGS 1, Toa Baja.

AQUIFER.--Tertiary Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), cased 4 in (0.1 m), 0-165 ft (0-50.3 m), screened 25-165 ft (7.62-50.3 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 7 ft (2.1 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor on top of 4 in (0.1 m) casing, 3.6 ft (1.1 m), above land-surface datum.

REMARKS.--Recording observation well. Water levels affected by marine tides.

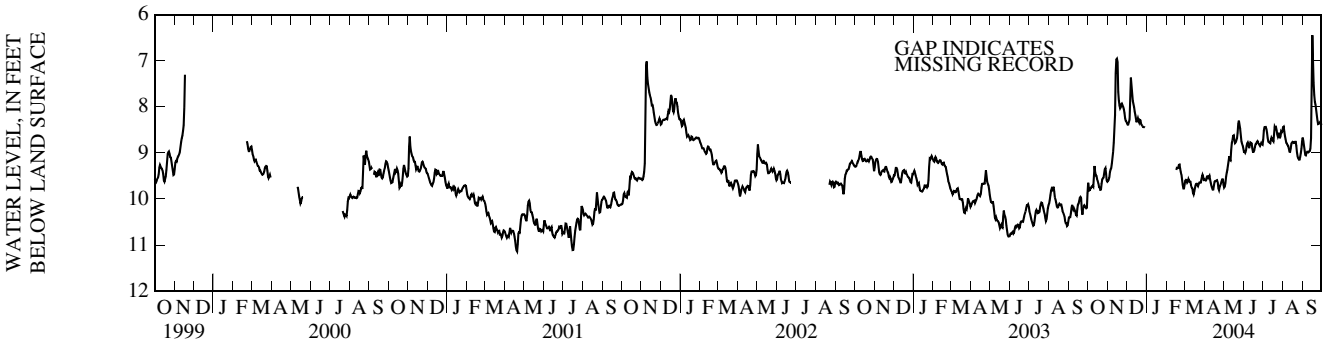
PERIOD OF RECORD.-- November 16, 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 3.04 ft (0.93 m), below land-surface datum, September 10, 1996; lowest water level recorded, 11.19 ft (3.41 m), below land-surface datum April 19, 20, 2001.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.58	9.62	8.33	---	---	9.64	9.58	9.76	8.97	8.83	8.48	8.66
2	9.72	9.60	8.38	---	---	9.56	9.61	9.75	8.98	8.60	8.41	8.68
3	9.79	9.59	8.39	---	---	9.61	9.59	9.71	8.96	8.45	8.45	8.81
4	9.84	9.50	8.38	---	---	9.59	9.53	9.60	9.04	8.44	8.63	8.88
5	9.77	9.34	8.29	---	---	9.70	9.50	9.44	8.88	8.44	8.64	9.02
6	9.76	9.39	8.24	---	---	9.55	9.52	9.43	8.83	8.43	8.77	9.07
7	9.75	9.28	7.27	---	---	9.59	9.58	9.30	8.76	8.52	8.79	9.04
8	9.70	9.19	7.46	---	---	9.63	9.46	9.23	8.78	8.61	8.80	8.98
9	9.73	9.03	7.63	---	---	9.61	9.53	9.11	8.86	8.74	8.86	8.97
10	9.74	8.93	7.81	---	---	9.64	9.62	9.04	8.94	8.77	8.83	8.99
11	9.22	8.63	7.93	---	---	9.76	9.67	9.27	8.73	8.76	8.97	8.99
12	9.35	8.38	7.95	---	---	9.74	9.75	9.06	8.82	8.80	8.97	8.95
13	9.50	7.97	8.06	---	---	9.80	9.76	8.81	8.75	8.78	8.98	8.97
14	9.48	6.57	8.15	---	---	9.92	9.83	8.76	8.84	8.66	8.83	8.84
15	9.52	7.38	8.21	---	---	9.88	9.76	8.69	8.97	8.68	8.78	8.52
16	9.62	6.53	8.32	---	9.41	9.80	9.66	8.57	8.99	8.72	8.77	6.14
17	9.60	7.53	8.35	---	9.33	9.74	9.60	8.67	8.97	8.74	8.75	6.75
18	9.72	7.82	8.24	---	9.32	9.68	9.62	8.78	8.93	8.76	8.78	7.34
19	9.76	7.91	8.26	---	9.34	9.67	9.60	8.80	8.82	8.40	8.79	7.60
20	9.75	8.03	8.35	---	9.31	9.67	9.60	8.75	8.81	8.45	8.77	7.88
21	9.85	8.04	8.33	---	9.22	9.74	9.59	8.73	8.80	8.46	8.75	7.90
22	9.74	7.97	8.24	---	9.29	9.72	9.69	8.66	8.73	8.43	8.77	8.01
23	9.60	7.90	8.35	---	9.40	9.65	9.85	8.48	8.76	8.59	8.93	8.10
24	9.55	7.95	8.40	---	9.44	9.64	9.77	8.26	8.79	8.62	9.05	8.23
25	9.57	7.97	8.40	---	9.50	9.65	9.70	8.34	8.82	8.68	9.10	8.36
26	9.51	8.03	8.43	---	9.66	9.64	9.72	8.44	8.84	8.53	9.14	8.39
27	9.38	8.07	8.44	---	9.73	9.55	9.62	8.52	8.87	8.60	9.15	8.35
28	9.33	8.20	8.44	---	9.81	9.50	9.62	8.73	8.76	8.77	9.14	8.34
29	9.33	8.30	8.44	---	9.73	9.45	9.53	8.77	8.81	8.53	9.04	8.33
30	9.57	8.31	8.46	---	---	9.59	9.62	8.83	8.82	8.54	8.98	8.29
31	9.64	---	---	---	---	9.58	---	8.85	---	8.57	8.84	---
MEAN	9.61	8.37	---	---	---	9.66	9.64	8.94	8.85	8.61	8.84	8.38

WTR YR 2004 MEAN 8.94 HIGHEST 5.14 SEPT 15, 16, 2004 LOWEST 10.06 MAR 14, 2004



RIO DE LA PLATA BASIN—Continued

182530066135400. Local number, 216.

LOCATION.--Lat 18°25'30", long 66°13'54", Hydrologic Unit 21010005, 2.61 mi northeast of Toa Alta plaza, 2.73 mi southwest of Sabana Seca U.S. Naval Radio Station, and 1.76 mi southeast of Hwy 2 km 17.7, Name: Campanilla Navy Well, Toa Baja.

AQUIFER.--Aguada Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 16 in (0.41 m) 0-106 ft (0-32.3 m), cased 16 in (0.41 m) 0-20 ft (0-6.1 m), cased 12 in (0.3 m) 0-106 ft (0-32.3 m), perforated 20-106 ft (6.1-32.3 m), diameter 10 in (10.25 m), 106-140 ft (32.3-42.7 m), cased 10 in (0.25 m) 106-140 ft (32.3-42.7 m), perforated 106-140 ft (32.3-42.7 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 13 ft (3.96 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor, 3.27 ft (0.99 m), above land-surface datum. Prior to August 6, 2001, hole on side of casing, 1.8 ft (0.55 m), above land-surface datum.

REMARKS.--Recording observation well. Water levels affected by nearby pumping well. From October 2000 to August 6, 2001, tapedowns measurements only.

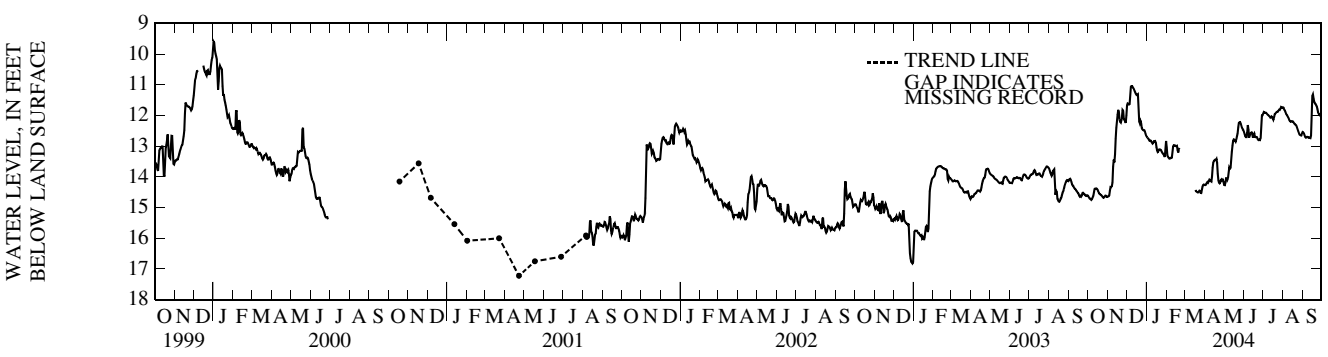
PERIOD OF RECORD.--October 1985 to June 29, 2000. Shelter found destroyed on June 29, 2000, replaced on August 6, 2001 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 9.38 ft (2.86 m), below land-surface datum, June 23, 1987; lowest water level recorded, 18.4 ft (5.61 m), below land-surface datum, September 24, 1994.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.60	14.63	11.73	12.69	12.81	---	14.26	14.25	12.50	12.01	11.76	12.53
2	14.64	14.65	11.61	12.71	13.25	---	14.27	14.27	12.56	11.87	11.72	12.55
3	14.69	14.61	11.61	12.74	13.33	---	14.25	14.26	12.64	11.91	11.78	12.56
4	14.71	14.59	11.64	12.75	13.36	---	14.22	14.11	12.71	11.91	11.84	12.61
5	14.71	14.31	11.65	12.80	13.39	---	14.14	13.99	12.70	11.90	11.84	12.68
6	14.74	14.35	11.61	12.84	13.41	---	14.19	14.12	12.71	11.91	11.94	12.73
7	14.76	14.32	11.08	12.79	13.39	---	14.19	14.08	12.39	11.93	11.97	12.72
8	14.69	14.30	11.05	12.85	13.37	---	14.09	14.00	12.23	11.97	11.99	12.70
9	14.66	14.07	11.03	12.86	13.40	---	14.09	13.73	12.71	11.98	12.05	12.70
10	14.59	13.26	11.05	12.91	13.35	---	14.13	13.66	12.74	12.00	12.07	12.72
11	14.43	13.62	11.11	12.92	13.04	---	14.14	13.81	12.59	12.02	12.13	12.72
12	14.37	13.43	11.12	12.86	12.97	---	14.16	13.61	12.58	12.04	12.18	12.71
13	14.39	13.09	11.18	12.82	12.97	---	13.83	13.29	12.55	12.09	12.20	12.74
14	14.37	12.42	11.23	12.85	12.97	---	13.58	13.08	12.55	12.03	12.21	12.73
15	14.38	12.38	11.27	12.81	12.98	---	13.49	12.89	12.69	12.03	12.19	12.57
16	14.41	12.01	11.33	12.95	13.01	---	13.48	12.77	12.75	12.07	12.19	11.49
17	14.44	11.95	11.34	13.11	12.99	14.40	13.44	12.79	12.48	12.12	12.19	11.25
18	14.51	11.68	11.30	13.16	12.99	14.46	13.45	12.79	12.69	12.16	12.22	11.38
19	14.56	12.08	11.31	13.22	13.26	14.48	13.46	12.86	12.70	11.97	12.25	11.52
20	14.56	12.18	12.11	13.11	13.15	14.49	13.38	12.86	12.71	11.95	12.28	11.59
21	14.58	12.23	12.26	13.11	13.05	14.51	13.72	12.71	12.69	11.93	12.30	11.61
22	14.60	12.23	12.24	13.10	13.07	14.50	14.07	12.64	12.72	11.90	12.30	11.63
23	14.61	12.07	12.10	13.12	---	14.46	14.15	12.53	12.76	11.88	12.35	11.69
24	14.65	12.04	12.38	13.13	---	14.44	14.23	12.25	12.81	11.88	12.41	11.72
25	14.68	11.61	12.43	13.20	---	14.48	14.19	12.23	12.79	11.87	12.48	11.86
26	14.69	12.10	12.47	13.22	---	14.55	14.16	12.21	12.79	11.81	12.53	11.92
27	14.65	12.14	12.48	13.26	---	14.49	14.03	12.22	12.82	11.80	12.60	11.96
28	14.62	12.17	12.48	13.27	---	14.34	14.12	12.30	12.67	11.84	12.64	11.97
29	14.60	12.22	12.48	13.33	---	14.29	14.12	12.37	12.02	11.72	12.63	12.03
30	14.63	12.26	12.56	13.37	---	14.24	14.07	12.44	11.98	11.73	12.66	12.01
31	14.68	---	12.63	12.85	---	14.26	---	12.45	---	11.75	12.64	---
MEAN	14.59	12.97	11.74	12.99	---	---	13.97	13.15	12.61	11.93	12.21	12.19

WTR YR 2004 MEAN 12.92 HIGHEST 10.87 DEC 08, 2003 LOWEST 14.76 OCT 7, 2003



RIO DE LA PLATA BASIN—Continued

180649066095500. Local number, 1134.

LOCATION.--Lat 18°06'49", long 66°09'55", Hydrologic Unit 21010005, 0.1 mi southeast of Cayey plaza, 0.5 mi northwest of the intersection of Hwy 1 with Hwy 15, and 1.3 mi west of Cayey exit from Hwy 52, Name: Minima Well, Cayey.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Abandoned production well, diameter 13 in (0.34 m), screened 40-90 ft (12.2-27.4 m). Depth 125 ft (38.1 m).

DATUM.--Elevation of land-surface datum is about 1,296 ft (395 m), above mean sea level, from topographic map. Measuring point: On highest part of motor support, 1.86 ft (0.57 m), above land-surface datum.

REMARKS.--Observation well.

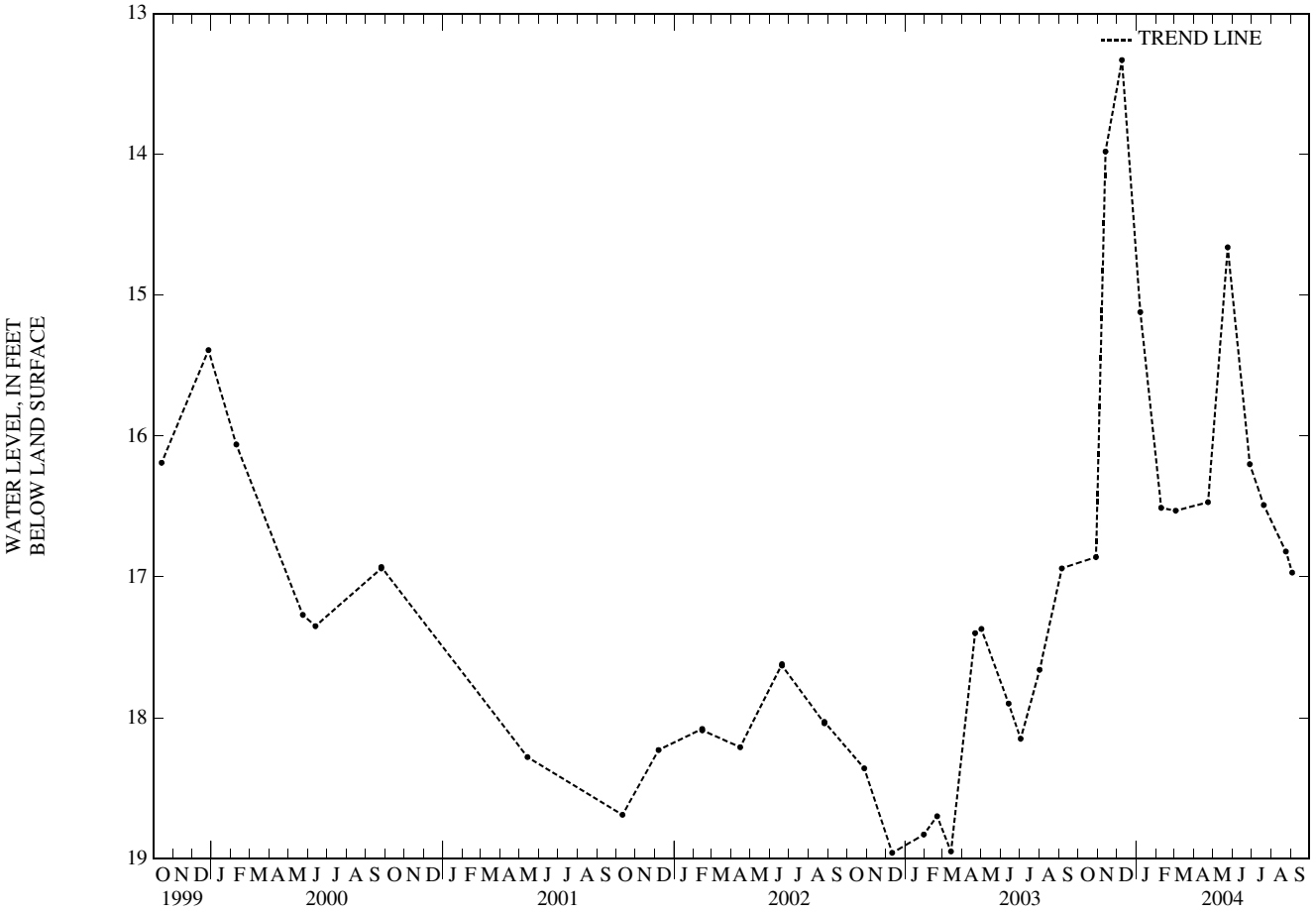
PERIOD OF RECORD.--February 28, 1998 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.33 ft (4.06 m), below land-surface datum, December 09, 2003; lowest water level measured, 19.03 ft (5.8 m), below land-surface datum, June 11, 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	16.86	DEC 09	13.33	FEB 09	16.51	APR 23	16.47	JUN 28	16.20	AUG 24	16.82
NOV 13	13.98	JAN 07	15.12	MAR 03	16.53	MAY 24	14.66	JUL 20	16.49	SEP 03	16.97

WATER YEAR 2004 HIGHEST 13.33 DEC 09, 2003 LOWEST 16.97 SEPT 03, 2004



182441066082600. Local number, 219.

LOCATION.--Lat 18°24'41", long 66°08'26", Hydrologic Unit 21010005, 0.47 mi west of Fort Buchanan main gate, 1.74 mi northeast of Bayamón plaza, and 1.88 mi southwest of the Puerto Rico National Cementery, Name: Buchanan Park Well, Bayamón.

AQUIFER.--Cibao Formation.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 10 in (0.25 m), cased 10 in (0.25 m) 0-270 ft (0-82.3 m), perforated 46-68.5 ft (14-20.7 m), 88-120 ft (26.8-36.6 m), 160-191 ft (48.8-58.2 m), 240-270 ft (73.2-82.3 m). Depth 270 ft (82.3 m).

DATUM.--Elevation of land-surface datum is about 66 ft (20.1 m), above mean sea level, from topographic map. Measuring point: Hole on side of casing, 0.75 ft (0.23 m), above land-surface datum. Prior to June 30, 1986, top of shelter floor, 3.59 ft (1.09 m), above land-surface datum.

REMARKS.--Observation well.

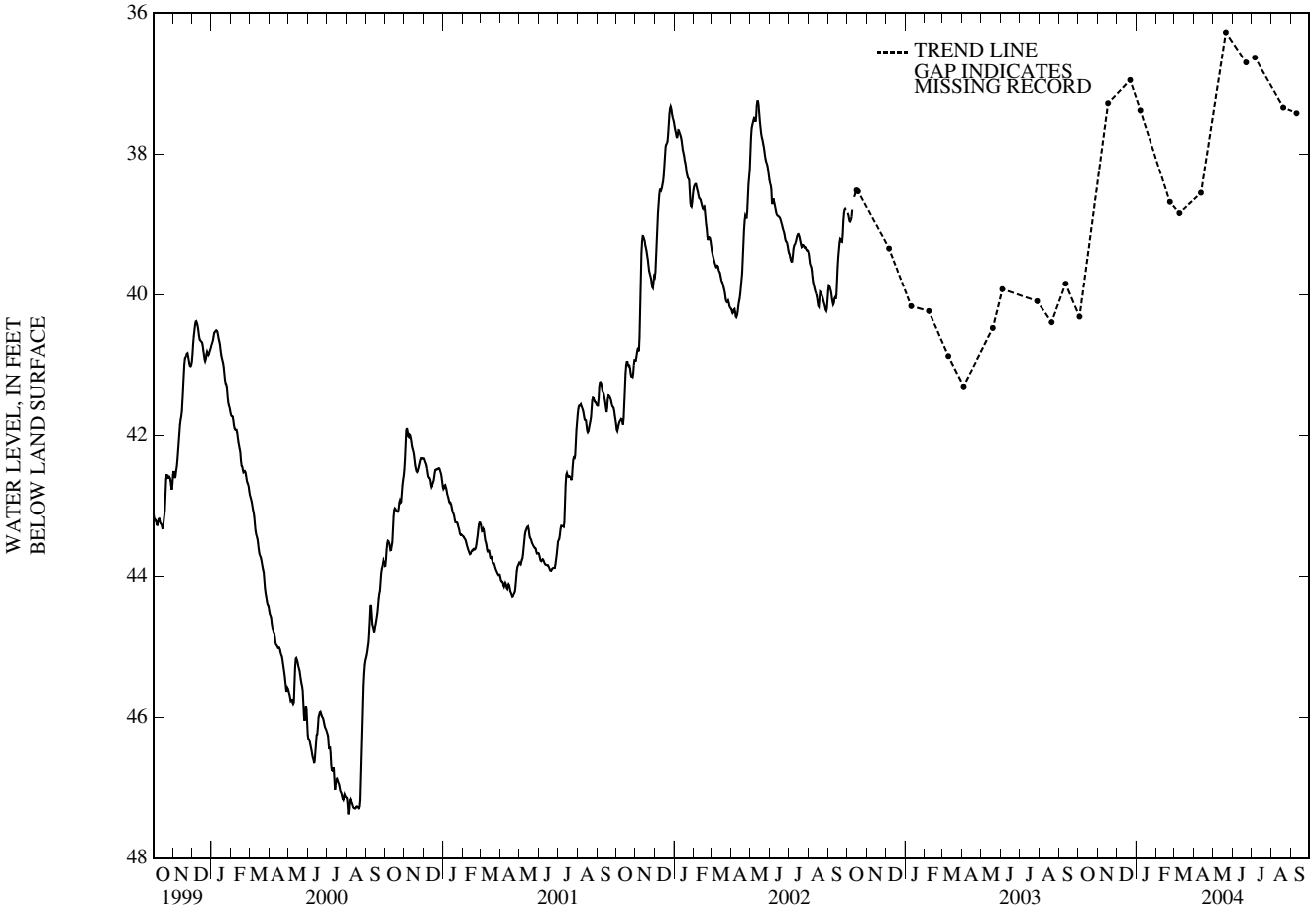
PERIOD OF RECORD.--December 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 34.9 ft (10.7 m), below land-surface datum, November 12, 13, 14, 1989; lowest water level recorded, 55.67 ft (17 m), below land-surface datum, May 13, 1995.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 03	40.31	DEC 22	36.92	FEB 23	38.68	APR 12	38.55	JUN 22	36.70	AUG 20	37.34
NOV 17	37.28	JAN 07	37.38	MAR 09	38.84	MAY 21	36.27	JUL 06	36.63	SEP 10	37.42

WATER YEAR 2004 HIGHEST 36.27 MAY 21, 2004 LOWEST 40.31 OCT 03, 2003



RIO HONDO TO RIO PUERTO NUEVO BASINS—Continued

182531066075900. Local number, 652.

LOCATION.--Lat 18°25'31", long 66°06'59", Hydrologic Unit 21010005, 0.07 mi north of Hwy 22, 0.32 mi southwest of the intersection of Hwy 165 with Hwy 28, and 1.4 mi south of the Cataño ferry building, Name: Piezometer USGS Building 652, Guaynabo.

AQUIFER.--Aymamón Limestone.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 4 in (0.1 m), cased 0-192 ft (0-58.5 m).

INSTRUMENTATION.--Pressure transducer with integrated electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 10 ft (3.05 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of the 4 in (0.1 m) casing, 3.27 ft (1 m), above land-surface datum.

REMARKS.--Recording observation well. Water level affected by marine tides.

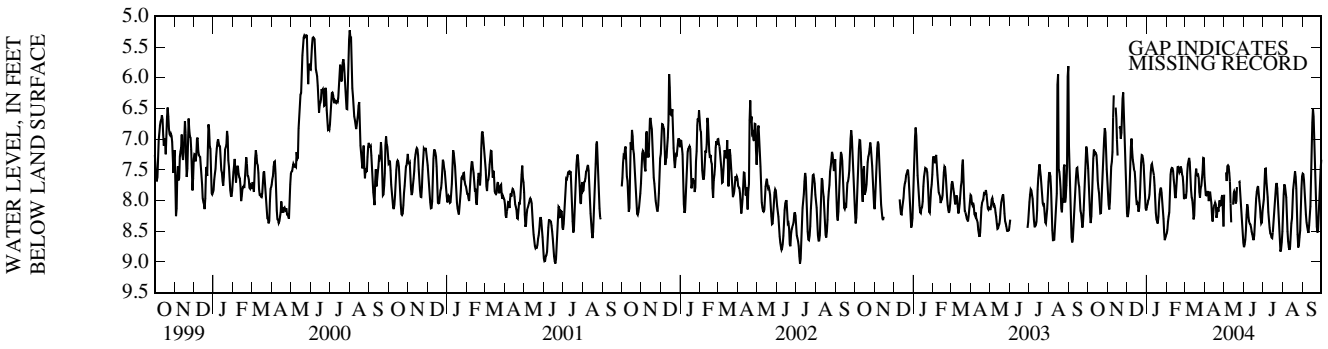
PERIOD OF RECORD.--May 14, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 3.1 ft (0.94 m), below land-surface datum, September 24, 2001; lowest water level recorded, 9.34 ft (2.85 m), below land-surface datum, January 22, 2004.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.37	7.77	8.11	8.13	8.58	7.87	7.67	8.41	8.75	8.01	8.39	7.61
2	7.59	8.02	8.32	8.08	8.50	7.93	7.89	7.40	8.77	8.13	8.04	7.51
3	7.91	8.12	8.22	8.06	8.45	8.00	7.93	---	8.66	7.83	7.76	7.63
4	8.13	8.17	8.20	7.94	8.24	7.69	7.90	7.24	8.62	7.54	7.71	7.71
5	8.34	7.87	8.01	8.01	8.28	7.42	7.88	7.84	8.34	7.43	7.81	7.96
6	8.39	7.52	7.75	7.80	8.11	7.40	7.81	7.52	8.12	7.53	7.91	8.15
7	8.12	7.37	7.32	7.63	7.63	7.32	7.98	7.36	8.00	7.82	7.99	8.30
8	7.88	7.37	6.93	7.47	7.53	7.29	8.04	7.49	8.23	7.80	8.37	8.41
9	7.55	7.05	7.05	7.38	7.46	7.46	7.81	7.39	8.31	8.09	8.64	8.44
10	7.08	6.26	7.34	7.43	7.48	7.66	7.90	7.71	8.37	8.28	8.69	8.53
11	7.26	6.31	7.34	7.52	7.47	7.98	8.00	7.67	8.38	8.34	8.82	8.52
12	7.21	---	7.48	7.55	7.57	7.91	8.08	8.43	8.40	8.55	8.78	8.29
13	7.22	6.43	7.51	7.63	7.75	8.07	8.40	8.28	8.47	8.51	8.73	8.19
14	7.23	6.54	7.54	7.87	7.78	8.16	8.28	---	8.54	8.59	8.38	8.00
15	7.28	6.77	7.83	8.12	8.08	8.45	8.11	8.28	8.56	8.61	8.36	7.35
16	7.57	7.25	8.01	8.28	7.84	8.04	8.08	7.85	8.65	8.61	8.22	6.84
17	7.78	7.28	8.07	8.33	7.79	7.79	8.07	7.91	8.64	8.43	7.92	6.62
18	7.82	---	7.99	8.35	7.50	7.41	8.00	7.78	8.50	8.31	7.73	6.39
19	7.94	6.90	8.18	8.40	7.41	7.55	8.13	7.96	8.30	8.13	7.73	6.87
20	8.17	6.75	8.18	8.13	7.49	7.61	8.43	8.14	8.04	8.01	7.51	7.28
21	8.25	6.83	8.06	7.94	7.49	7.57	8.01	7.90	7.89	7.85	7.54	7.59
22	8.16	7.15	7.85	7.86	7.59	7.59	8.21	7.66	7.83	7.67	7.69	8.04
23	7.88	6.64	7.48	7.77	7.44	7.68	8.15	---	7.76	7.76	7.92	8.33
24	7.68	6.61	7.29	7.81	7.45	8.04	7.97	7.78	7.77	7.84	8.46	8.52
25	7.35	6.07	7.23	7.94	7.51	7.87	8.02	7.63	7.98	8.12	8.64	8.52
26	7.13	6.41	7.31	8.12	7.63	7.74	8.14	7.76	8.03	8.35	8.89	8.42
27	6.84	6.64	7.34	8.19	7.58	7.80	8.00	7.95	8.18	8.49	8.57	8.09
28	6.80	7.13	7.51	8.40	7.91	7.49	7.91	8.09	8.36	8.82	8.62	7.83
29	6.98	7.50	7.81	8.63	8.04	7.57	7.91	8.34	8.38	8.84	8.36	7.65
30	7.37	7.85	8.05	8.66	---	7.04	8.43	8.46	8.32	8.73	8.02	7.33
31	7.60	---	8.19	8.56	---	7.58	---	8.63	---	8.62	7.60	---
MEAN	7.61	---	7.73	8.00	7.78	7.71	8.04	---	8.30	8.18	8.19	7.83

WTR YR 2004 MEAN 7.87 HIGHEST 5.28 NOV 18, 2003 LOWEST 9.34 JAN 22, 2004



RIO HONDO TO RIO PUERTO NUEVO BASINS—Continued

182435066052700. Local number, 1153.

LOCATION.--Lat 18°24'35", long 66°05'27", Hydrologic Unit 21010005, 2.94 mi southeast of Cataño plaza, 0.44 mi north of Escuela Superior Gabriela Mistral, and 1.19 mi northeast of WAPA TV radio anthena, Name: Piezometer Salud Mental (1) 5, San Juan.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 4 in (0.1 m), cased 4 in (0.1 m), 0-83 ft (0-25.3 m), perforated 73-83 ft (22.2-25.3 m). Depth 83 ft (25.3 m).

DATUM.--Elevation of land-surface datum is about 85 ft (25.9 m), above mean sea level, from topographic map. Measuring point: Hole on well shaft, 2.85 ft (0.87 m), above land-surface datum.

REMARKS.--Observation well.

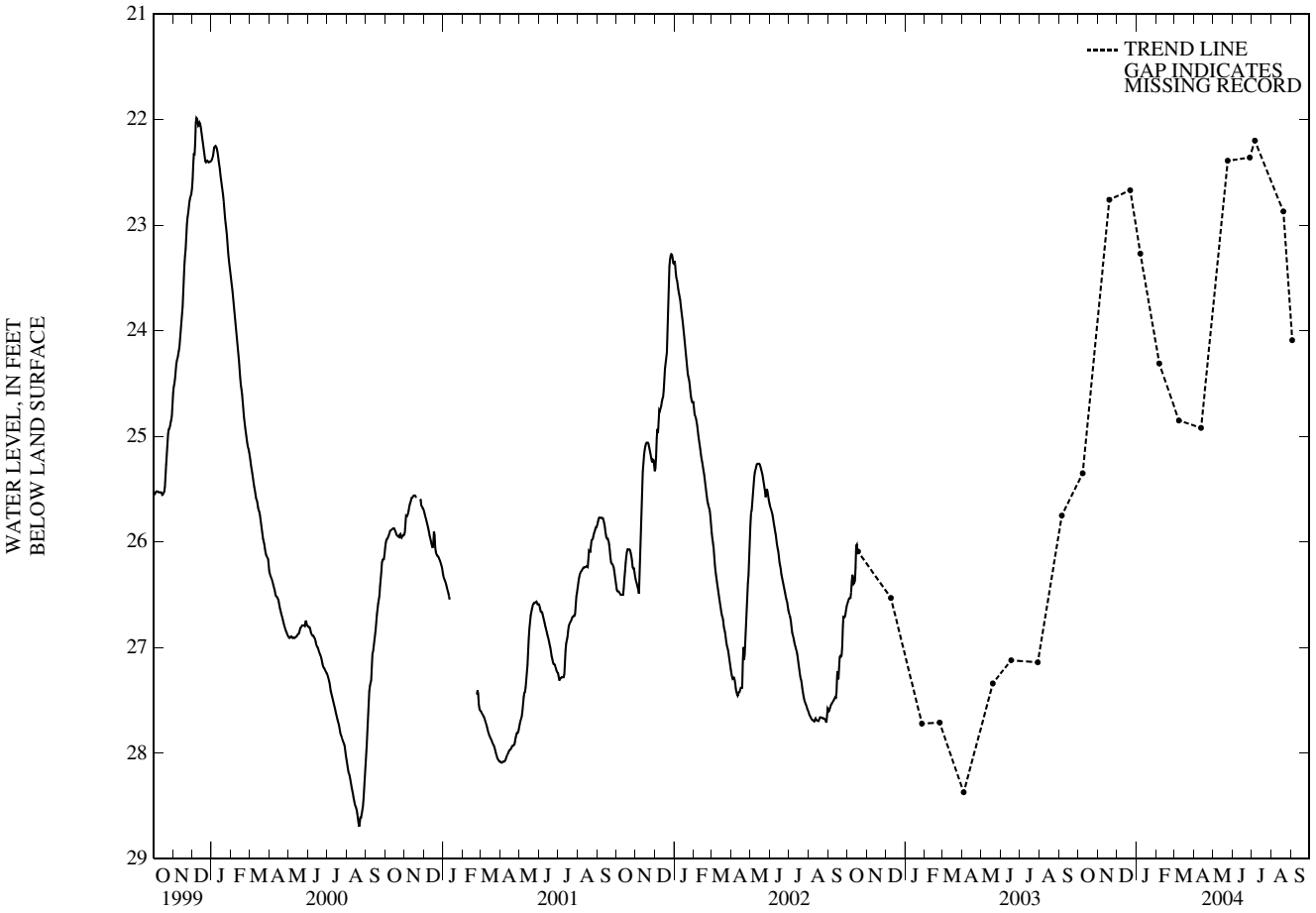
PERIOD OF RECORD.--April 1989 to July 1, 1998, discontinued, February 17, 1999 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 21.97 ft (6.69 m), below land-surface datum, December 8, 9, 1999; lowest water level recorded, 32.82 ft (10 m), below land-surface datum, September 25-28, 1994.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 08	25.35	DEC 22	22.67	FEB 06	24.31	APR 12	24.92	JUN 28	22.36	AUG 20	22.87
NOV 19	22.76	JAN 07	23.27	MAR 08	24.85	MAY 24	22.39	JUL 06	22.20	SEP 03	24.09

WATER YEAR 2004 HIGHEST 22.20 JUL 06, 2004 LOWEST 25.35 OCT 08, 2003



RIO HONDO TO RIO PUERTO NUEVO BASINS—Continued

182445066043401. Local number, 1154.

LOCATION.--Lat 18°24'45", long 66°04'34", Hydrologic Unit 21010005, 0.28 mi northeast of Dr. Pedreira School, 3.52 mi southeast of Cataño plaza, and 0.53 mi south of Hiram Bithorn Stadium main gate, Name: Piezometer Alsacia (2) 6, San Juan.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in (0.1 m), cased 4 in (0.1 m), 0-27 ft (0-8.23 m), perforated 21-27 ft (6.4-8.23 m). Depth 27 ft (8.23 m).

DATUM.--Elevation of land-surface datum is about 13 ft (3.96 m), above mean sea level, from topographic map. Measuring point: Hole on well shaft, 3.58 ft (1.09 m), above land-surface datum.

REMARKS.--Observation well.

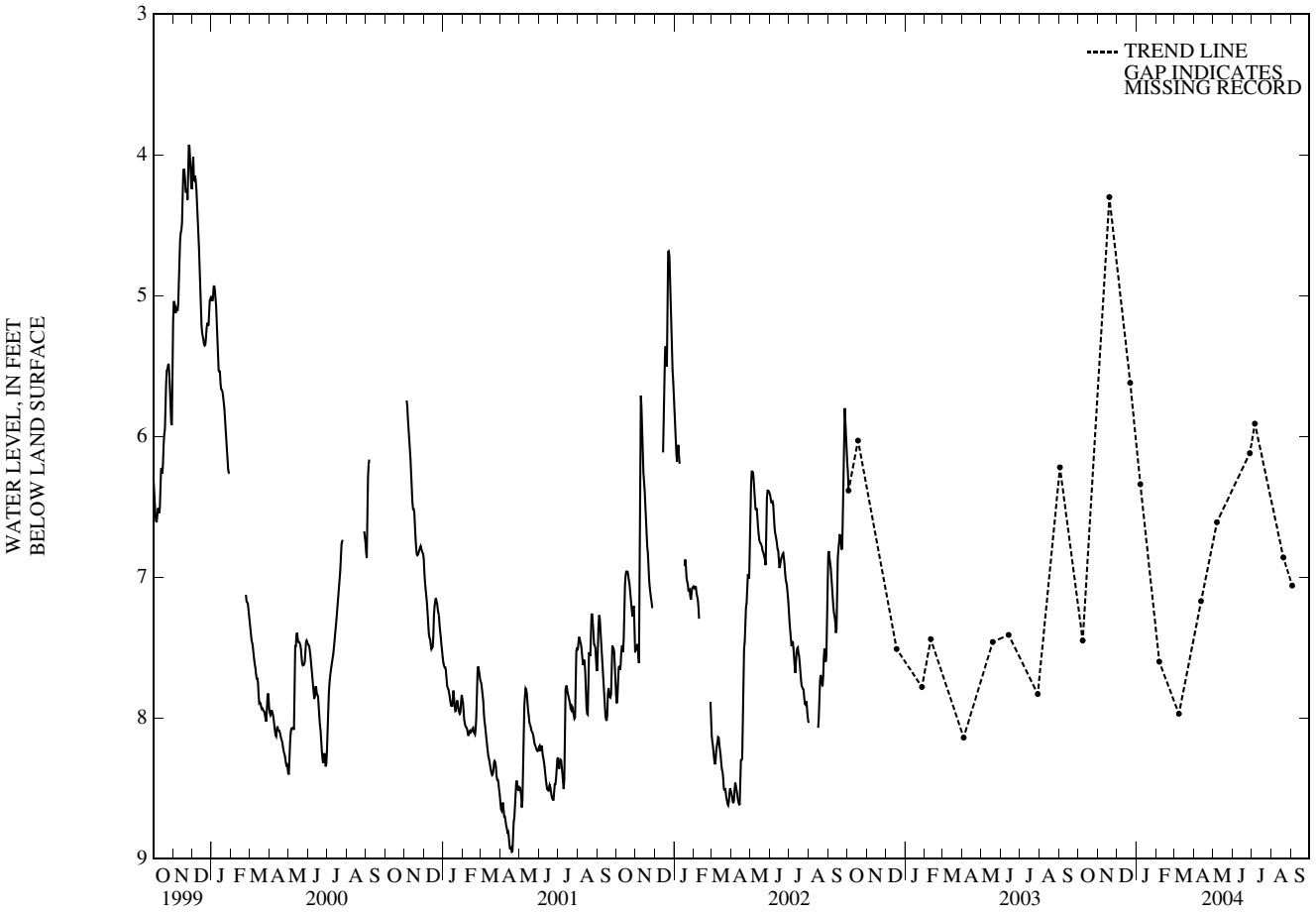
PERIOD OF RECORD.--July 1989 to November 27, 1991, Temporary discontinued, September 9, 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 2.6 ft (0.79 m), below land-surface datum, November 25, 1999; lowest water level recorded, 13.65 ft (4.16 m), below land-surface datum, October 6, 7, 1994.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 08	7.43	DEC 22	5.62	FEB 06	7.60	APR 12	7.17	JUN 28	6.12	AUG 20	6.86
NOV 19	4.30	JAN 07	6.34	MAR 08	7.97	MAY 07	6.61	JUL 06	5.91	SEP 03	7.06

WATER YEAR 2004 HIGHEST 4.30 NOV 19, 2003 LOWEST 7.97 MAR 08, 2004



RIO HONDO TO RIO PUERTO NUEVO BASINS—Continued

182406066034700. Local number, 1158.

LOCATION.--Lat 18°24'06", long 66°03'47", Hydrologic Unit 21010005, 4.65 mi southeast of Cataño plaza, 0.89 mi south of Escuela J.J. Osuna, and 0.78 mi southwest of University of Puerto Rico main gate, Name: Piezometer Jardín Botánico (3) 19, San Juan.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 4 in (0.1 m) cased 4 in (0.1 m), 0-48 ft (0-14.6 m), perforated 38-48 ft (11.6-14.6 m). Depth 48 ft (14.6 m).

DATUM.--Elevation of land-surface datum is about 32 ft (9.75 m), above mean sea level, from topographic map. Measuring point: Hole on well shaft, 2.91 ft (0.88 m), above land-surface datum.

REMARKS.--Observation well.

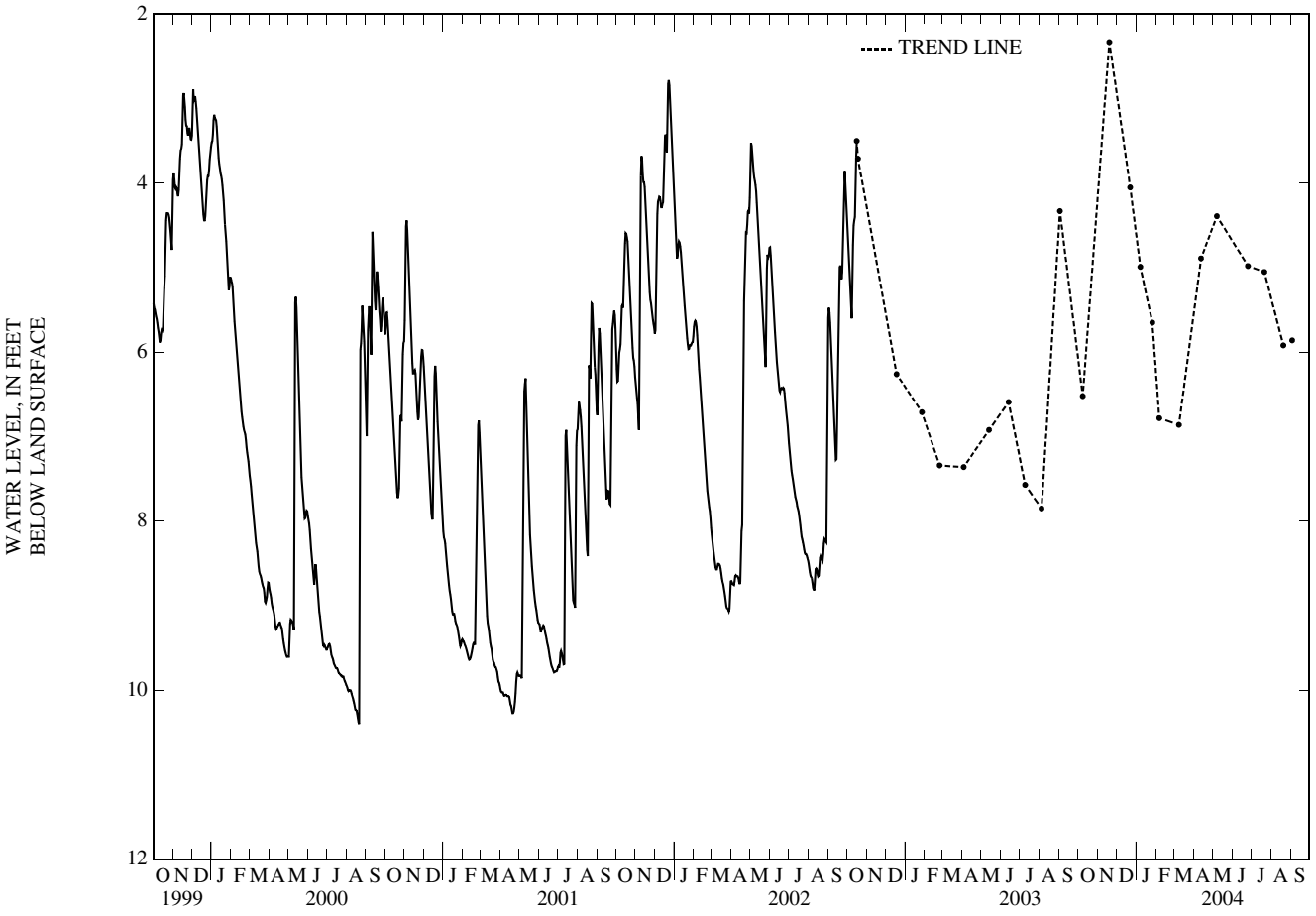
PERIOD OF RECORD.--June 1991 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 2.05 ft (0.62 m), below land-surface datum, December 4, 1998; lowest water level recorded, 13.43 ft (4.09 m), below land-surface datum, November 8, 9, 1994.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 08	6.52	JAN 07	4.99	MAR 08	6.86	JUN 25	4.98	AUG 20	5.92	SEP 03	5.86
NOV 19	2.33	JAN 26	5.65	APR 12	4.89	JUL 21	5.05				
DEC 22	4.02	FEB 06	6.78	MAY 07	4.39						

WATER YEAR 2004 HIGHEST 2.33 NOV 19, 2003 LOWEST 6.86 MAR 08, 2004



RIO HONDO TO RIO PUERTO NUEVO BASINS—Continued

182451066080200. Local number, 1159.

LOCATION.--Lat 18°24'50", long 66°08'05", Hydrologic Unit 21010005, 1.7 mi west of Fort Buchanan main gate, 0.2 mi southeast of oil refinery, and 0.9 mi east of Goya Products plant, Name: Piezometer Fort Buchanan 1, Bayamón.

AQUIFER.--Mucarabones Sand.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 4 in (0.1 m), screened 209-249 ft (63.7-75.89 m). Depth 249 ft (75.89 m).

DATUM.--Elevation of land-surface datum is about 46 ft (14 m), about mean sea level, from topographic map. Measuring point: Top of shelter floor, 3.33 ft (1.01 m), above land-surface datum.

REMARKS.--Observation well. Well is affected by nearby pumping.

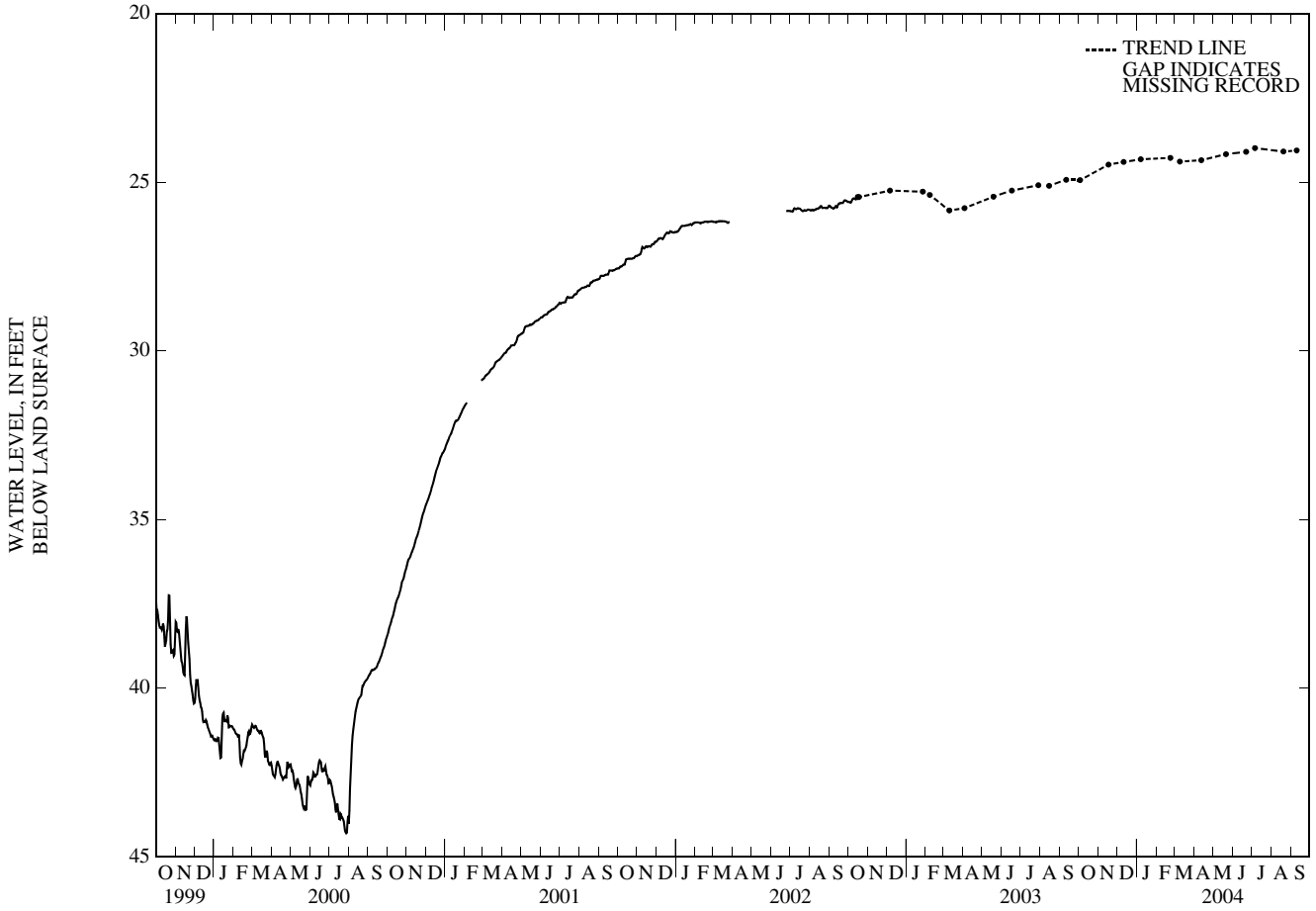
PERIOD OF RECORD.--September 12, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 23.99 ft (7.31 m), below land-surface datum, July 6, 2004; lowest water level recorded, 44.38 ft (13.53 m), below land-surface datum, July 28, 29, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 03	24.94	DEC 22	24.40	FEB 23	24.28	APR 12	24.35	JUN 22	24.10	AUG 20	24.09
NOV 17	24.48	JAN 07	24.32	MAR 09	24.39	MAY 21	24.17	JUL 06	23.99	SEP 10	24.06

WATER YEAR 2004 HIGHEST 23.99 JUL 06, 2004 LOWEST 24.94 OCT 03, 2003



RIO GRANDE DE LOIZA BASIN

181352066025300. Local number, 1176.

LOCATION.--Lat 18°13'52", long 66°02'53", Hydrologic Unit 21010005, 0.96 mi southwest of Caguas plaza, 1.02 mi northwest of Escuela Antonio S. Pedreira, and 0.3 mi southeast of Hwy 156 km 59.1, Name: Piezometer CJ 19A, Caguas.

AQUIFER.--Unconsolidated deposits of Quaternary Age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), cased 4 in (0.1 m), 0-67 ft (0-20.4 m), screened 50-65 ft (15.2-19.8 m). Depth 67 ft (20.4 m).

DATUM.--Elevation of land-surface datum is about 262 ft (79.8 m), above mean sea level, from topographic map. Measuring point: Top of casing 3.48 ft (1.06 m), above land-surface datum.

REMARKS.--Observation well.

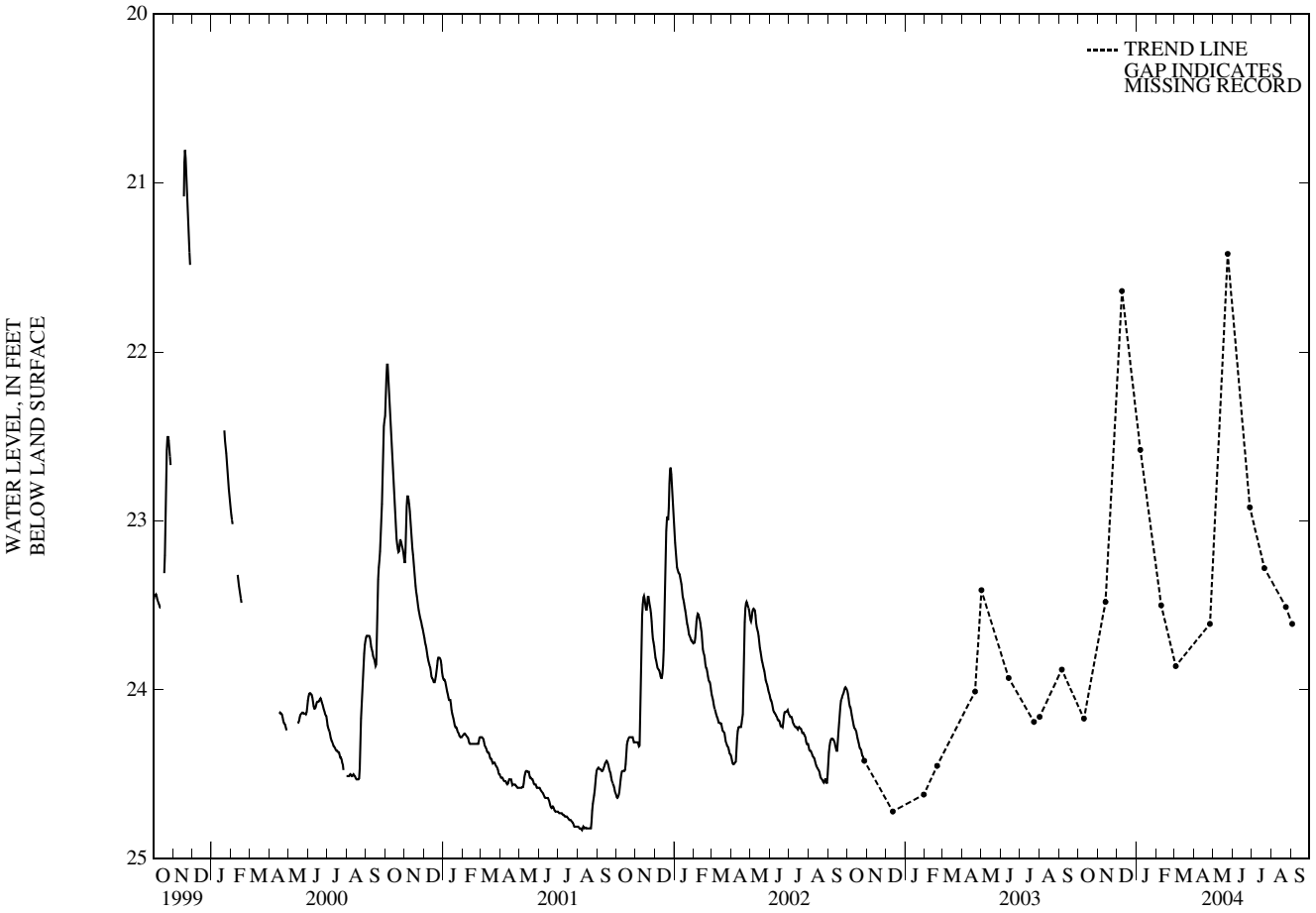
PERIOD OF RECORD.-- September 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 20.75 ft (6.32 m), below land-surface datum, November 20, 21, 1999; lowest water level recorded, 25.7 ft (7.83 m), below land-surface datum, May 31, 1995.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 10	24.17	DEC 09	21.64	FEB 09	23.50	APR 26	23.61	JUN 28	22.92	AUG 24	23.51
NOV 13	23.48	JAN 07	22.58	MAR 03	23.86	MAY 25	21.42	JUL 21	23.28	SEP 03	23.61

WATER YEAR 2004 HIGHEST 21.42 MAY 25, 2004 LOWEST 24.17 OCT 10, 2003



RIO GRANDE DE LOIZA BASIN—Continued

181311066022500. Local number, 1177.

LOCATION.--Lat 18°13'11", long 66°02'25", Hydrologic Unit 21010005, 1.13 mi south of the intersection of Hwy 156 with Hwy 52, 0.15 mi southeast of the intersection of Hwy 172 with Hwy 1, and 0.2 mi northeast of Escuela Antonio S. Pereira, Name: Piezometer Caguas-Juncos 11, Caguas.

AQUIFER.--Unconsolidated deposits of Quaternary Age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), 0-110 ft (0-33.5 m), screened 66-96 ft (20.1-29.3 m). Depth 110 ft (33.5 m).

DATUM.--Elevation of land-surface datum is about 282 ft (85.9 m), above mean sea level. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 3.04 ft (0.24 m), above land-surface datum.

REMARKS.--Observation well.

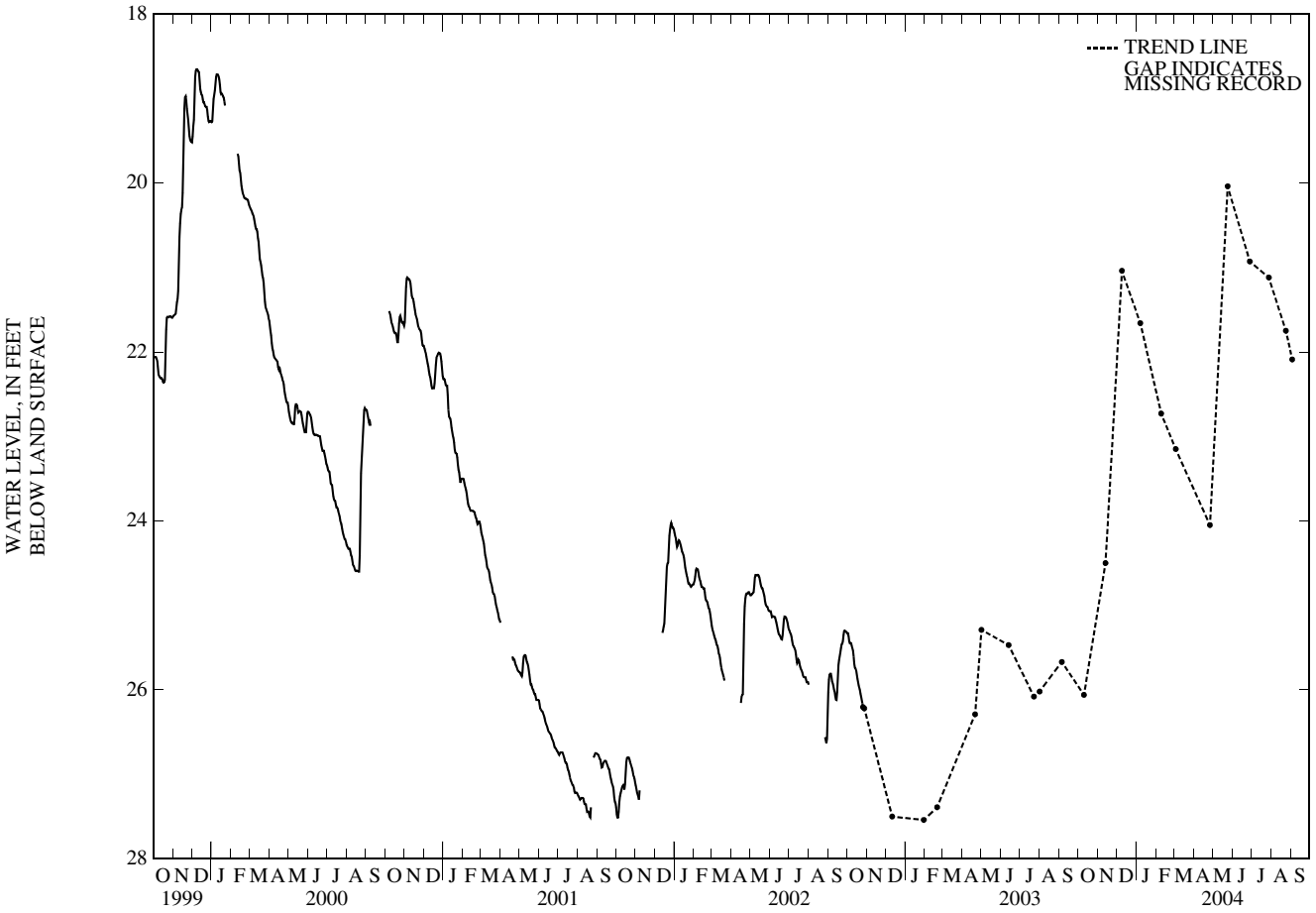
PERIOD OF RECORD.--May 2, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 18.34 ft (5.59 m), below land-surface datum, December 6, 7, 8, 1998; lowest water level recorded, 28.73 ft (8.76 m), below land-surface datum, August 22, 1997.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 10	26.06	DEC 09	21.04	FEB 09	22.73	APR 26	23.56	JUN 28	20.93	AUG 24	21.75
NOV 13	24.50	JAN 07	21.66	MAR 03	23.15	MAY 24	20.04	JUL 21	21.12	SEP 03	22.09

WATER YEAR 2004 HIGHEST 20.04 MAY 24, 2004 LOWEST 26.06 OCT 10, 2003



RIO GRANDE DE LOIZA BASIN—Continued

181539066014500. Local number, 1179.

LOCATION.--Lat 18°15'39", long 66°01'45", Hydrologic Unit 21010005, 0.55 mi southeast of the intersection of Hwy 1 with Hwy 30, 0.75 mi southeast of the intersection of Hwy 1 with Hwy 52, and 0.06 mi north of Hwy 796, Name: Piezometer Caguas-Juncos 15, Caguas.

AQUIFER.--Unconsolidated deposits of Quaternary Age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), 0-70 ft (0-21.3 m), screened 25-70 ft (7.62-21.3 m). Depth 70 ft (21.3 m).

DATUM.--Elevation of land-surface datum is about 167.3 ft (51 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 3.75 ft (1.14 m), above land-surface datum.

REMARKS.--Observation well.

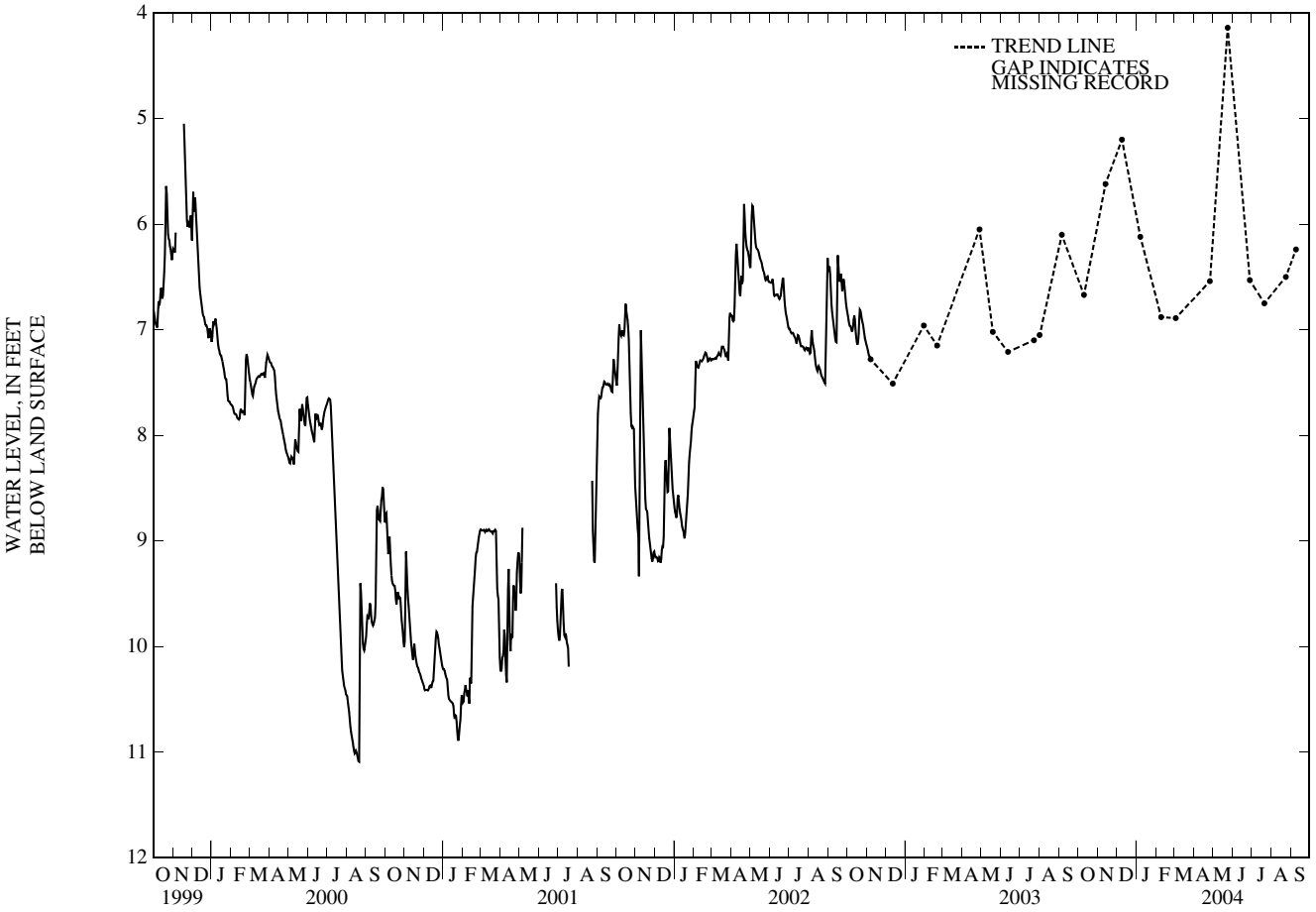
PERIOD OF RECORD.--May 5, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 4.14 ft (1.26 m), below land-surface datum, May 24, 2004; lowest water level recorded, 11.11 ft (3.39 m), below land-surface datum, August 11, 22, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 10	6.67	DEC 09	5.20	FEB 09	6.91	APR 26	6.54	JUN 28	6.53	AUG 24	6.50
NOV 13	5.62	JAN 07	6.12	MAR 03	6.89	MAY 24	4.14	JUL 21	6.75	SEP 03	6.24

WATER YEAR 2004 HIGHEST 4.14 MAY 24, 2004 LOWEST 6.91 FEB 09, 2004



RIO GRANDE DE LOIZA BASIN—Continued

182515065594100. Local number, 222.

LOCATION.--Lat 18°25'15", long 65°59'41", Hydrologic Unit 21010005, 3.56 mi northwest of Carolina plaza, 1.21 mi northwest of Extensión El Comandante School, and 0.74 mi southwest of Vistamar School, Name: Piezometer Campo Rico 1, Carolina.

AQUIFER.--Surficial Deposits.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m).

DATUM.--Elevation of land-surface datum is about 10 ft (3.05 m), above mean sea level, from topographic map. Measuring point: Hole on side of casing, 0.9 ft (0.27 m), above land-surface datum. Prior to July 28, 1986, top of shelter floor, 3.1 ft (0.94 m), above land-surface datum.

REMARKS.--Observation well. Well level affected by marine tides.

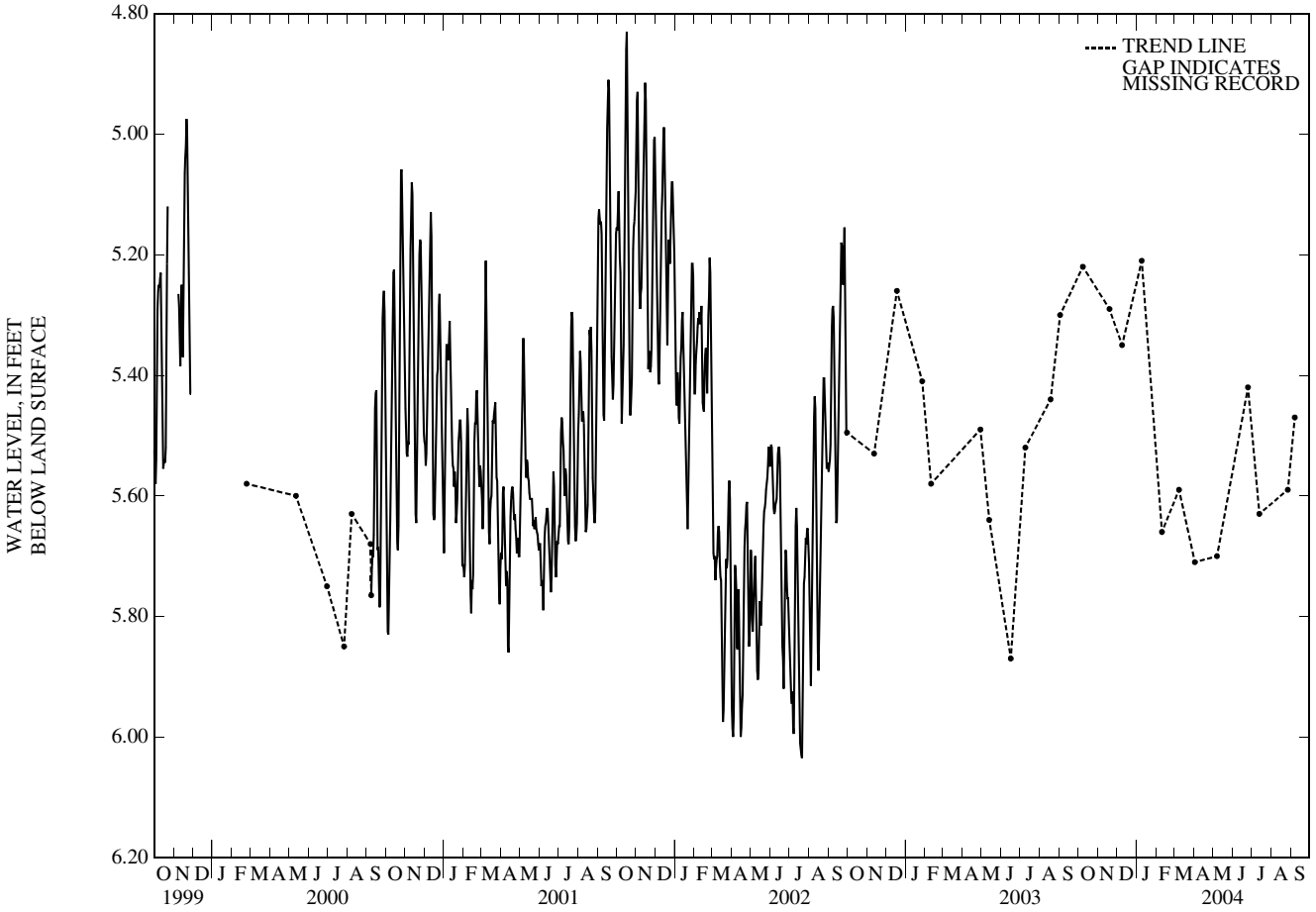
PERIOD OF RECORD.--February 1986 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 4.33 ft (1.32 m), below land-surface datum, September 6, 1995; lowest water level recorded, 7.42 ft (2.26 m), below land-surface datum, February 9, 1986.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 08	5.22	DEC 18	5.35	FEB 10	5.66	APR 02	5.71	JUN 25	5.42	AUG 27	5.59
NOV 19	5.29	JAN 09	5.21	MAR 08	5.59	MAY 07	5.70	JUL 13	5.63	SEP 07	5.47

WATER YEAR 2004 HIGHEST 5.21 JAN 09, 2004 LOWEST 5.71 APR 02, 2004



RIO HERRERA TO RIO ANTON RUIZ BASINS

181217065453000. Local number, 1203.

LOCATION.--Lat 18°12'17", long 65°45'30", Hydrologic Unit 21010005, 0.01 mi south of Hwy 927 at km 8 and 0.62 mi south of Hwy 31, Name: Piezometer Carlos Arroyo 1, Naguabo.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), screened 29-32 ft (8.84-9.75 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 16 ft (4.87 m), above mean sea level, from topographic map. Measuring point: Shelter floor, 4.8 ft (1.46 m), above land-surface datum.

REMARKS.--Recording observation well. Well is affected by stage in nearby Río Blanco.

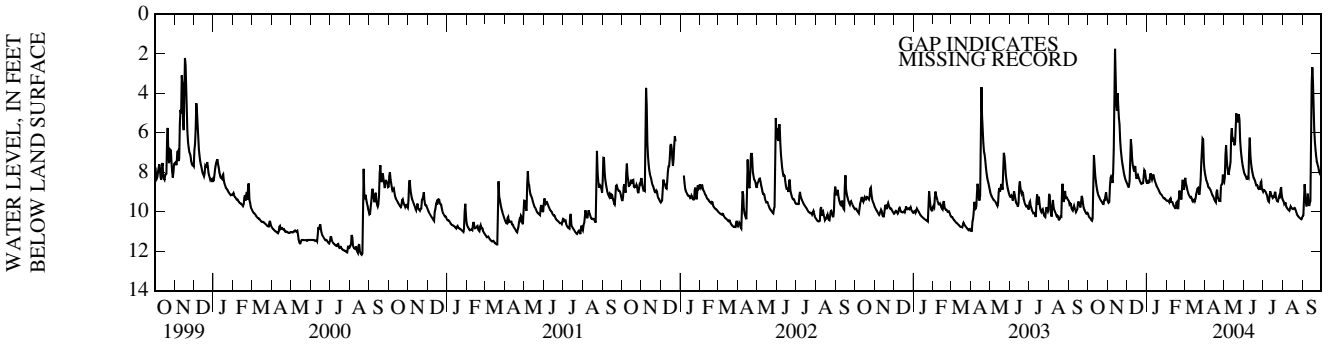
PERIOD OF RECORD.--October 26, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 0.17 ft (0.05 m), below land-surface datum, November 12, 2003; lowest water level recorded, 12.2 ft (3.72 m), below land-surface datum, August 21, 22, 2000.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.03	9.45	8.52	8.52	9.43	8.04	8.04	8.58	7.92	8.96	9.41	10.26
2	10.20	9.51	8.59	8.57	9.46	8.52	8.16	8.44	8.06	9.02	9.42	10.20
3	10.26	9.58	8.71	8.51	9.42	8.62	8.35	8.08	8.12	8.77	9.54	10.16
4	10.33	9.44	8.77	8.42	9.45	8.79	8.52	6.22	8.18	9.06	9.68	8.60
5	10.31	8.02	8.69	8.61	9.49	8.92	8.46	7.02	8.25	8.85	9.44	8.62
6	10.38	8.57	8.17	8.40	9.55	9.02	8.66	7.54	8.40	9.15	9.69	9.40
7	10.46	7.85	6.36	7.91	9.21	9.15	8.79	7.94	8.27	9.04	9.78	9.61
8	10.45	8.72	6.31	8.20	9.44	9.20	8.75	8.04	8.24	9.28	9.82	9.86
9	10.18	8.36	7.12	8.33	9.55	9.27	8.84	8.22	8.36	9.42	9.87	8.75
10	6.94	7.75	7.55	8.42	9.47	9.29	8.87	7.56	5.59	9.49	9.91	9.42
11	7.32	5.94	7.75	8.08	9.56	9.22	8.95	7.88	6.91	9.51	9.93	9.63
12	7.96	0.49	7.83	8.14	9.65	9.41	9.06	7.04	7.37	8.90	9.97	9.79
13	8.31	3.00	8.08	8.32	9.72	9.48	9.16	5.24	7.68	9.02	9.72	9.38
14	8.58	3.74	7.37	8.44	9.80	9.50	9.19	6.28	7.89	9.12	9.75	9.59
15	8.82	5.43	8.09	8.51	9.83	9.37	9.26	6.61	8.08	9.26	9.84	4.57
16	8.98	4.35	8.29	8.62	9.80	9.42	9.36	6.01	8.21	9.18	9.84	2.42
17	9.12	3.64	8.37	8.69	9.29	9.51	9.43	6.76	8.34	9.41	9.85	2.94
18	9.22	5.42	8.05	8.78	9.73	9.20	9.50	6.51	8.34	9.09	9.88	3.81
19	9.24	5.05	8.23	8.84	9.84	9.03	9.55	6.56	8.47	9.39	9.83	5.46
20	9.35	6.10	8.26	8.90	9.88	8.95	8.49	5.02	8.60	8.75	9.78	6.21
21	9.42	6.66	8.39	8.97	8.74	8.70	9.27	5.01	8.70	9.23	9.86	6.67
22	9.47	7.04	8.46	9.05	9.13	8.89	9.25	5.83	8.58	9.35	9.97	7.04
23	9.50	7.26	8.54	9.11	9.26	9.08	9.41	5.02	8.76	9.44	10.07	7.33
24	9.55	7.54	8.61	9.11	9.34	9.18	9.47	5.53	8.84	9.49	10.14	7.56
25	9.64	7.69	8.53	9.17	9.41	8.54	9.41	4.60	8.84	9.47	10.23	7.59
26	9.57	7.93	8.61	9.22	8.06	8.22	9.49	6.13	8.77	9.16	10.24	7.78
27	9.27	8.11	8.49	9.29	8.70	6.80	7.95	6.67	8.98	9.27	10.29	7.94
28	9.55	8.25	7.91	9.33	8.86	7.14	9.29	7.04	8.11	9.37	10.31	8.06
29	8.80	8.37	7.87	9.29	8.90	5.46	7.91	7.34	8.84	8.43	10.35	8.08
30	9.24	8.44	8.04	9.35	---	7.25	8.33	7.59	8.87	9.08	10.38	8.21
31	9.36	---	8.39	9.39	---	7.75	---	7.76	---	9.27	10.39	---
MEAN	9.35	6.92	8.10	8.73	9.38	8.67	8.91	6.78	8.22	9.17	9.91	7.83

WTR YR 2004 MEAN 8.50 HIGHEST 0.17 NOV 12, 2003 LOWEST 10.49 OCT 09, 2003



RIO HERRERA TO RIO ANTON RUIZ BASINS—Continued

182131065421100. Local number, 1205.

LOCATION.--Lat. 18°21'31", long. 65°42'11", Hydrologic Unit 21010005, 1.39 mi southeast of the intersection of Hwy 992 with Hwy 3, 0.4 mi southeast of the intersection of Hwy 983 with Hwy 3, 0.12 mi northwest of the intersection with Hwy 940 with Hwy 983, and 0.03 mi southwest of Hwy 983, Name: Piezometer USGS RP 4, Luquillo.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), cased 4 in (0.1 m) 0-39 ft (0-11.9 m), screened 4-39 ft (1.2-11.9 m). Depth 39 ft (11.9 m).

DATUM.--Elevation of land-surface datum is about 14 ft (4.27 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 4.42 ft (1.35 m), above land-surface datum.

REMARKS.--Observation well.

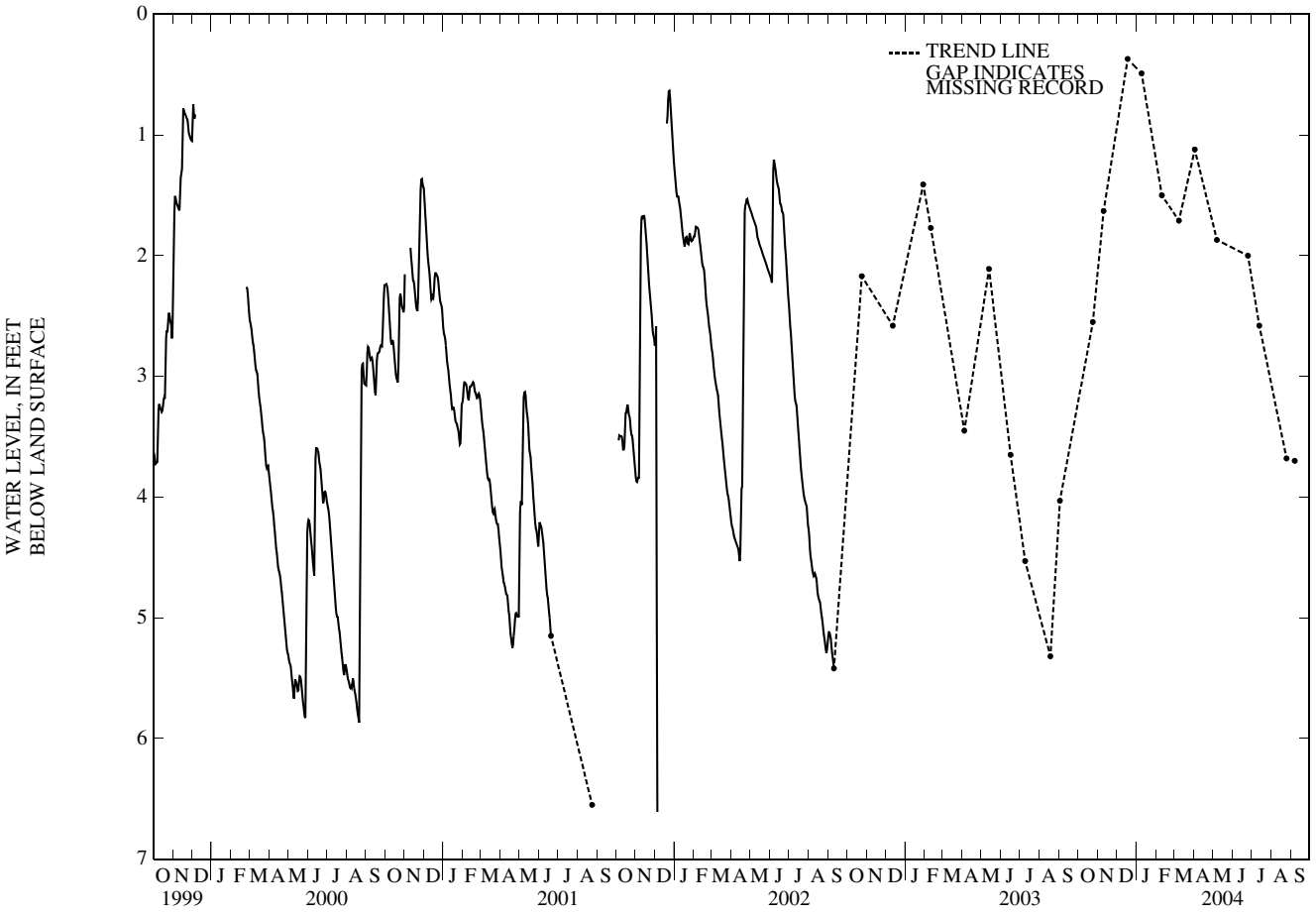
PERIOD OF RECORD.--August 30, 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 0.32 ft (0.09 m), below land-surface datum, December 10, 1998; lowest water level recorded, 14.05 ft (4.28 m), below land-surface datum, August 21, 1997.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	2.58	DEC 18	.40	FEB 10	1.53	APR 02	1.15	JUN 25	2.03	AUG 25	3.71
NOV 10	1.66	JAN 09	.52	MAR 08	1.74	MAY 07	1.90	JUL 13	2.61	SEP 07	3.70

WATER YEAR 2004 HIGHEST 0.40 DEC 18, 2003 LOWEST 3.71 AUG 25, 2004



RIO HERRERA TO RIO ANTON RUIZ BASINS—Continued

181917065382701. Local number, 1207.

LOCATION.--Lat 18°19'17", long 65°38'27", Hydrologic Unit 2101005, 1.2 mi northwest of Punta Barrancas, 0.81 mi east of Hwy 3, 0.82 mi south of Hwy 195, and 0.61 mi east of Hwy 194, Name: USGS RF 12, Fajardo.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), cased 4 in (0.1 m) 0-34 ft (0-10.4 m), screened 3.75-34 ft (1.14-10.4 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is 13.7 ft (4.18 m), above mean sea level, from topographic survey. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 4.16 ft (1.27 m), above land-surface datum.

REMARKS.--Recording observation well.

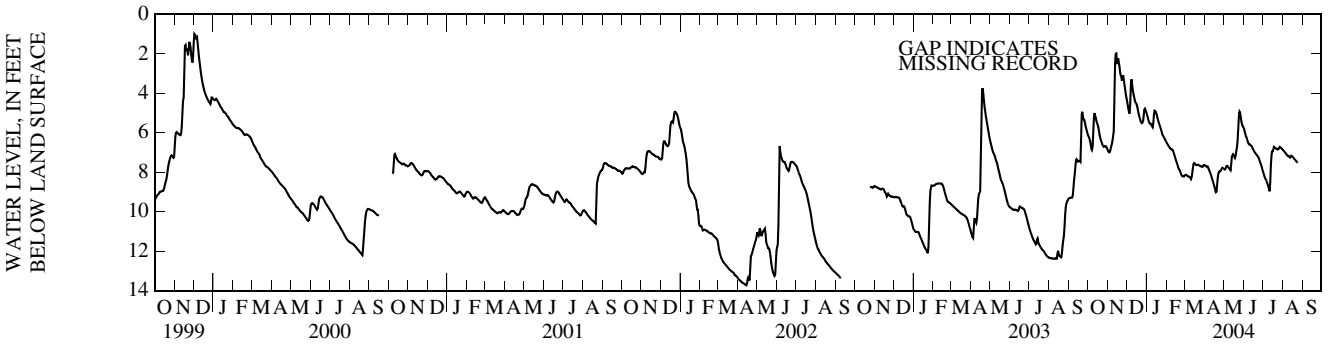
PERIOD OF RECORD.--August 30, 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 0.58 ft (0.18 m), below land-surface datum, December 3, 1999; lowest water level recorded, 13.74 ft (4.19 m), below land-surface datum, April 15, 2002.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.10	6.86	4.30	5.00	6.48	8.14	7.64	7.84	5.72	7.94	6.86	---
2	6.17	6.94	4.47	5.09	6.53	8.13	7.68	7.84	5.85	8.04	6.89	---
3	6.23	7.00	4.67	5.23	6.60	8.13	7.69	7.88	6.00	8.14	6.92	---
4	6.34	6.99	4.88	5.35	6.64	8.16	7.72	7.81	6.11	8.26	6.97	---
5	6.50	6.93	5.00	5.46	6.70	8.19	7.67	7.69	6.19	8.34	7.00	---
6	6.69	6.74	5.07	5.55	6.74	8.21	7.72	7.66	6.28	8.38	7.05	---
7	6.90	6.64	3.95	5.53	6.80	8.22	7.80	7.69	6.39	8.46	7.10	---
8	6.83	6.49	3.20	5.55	6.82	8.23	7.88	7.76	6.50	8.56	7.14	---
9	6.55	6.31	3.39	5.63	6.84	8.26	7.96	7.79	6.58	8.65	7.18	---
10	5.50	6.03	3.73	5.69	6.85	8.33	8.04	7.84	6.59	8.76	7.15	---
11	4.96	5.82	3.95	5.75	6.86	8.38	8.13	7.87	6.59	8.89	7.21	---
12	5.06	2.74	4.11	5.29	6.97	8.13	8.24	7.92	6.62	9.03	7.26	---
13	5.18	2.37	4.23	4.89	7.06	7.90	8.36	7.27	6.67	8.00	7.26	---
14	5.34	1.62	4.42	4.87	7.17	7.62	8.46	7.19	6.70	7.30	7.15	---
15	5.49	2.34	4.51	4.90	7.27	7.54	8.56	7.09	6.79	6.96	7.17	---
16	5.53	2.69	4.49	4.98	7.41	7.53	8.69	7.08	6.85	6.92	7.20	---
17	5.66	2.00	4.60	5.09	7.47	7.59	8.82	7.17	6.91	6.94	7.22	---
18	5.81	2.47	4.76	5.23	7.58	7.63	8.95	7.25	6.98	6.72	7.26	---
19	6.04	2.45	4.94	5.36	7.69	7.63	9.08	7.31	7.03	6.72	7.30	---
20	6.21	2.86	5.09	5.46	7.79	7.63	8.90	7.03	7.06	6.78	7.36	---
21	6.33	3.03	5.21	5.56	7.88	7.62	8.42	6.83	7.10	6.79	7.37	---
22	6.41	3.14	5.31	5.67	7.90	7.62	8.14	6.64	7.14	6.80	7.43	---
23	6.52	3.26	5.42	5.76	7.99	7.64	8.01	6.16	7.20	6.82	7.46	---
24	6.61	3.47	5.50	5.86	8.10	7.68	7.95	5.37	7.24	6.85	7.49	---
25	6.68	2.95	5.52	5.99	8.18	7.68	7.95	4.97	7.30	6.84	7.57	---
26	6.72	3.22	5.46	6.11	8.20	7.70	7.95	4.90	7.42	6.80	---	---
27	6.67	3.42	5.40	6.17	8.21	7.71	7.88	5.09	7.51	6.72	---	---
28	6.69	3.69	4.91	6.22	8.21	7.72	7.77	5.36	7.58	6.72	---	---
29	6.69	3.93	4.73	6.29	8.22	7.73	7.78	5.51	7.71	6.77	---	---
30	6.70	4.14	4.81	6.33	---	7.65	7.79	5.65	7.81	6.78	---	---
31	6.79	---	4.89	6.40	---	7.62	---	5.68	---	6.81	---	---
MEAN	6.19	4.28	4.67	5.56	7.35	7.87	8.12	6.88	6.81	7.50	---	---

WTR YR 2004 MEAN 6.57 HIGHEST 1.57 NOV 14, 2003 LOWEST 9.17 APR 20, 2004



RIO HERRERA TO RIO ANTON RUIZ BASINS—Continued

182234065440000. Local number, 1208.

LOCATION.--Lat 18°22'34", long 65°44'00", Hydrologic Unit 2101005, 0.7 mi south of Balneario de Luquillo, 1.1 mi west of Luquillo, and 1 mi northwest of intersection of Hwy 991 with Hwy 992, Name: Piezometer Qda. Mata de Plátanos 1, Luquillo.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--PVC cased, ran levels, diameter 4 in (0.1 m) screened 5-25 ft (1.52-7.62 m). Depth 25 ft (7.62 m).

DATUM.--Elevation of land-surface is about 2.39 ft (0.73 m), about mean sea level, from topographic map. Measuring point: Floor of shelter, 5.6 ft (1.71 m), above land-surface datum.

REMARKS.--Observation well.

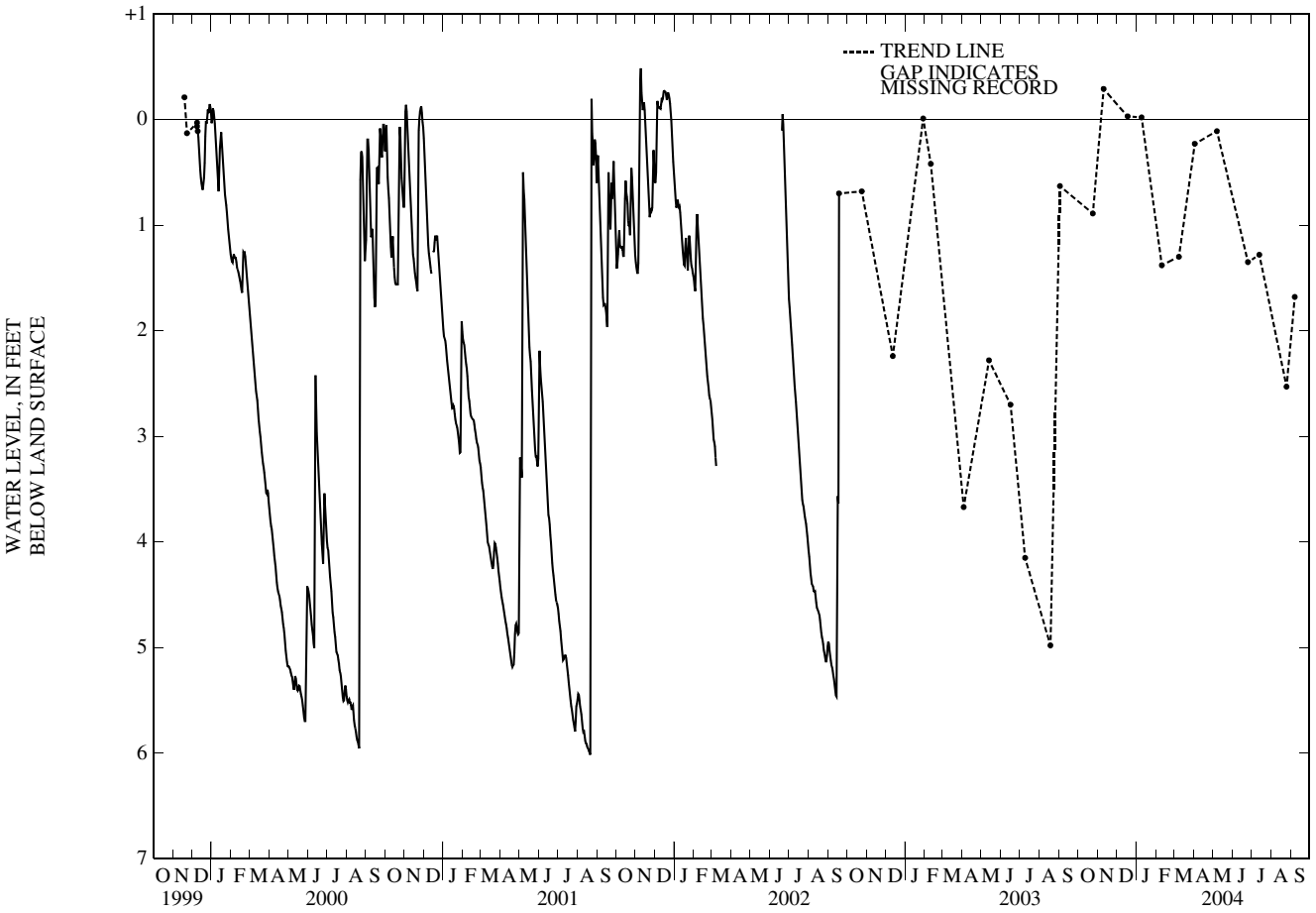
PERIOD OF RECORD.--September 17, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, +3.02 ft (+0.92 m), above land-surface datum, September 18, 2002; lowest water level measured, 6.03 ft (1.84 m), below land-surface datum, August 19-22, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM (READINGS ABOVE LAND-SURFACE INDICATED BY "+")
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	.89	DEC 18	+.03	FEB 10	1.38	APR 02	.23	JUN 25	1.35	AUG 25	2.53
NOV 10	+.29	JAN 09	+.02	MAR 08	1.30	MAY 07	.11	JUL 13	1.28	SEP 07	1.68

WATER YEAR 2004 HIGHEST +0.29 NOV 10, 2003 LOWEST 2.53 AUG 25, 2004



RIO HUMACAO TO QUEBRADA AGUAS VERDES BASINS

180415065513900. Local number, 96.

LOCATION.--Lat 18°04'15", long 65°51'39", Hydrologic Unit 21010005, 2.44 mi northwest of Escuela Eugenio María de Hostos, 4.67 mi southwest of Escuela Segunda Unidad Luciano, and 3.93 mi southwest of Escuela Asunción López, Name: Yabucoa 7 Well, Yabucoa.

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 16 in (0.41 m), cased 0-1 ft (0-3.05 m), diameter 6 in (0.15 m), cased about 0-183 ft (0-55.8 m), perforated 56-81 ft (17.1-24.7 m), 102-123 ft, (31.1-37.5 m), 144-181 ft (43.9-55.2 m). Depth 181 ft (55.2 m).

DATUM.--Elevation of land-surface datum is about 25 ft (7.62 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor, 4 ft (1.22 m), above land-surface datum.

REMARKS.--Observation well.

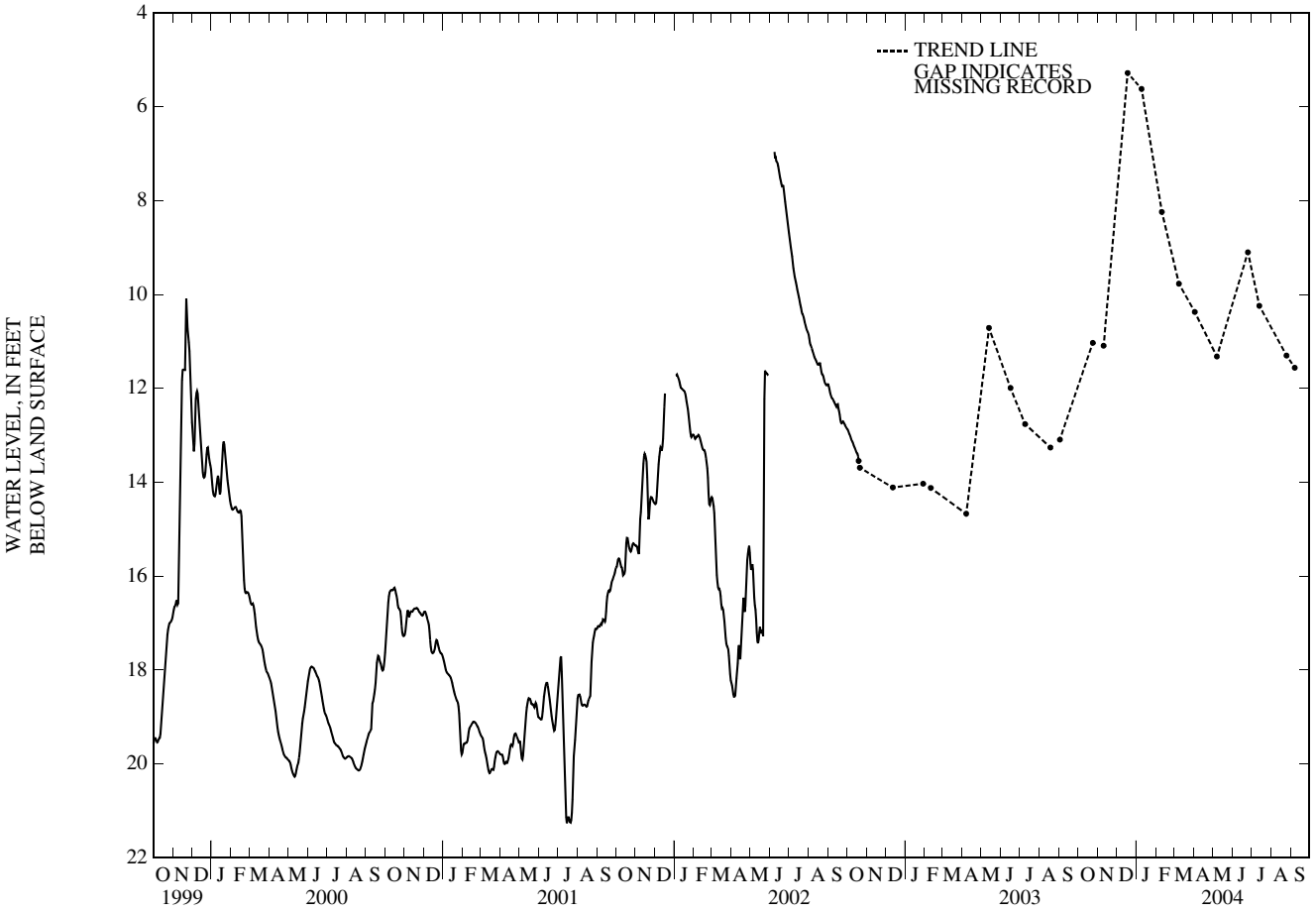
PERIOD OF RECORD.--April 25, 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 5.28 ft (1.61 m), below land-surface datum, December 18, 2003; lowest water level recorded, 28.29 ft (8.62 m) below land-surface datum, September 20, 1980.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	11.03	DEC 18	5.28	FEB 10	8.24	APR 02	10.37	JUN 25	9.10	AUG 25	11.30
NOV 10	11.09	JAN 09	5.62	MAR 08	9.77	MAY 07	11.32	JUL 13	10.24	SEP 07	11.56

WATER YEAR 2004 HIGHEST 5.28 DEC 18, 2003 LOWEST 11.56 SEP 07, 2004



RIO HUMACAO TO QUEBRADA AGUAS VERDES BASINS—Continued

175855066050500. Local number, 1228.

LOCATION.--Lat 17°58'55", long 66°05'05", Hydrologic Unit 21010004, 1.97 mi east-southeast of the intersection of Hwy 16 with Hwy 3, 1 mi west of the intersection of Hwy 3 with Hwy 178, and 0.04 mi south of Hwy 3, Name: Algarrobos Domestic Well, Guayama.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 9 in (0.23 m). Depth 57 ft (17.4 m).

DATUM.--Elevation of land-surface datum is about 89 ft (27.1 m), above mean sea level. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 2.95 ft (0.9 m), above land-surface datum.

REMARKS.--Observation well.

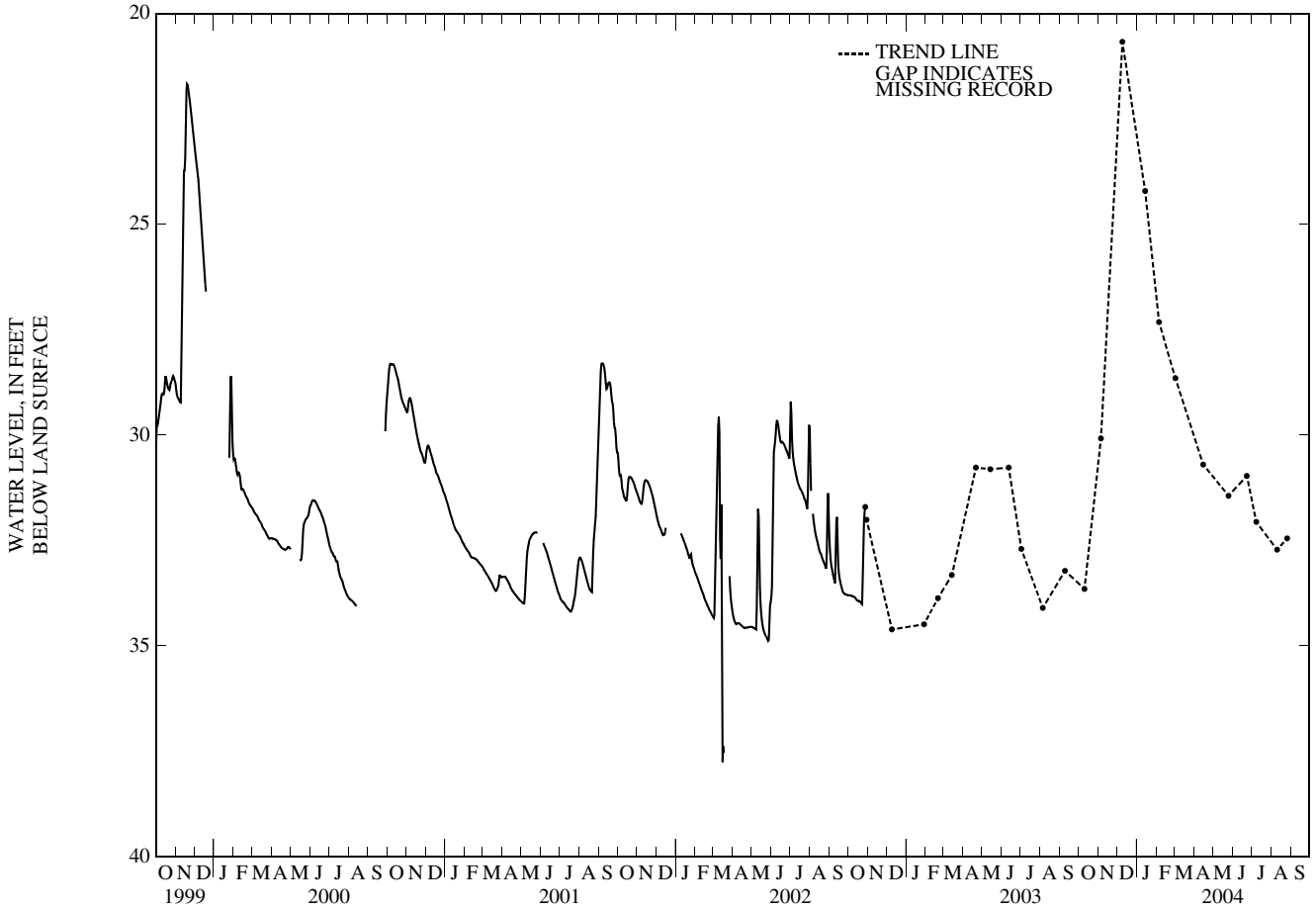
PERIOD OF RECORD.--December 26, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 18.19 ft (5.54 m), below land-surface datum, June 26, 1997; lowest water level measured, 34.62 ft (10.55 m), below land-surface datum, December 9, 2002.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 10	33.65	DEC 09	20.67	FEB 05	27.32	APR 15	30.70	JUN 23	30.97	AUG 10	32.72
NOV 05	30.08	JAN 14	24.21	MAR 02	28.65	MAY 25	31.44	JUL 08	32.06	AUG 26	32.45

WATER YEAR 2004 HIGHEST 20.67 DEC 09, 2003 LOWEST 33.65 OCT 10, 2003



RIO HUMACAO TO QUEBRADA AGUAS VERDES BASINS—Continued

175728066072200. Local number, 1229.

LOCATION.--Lat 17°57'28", long 66°07'22", Hydrologic Unit 21010004, 0.65 mi west of Central Machete, 0.75 mi northwest of Playita Machete, 2 mi south of the intersection of Hwy 15 with Hwy 3, and 1.13 mi southeast of intersection of Hwy 710 with Hwy 3, Name: Barranca Dug Well, Guayama.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Hand-dug unused water-table well, diameter 9 ft (2.74 m). Depth 36 ft (11.0 m), sounded on October 3, 2002.

DATUM.--Elevation of land-surface datum is about 59.1 ft (18 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 5 ft (1.52 m), above land-surface datum.

REMARKS.--Observation well.

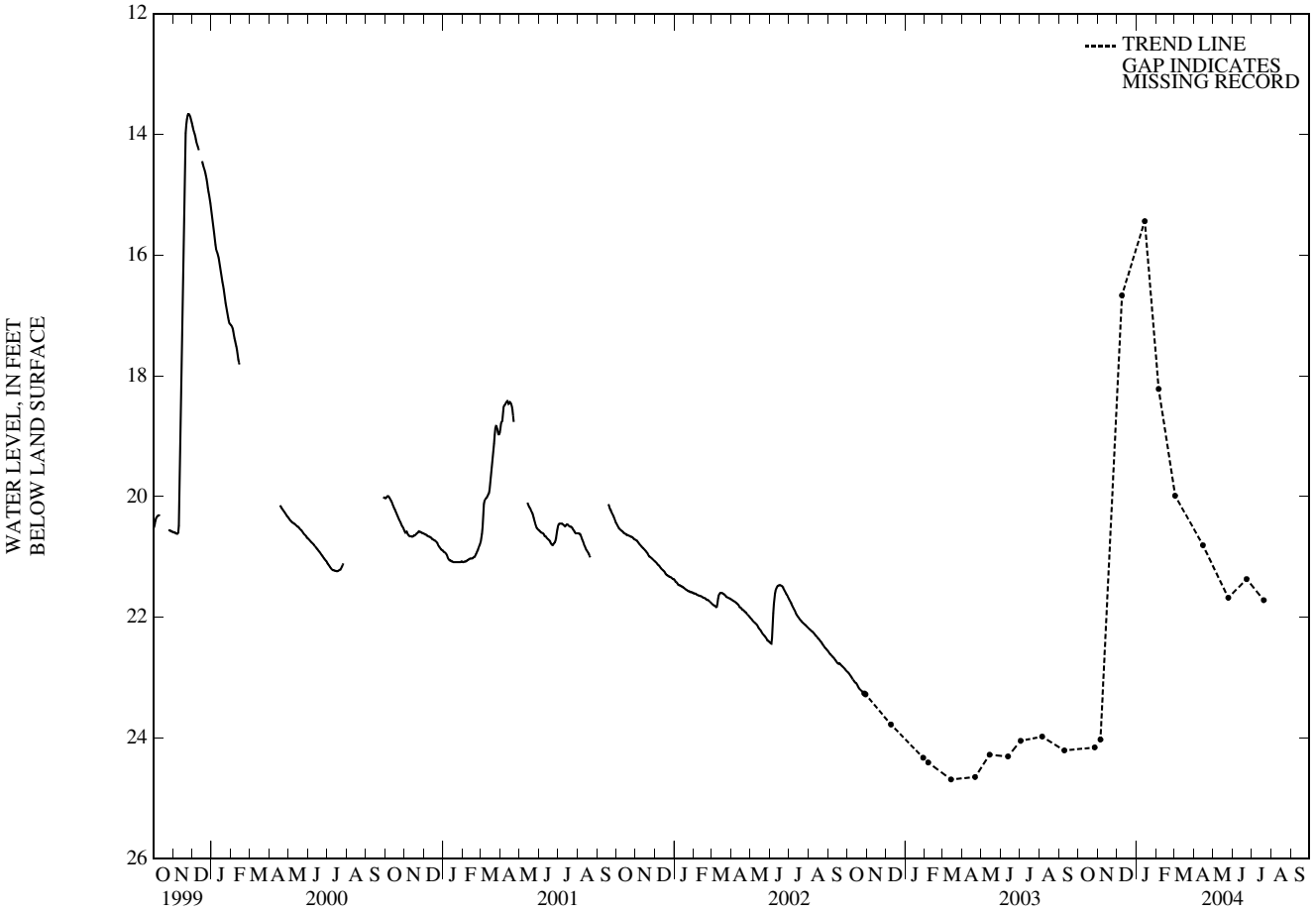
PERIOD OF RECORD.--April 3, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 13.66 ft (4.16 m), below land-surface datum, November 25, 26, 27, 1999; lowest water level measured, 24.69 ft (7.52 m), below land-surface datum, March 14, 2003.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	24.16	DEC 09	16.49	FEB 05	18.22	APR 15	20.81	JUN 23	21.37	JUL 20	21.72
NOV 05	24.03	JAN 14	15.44	MAR 02	19.99	MAY 25	21.68				

WATER YEAR 2004 HIGHEST 15.44 JAN 14, 2004 LOWEST 24.16 OCT 27, 2003



RIO HUMACAO TO QUEBRADA AGUAS VERDES BASINS—Continued

175719066085500. Local number, 1230.

LOCATION.--Lat 17°57'20", long 66°09'02", Hydrologic Unit 2101004, 1 mi east of the intersection of Hwy 3 with Hwy 707, 0.28 mi south of Hwy 3, and 0.25 mi northwest of the Phillips Petroleum oil refinery, Name: Phillips Petroleum 13 Well, Guayama.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m). Depth 99 ft (30.2 m).

DATUM.--Elevation of land-surface datum is about 33 ft (10.1 m), above mean sea level, from topographic map. Measuring point: Top of 4 in (0.1 m) casing, 2.83 ft (0.86 m), above land-surface datum. Prior to September 18, 2002, shelter floor on top of 4 in (0.1 m) casing, 3.21 ft (0.98 m), above land-surface datum.

REMARKS.--Observation well.

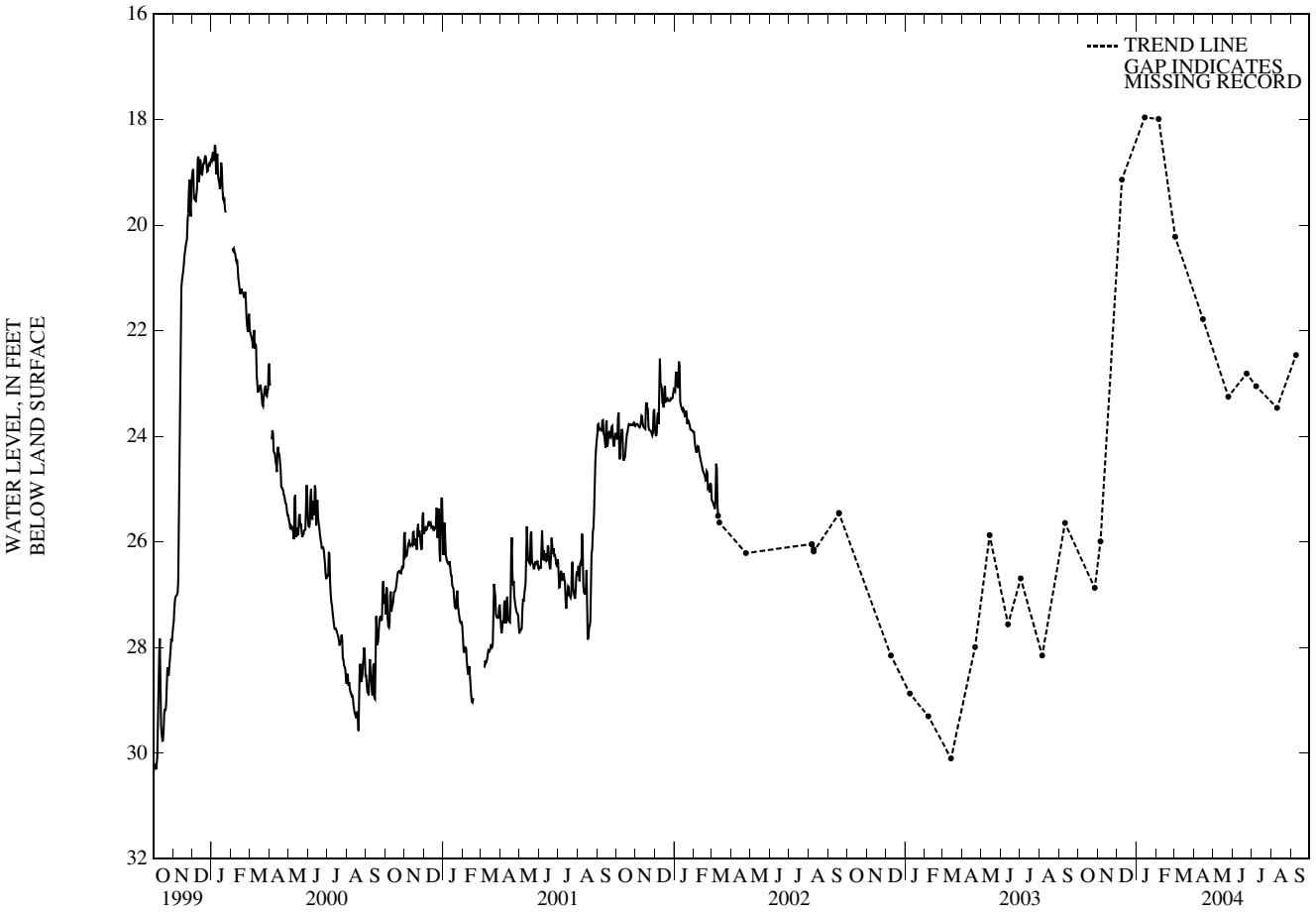
PERIOD OF RECORD.--September 25, 1991 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 14.47 ft (4.41 m), below land-surface datum, March 22, 24, 1993; lowest water level recorded, 31.22 ft (9.52 m), below land-surface datum, August 24, 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	26.87	DEC 09	19.14	FEB 05	17.99	APR 15	21.78	JUN 23	22.81	AUG 10	23.46
NOV 05	25.99	JAN 14	17.96	MAR 02	20.22	MAY 25	23.25	JUL 08	23.05	SEP 09	22.09

WATER YEAR 2004 HIGHEST 17.96 JAN 14, 2004 LOWEST 26.87 OCT 27, 2003



RIO HUMACAO TO QUEBRADA AGUAS VERDES BASINS—Continued

175858066100200. Local number, 6.

LOCATION.--Lat 17°58'58", long 66°10'02", Hydrologic Unit 21010004, 4.23 mi northeast of Central Aguirre Church, 4.08 mi northeast of Colegio del Perpetuo Socorro Church, and 1.77 mi northwest of Hwy 3 km 144.2, Name: Juana 5 Well, Guayama.

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 16 in (0.41 m). Depth 173 ft (52.74 m) reported, 110 ft (33.54 m) measured.

DATUM.--Elevation of land-surface datum is about 127 ft (38.7 m), above mean sea level, from topographic map. Measuring point: Inner steel pipe, 3 ft (0.91 m), above land-surface datum. After August 7, 1981, top of 16 in (0.41 m) casing, 1.55 ft (0.47 m), above land-surface datum.

REMARKS.--Observation well.

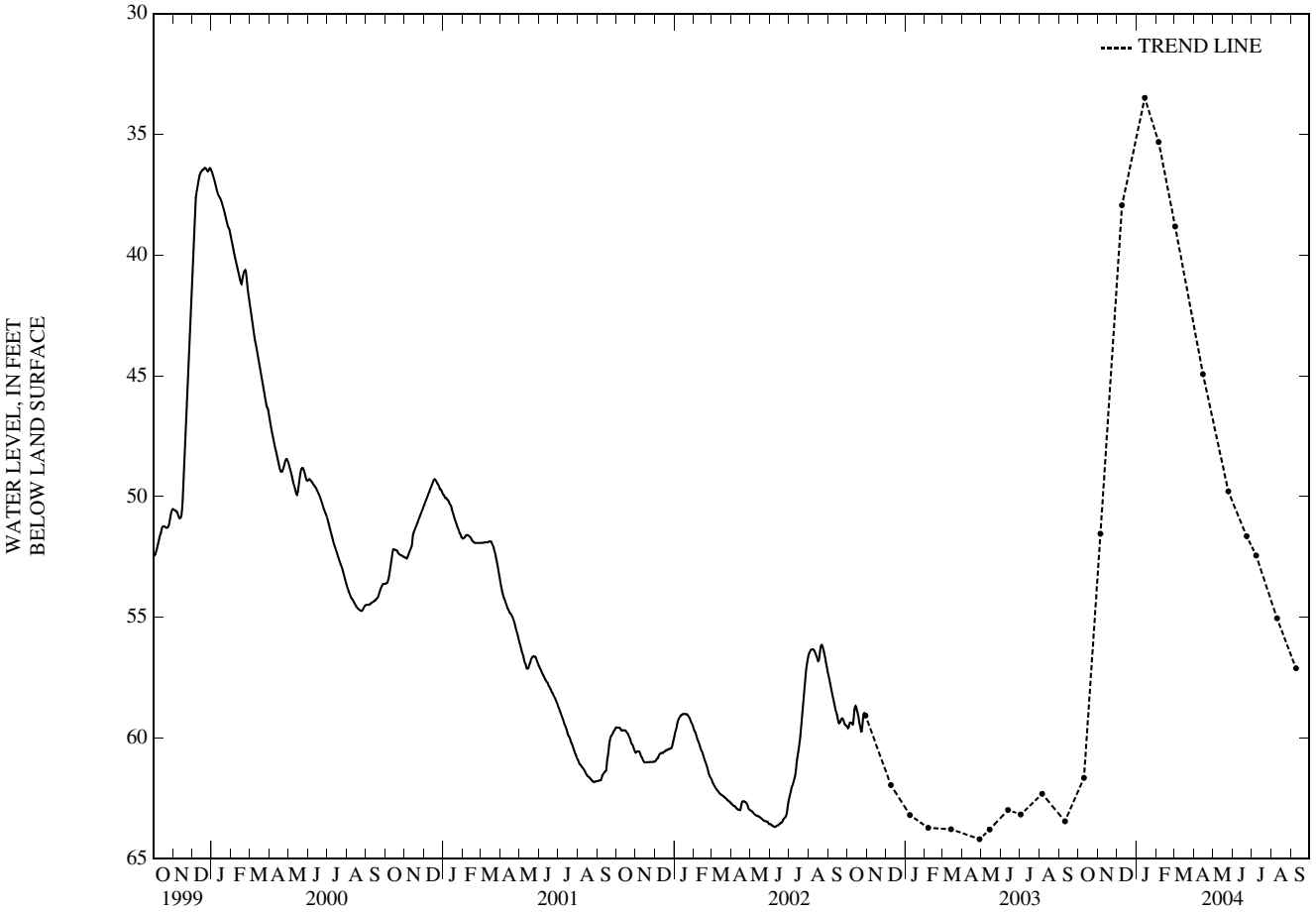
PERIOD OF RECORD.--November 1960 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 26.2 ft (7.99 m), below land-surface datum, Decenber 10, 1979; lowest water level recorded, 65.95 ft (20.1 m), below land-surface datum, June 2, 1968.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 10	61.66	DEC 09	37.94	FEB 05	35.32	APR 15	44.94	JUN 23	51.65	AUG 10	55.05
NOV 05	51.55	JAN 14	33.49	MAR 02	38.82	MAY 25	49.79	JUL 08	52.45	SEP 09	57.12

WATER YEAR 2004 HIGHEST 33.49 JAN 14, 2004 LOWEST 61.66 OCT 10, 2003



RIO HUMACAO TO QUEBRADA AGUAS VERDES BASINS—Continued

175947066130601. Local number, 1233.

LOCATION.--Lat 17°59'47", long 66°13'06", Hydrologic Unit 21010004, 2.7 mi northeast of Central Aguirre Church, 6.16 mi northwest of Guayama School, and 2.7 mi northeast of Hwy 3 km 151.3, Name: Piezometer Aguirre HW 5B, Salinas.

AQUIFER.--Fractured, volcanic rock, water-table aquifer.

WELL CHARACTERISTICS.--Drilled observation well, diameter 7 in (0.18 m), 0-52 ft (0-15.8 m), cased 4 in (0.1 m), 0-51 ft (0-15.5 m), screened 41-46 ft (12.5-14 m).

INSTRUMENTATION.--Pressure transducer attached to a Data Collector Platform (DCP) --60-minutes interval real time transmissions.

DATUM.--Elevation of land-surface datum is about 131 ft (39.93 m), above mean sea level. Measuring point: Hole on side of casing, 3 ft (0.91 m), above land-surface datum. Prior to October 13, 1989 top of shelter floor, 3.47 ft (1.06 m), above land-surface datum.

REMARKS.--Recording observation well. Electronic Data Logger (EDL), installed on April 15, 1998, replaced by a DCP, installed on August 3, 2000.

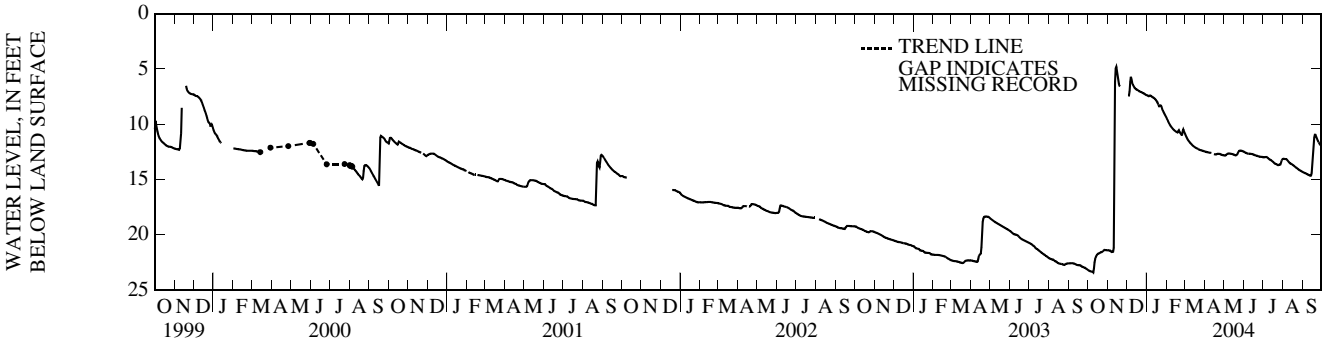
PERIOD OF RECORD.--April 13, 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 4.28 ft (1.3 m), below land-surface datum, November 14, 2003; lowest water level recorded, 28.55 ft (8.7 m), below land-surface datum, August 14, 15, 1996.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.16	21.40	---	7.37	9.37	10.79	12.46	12.81	12.47	12.98	13.15	14.31
2	23.23	21.41	---	7.38	9.52	10.99	12.48	12.82	12.51	12.99	13.11	14.33
3	23.26	21.41	7.40	7.40	9.65	11.09	12.50	12.84	12.55	12.99	13.12	14.36
4	23.29	21.42	7.39	7.44	9.74	11.23	12.52	12.83	12.58	12.97	13.14	14.39
5	23.30	21.42	7.40	7.47	9.89	11.34	12.52	12.78	12.60	12.97	13.16	14.42
6	23.32	21.49	6.63	7.42	10.01	11.45	12.54	12.69	12.63	12.95	13.13	14.44
7	23.33	21.57	5.70	7.38	10.10	11.53	12.54	12.66	12.65	12.97	13.16	14.46
8	23.35	21.55	5.72	7.45	10.18	11.59	12.56	12.65	12.66	13.00	13.24	14.50
9	23.36	21.52	6.12	7.49	10.27	11.67	12.58	12.64	12.68	13.06	13.30	14.54
10	23.46	21.53	6.33	7.53	10.31	11.75	12.59	12.65	12.66	13.11	13.37	14.56
11	22.70	20.88	6.47	7.59	10.43	11.78	12.59	12.66	12.66	13.16	13.44	14.59
12	22.31	7.02	6.56	7.60	10.46	11.86	12.61	12.67	12.67	13.23	13.51	14.62
13	22.08	5.29	6.67	7.64	10.54	11.93	---	12.68	12.69	13.22	13.57	14.65
14	21.96	4.62	6.73	7.70	10.58	11.97	---	12.69	12.69	13.26	13.56	14.66
15	21.84	5.00	6.81	7.75	10.63	12.00	12.69	12.71	12.72	13.32	13.61	14.63
16	21.75	5.39	6.85	7.85	10.66	12.07	12.71	12.74	12.74	13.35	13.65	14.18
17	21.71	5.77	6.86	7.91	10.72	12.10	12.73	12.76	12.76	13.40	13.68	13.01
18	21.69	6.16	6.91	8.01	10.72	12.15	12.73	12.79	12.79	13.46	13.72	12.61
19	21.67	6.50	6.95	8.14	10.76	12.16	12.73	12.81	12.81	13.52	13.77	11.35
20	21.65	6.57	6.99	8.29	10.46	12.19	12.72	12.82	12.82	13.58	13.82	11.03
21	21.58	6.58	7.02	8.44	10.60	12.22	12.68	12.78	12.84	13.59	13.87	10.88
22	21.57	---	7.05	8.29	10.72	12.26	12.67	12.73	12.86	13.61	13.92	11.02
23	21.57	---	7.08	8.31	10.82	12.30	12.66	12.61	12.88	13.64	13.96	11.17
24	21.53	---	7.10	8.32	10.91	12.32	12.67	12.47	12.89	13.68	14.00	11.32
25	21.48	---	7.13	8.51	11.00	12.34	12.70	12.41	12.91	13.73	14.05	11.46
26	21.41	---	7.16	8.72	10.89	12.35	12.72	12.38	12.93	13.66	14.10	11.59
27	21.38	---	7.20	8.82	10.39	12.36	12.75	12.38	12.95	13.66	14.13	11.70
28	21.38	---	7.20	8.94	10.55	12.39	12.77	12.39	12.95	13.64	14.16	11.78
29	21.39	---	7.25	9.06	10.72	12.40	12.79	12.41	12.94	13.63	14.21	11.85
30	21.39	---	7.31	9.15	---	12.43	12.80	12.44	12.96	13.34	14.24	11.93
31	21.40	---	7.35	9.30	---	12.44	---	12.45	---	13.22	14.27	---
MEAN	22.21	---	---	8.02	10.40	11.92	---	12.65	12.75	13.32	13.65	13.14

WTR YR 2004 MEAN 12.64 HIGHEST 4.28 NOV 14, 2003 LOWEST 23.47 OCT 09, 10, 2003



RIO HUMACAO TO QUEBRADA AGUAS VERDES BASINS—Continued

175814066102200. Local number, 1239.

LOCATION.--Lat 17°58'14", long 66°10'22", Hydrologic Unit 21010004, 1 mi northwest of Jobos community, 3.8 mi east of Colegio del Perpetuo Socorro, and 3.5 mi northeast of Central Aguirre, Name: Jobos Well, Guayama.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 11 in (0.24 m). Depth 63 ft (19.2 m).

DATUM.--Elevation of land-surface datum is about 59 ft (18 m), above mean sea level, from topographic map. Measuring point: On shelter floor, 2.86 ft (0.87 m), above land-surface datum.

REMARKS.--Observation well.

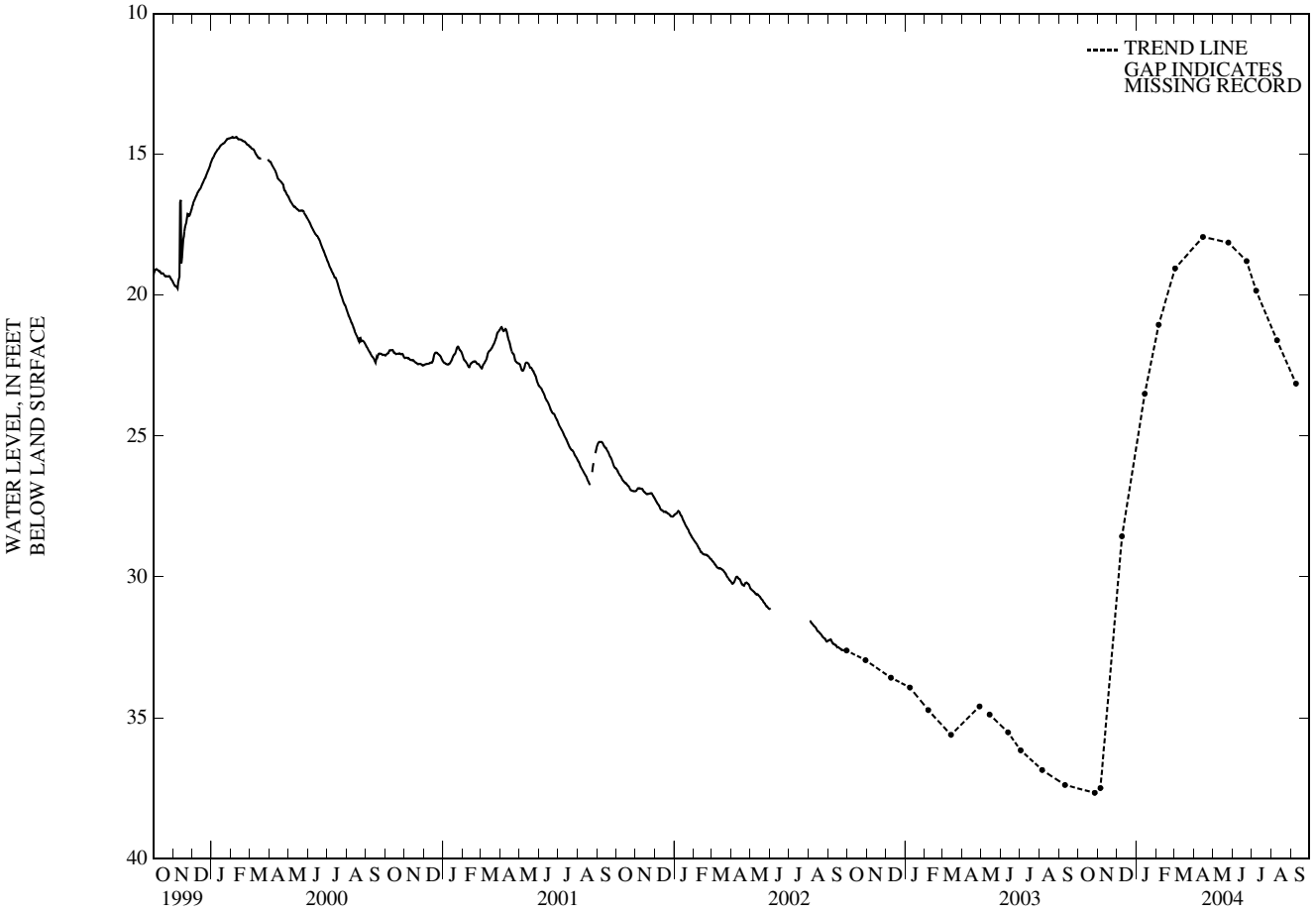
PERIOD OF RECORD.--April 2, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 6.14 ft (1.87 m), below land-surface datum, October 18, 1998; lowest water level measured, 37.37 ft (11.48 m), below land-surface datum, October 27, 2003.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	37.67	DEC 09	28.56	FEB 05	21.05	APR 15	17.93	JUN 23	18.79	AUG 10	21.60
NOV 05	37.50	JAN 14	23.50	MAR 02	19.05	MAY 25	18.13	JUL 08	19.84	SEP 09	23.14

WATER YEAR 2004 HIGHEST 17.93 APR 15, 2004 LOWEST 37.67 OCT 27, 2003



175809066133100. Local number, 1251.

LOCATION.--Lat 17°58'09", long 66°13'31", Hydrologic Unit 21010004, 0.49 mi southwest of the intersection of Hwy 706 with Hwy 3, 0.3 mi south of Hwy 3, and 0.12 mi east of Hwy 705, Name: Coqui 1 Btr Well, Salinas.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 18 in (0.46 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is 16.4 ft (5 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor, 1.33 ft (0.41 m), above land-surface datum.

REMARKS.--Recording observation well. Well is affected by nearby pumping. From October 1 2001 to February 12, 2002, tapedowns measurements only.

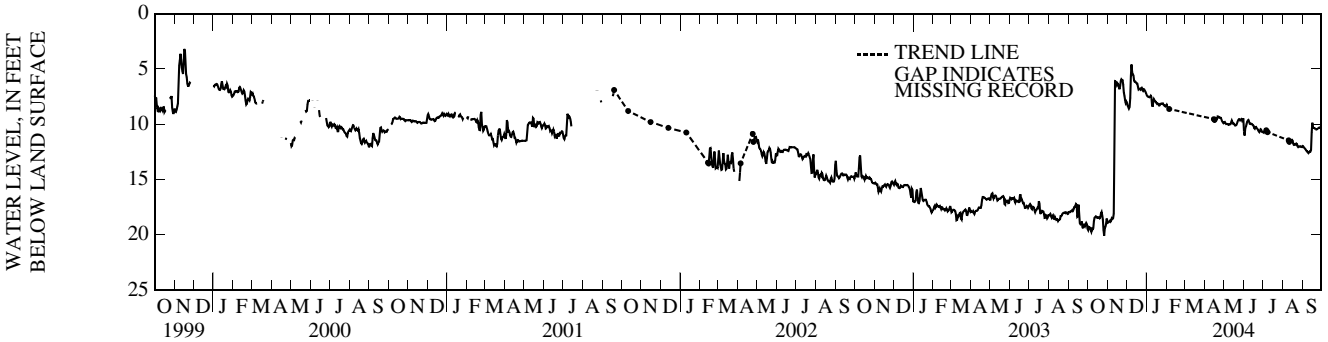
PERIOD OF RECORD.--March 6, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 1.04 ft (0.32 m), below land-surface datum, November 10, 1999; lowest water level recorded, 20.49 ft (6.24 m), below land-surface datum, October 26, 2003.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.80	18.92	7.83	7.31	8.23	---	---	9.90	9.72	10.66	---	12.03
2	19.33	18.89	8.33	7.46	8.22	---	---	9.78	11.59	10.79	---	11.93
3	19.27	18.85	8.37	7.48	8.62	---	---	9.82	10.44	10.76	---	12.10
4	19.41	18.78	8.53	7.55	8.65	---	---	10.02	10.30	10.49	---	12.12
5	19.30	18.70	8.66	7.52	8.59	---	---	9.94	10.14	10.46	---	12.21
6	19.86	18.92	8.25	7.59	---	---	---	9.98	9.81	10.52	---	12.26
7	19.58	18.42	6.98	7.42	---	---	---	9.98	9.71	10.58	---	12.38
8	19.33	18.60	4.28	7.40	---	---	---	10.07	9.60	---	---	12.46
9	19.71	18.57	4.92	7.66	---	---	---	10.03	9.62	---	---	12.40
10	19.12	18.43	5.62	8.70	---	---	---	10.02	9.91	---	---	12.71
11	18.44	17.76	5.29	8.14	---	---	---	9.99	10.00	---	11.57	12.51
12	18.45	5.79	5.86	7.73	---	---	---	9.99	9.95	---	11.62	12.52
13	18.34	6.45	6.22	7.75	---	---	---	9.68	9.95	---	11.64	12.42
14	18.34	5.82	6.10	7.95	---	---	---	9.63	9.99	---	11.53	12.55
15	18.45	6.64	6.19	7.96	---	---	---	9.99	10.08	---	11.41	12.13
16	18.49	6.26	6.30	7.97	---	---	9.64	9.91	10.05	---	11.42	9.38
17	18.45	6.36	6.27	8.18	---	---	9.58	9.95	10.22	---	11.55	10.36
18	18.39	6.51	6.37	8.15	---	---	9.43	10.10	10.49	---	11.89	10.29
19	18.45	6.80	6.82	8.11	---	---	9.53	10.11	10.35	---	11.79	10.37
20	18.55	6.86	6.88	8.26	---	---	9.63	10.12	10.17	---	11.82	10.31
21	18.27	6.20	6.72	8.34	---	---	9.33	10.04	10.31	---	11.86	10.42
22	17.89	5.96	6.87	8.22	---	---	9.26	9.89	10.42	---	11.79	10.46
23	18.02	5.91	6.85	8.10	---	---	9.38	9.68	10.44	---	11.70	10.48
24	18.47	6.09	6.66	8.18	---	---	9.41	9.59	10.52	---	11.89	10.46
25	18.81	5.93	6.75	8.13	---	---	9.40	9.51	10.77	---	12.11	10.40
26	20.36	6.92	7.08	8.12	---	---	9.41	9.60	10.66	---	12.06	10.36
27	19.81	7.33	6.89	8.10	---	---	9.45	9.72	10.52	---	12.01	10.31
28	19.07	7.57	6.77	8.35	---	---	9.72	9.47	10.39	---	11.99	10.29
29	19.52	8.09	6.96	8.25	---	---	9.78	9.60	10.60	---	12.00	10.40
30	18.50	8.06	7.01	8.36	---	---	9.91	9.72	10.75	---	12.01	10.33
31	18.58	---	7.13	8.41	---	---	---	9.34	---	---	12.10	---
MEAN	18.91	11.01	6.77	7.96	---	---	---	9.84	10.25	---	---	11.31

WTR YR 2004 MEAN 10.81 HIGHEST 3.69 DEC 08, 2003 LOWEST 20.49 OCT 26, 2003



RIO SALINAS TO RIO JACAGUAS BASINS

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	19.81	FEB 05	8.62	APR 15	9.54	MAY 04	10.03	JUL 08	10.72	AUG 10	11.56
DEC 08	4.40										

WATER YEAR 2004 HIGHEST 4.40 DEC 08, 2003 LOWEST 19.81 OCT 27, 2003

RIO SALINAS TO RIO JACAGUAS BASINS—Continued

180104066152300. Local number, 1253.

LOCATION.--Lat 18°01'04", long 66°15'23", Hydrologic Unit 21010004, 8 mi southeast of Coamo plaza, 1.07 mi northeast of Coco School, and 0.7 mi southwest of Sabana Llana School, Name: Piezometer RM 10, Salinas.

AQUIFER.--Quaternary alluvium.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 4 in (0.1 m), cased 4 in (0.1 m), 0-37 ft (0-11.3 m), screened 27-37 ft (8.23-11.3 m). Depth 37 ft (11.3 m).

DATUM.--Elevation of land-surface datum is about 164 ft (50 m), above mean sea level. Measuring point: Top of shelter floor, 3.62 ft (1.1 m), above land-surface datum.

REMARKS.--Observation well.

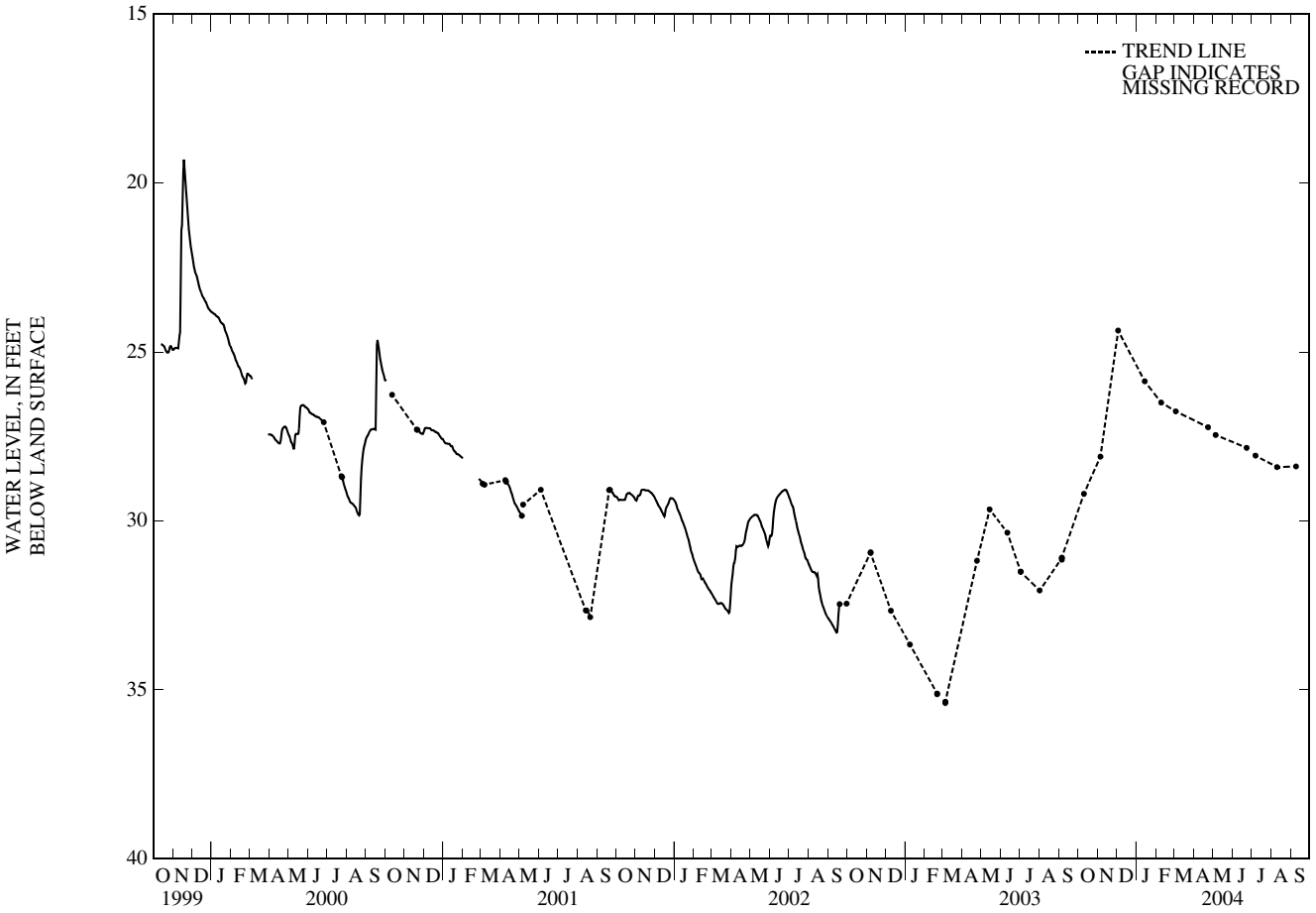
PERIOD OF RECORD.--March 13, 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 18 ft (5.49 m), below land-surface datum, November 9, 1990; lowest water level recorded, well dry from September 14 to October 5, 1994.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 10	29.20	DEC 03	24.37	FEB 09	26.50	APR 23	27.23	JUN 23	27.84	AUG 10	28.41
NOV 05	28.10	JAN 14	25.87	MAR 03	26.76	MAY 05	27.46	JUL 07	28.07	SEP 09	28.39

WATER YEAR 2004 HIGHEST 24.37 DEC 03, 2003 LOWEST 29.20 OCT 10, 2003



RIO SALINAS TO RIO JACAGUAS BASINS—Continued

175910066155500. Local number, 1254.

LOCATION.--Lat 17°59'10", long 66°15'55", Hydrologic Unit 21010004, 0.55 mi south of Hwy 52, 0.92 mi north of the Salinas Speedway, and 2.27 mi northeast of the intersection of Hwy 1 with Hwy 3, Name: Piezometer USGS D, Salinas.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), 0-86 ft (0-26.2 m). Depth 77 ft (23.5 m), sounded depth measured on October 6, 2004.

INSTRUMENTATION.--Pressure transducer with integrated electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 73 ft (22.3 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 3.4 ft (1.04 m), above land-surface datum.

REMARKS.--Recording observation well.

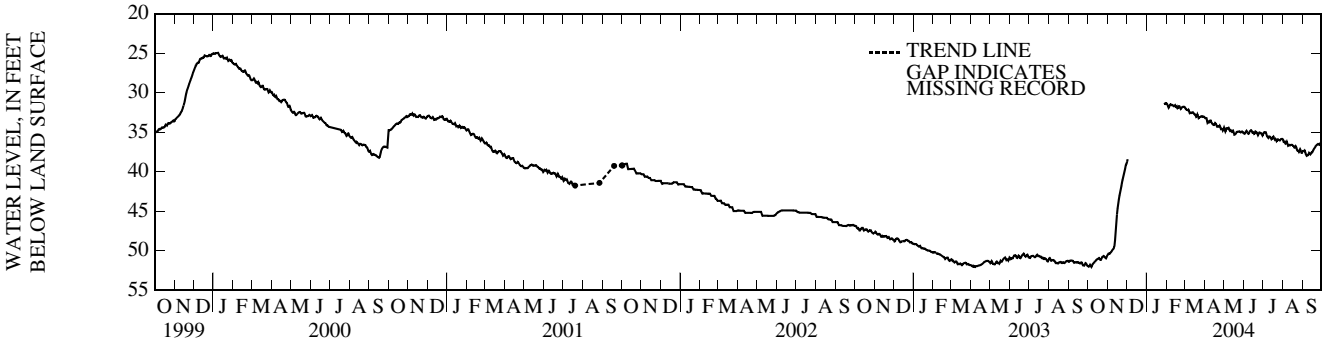
PERIOD OF RECORD.--February 19, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 19.7 ft (6 m), below land-surface datum, January 24, 25, 1999; lowest water level recorded, 52.19 ft (15.9 m) below land-surface datum, April 7, 2003.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51.94	50.55	39.10	---	31.30	31.81	33.18	34.41	34.98	35.43	35.85	37.49
2	52.02	50.44	38.39	---	31.47	31.98	33.25	34.42	35.34	35.09	36.03	37.29
3	52.07	50.35	38.45	---	31.50	32.20	33.19	34.90	35.09	35.03	36.44	37.46
4	51.83	50.48	---	---	31.87	32.12	33.27	34.96	35.02	34.99	36.14	37.32
5	51.80	50.29	---	---	31.92	32.26	33.79	34.53	34.86	35.01	36.32	37.30
6	52.09	50.27	---	---	31.64	32.19	33.78	34.49	34.82	35.00	36.61	37.75
7	52.08	50.10	---	---	31.52	32.09	33.57	34.60	35.24	35.45	36.20	37.92
8	51.78	50.00	---	---	31.44	32.59	33.96	34.45	35.07	35.57	36.26	38.03
9	51.70	49.88	---	---	31.61	32.63	33.55	34.45	35.38	35.68	36.68	37.78
10	51.58	49.78	---	---	31.54	32.53	33.53	34.93	34.94	35.79	36.76	38.07
11	51.52	49.68	---	---	31.56	32.53	33.52	34.72	34.86	35.31	36.56	37.63
12	51.40	49.26	---	---	31.73	32.60	33.96	34.76	34.78	35.79	36.71	37.66
13	51.33	48.14	---	---	31.73	32.49	33.81	35.05	34.74	35.54	36.68	37.82
14	51.22	46.93	---	---	31.57	32.49	34.19	34.89	34.90	35.87	36.62	37.83
15	51.12	45.86	---	---	31.58	32.68	33.97	34.78	35.17	35.92	36.60	37.51
16	51.10	45.02	---	---	32.03	32.73	34.22	34.81	35.01	35.72	36.61	37.66
17	51.04	44.33	---	---	31.64	32.72	33.82	35.29	35.06	35.53	36.72	37.45
18	50.99	43.78	---	---	31.83	32.94	33.86	35.33	35.41	35.59	36.77	37.34
19	50.93	43.26	---	---	32.14	33.19	33.98	35.24	34.94	36.03	36.77	37.14
20	51.18	42.82	---	---	31.72	32.76	34.22	35.18	34.90	35.90	37.12	36.99
21	51.19	42.40	---	---	31.72	32.75	34.35	35.00	35.06	35.78	36.74	36.89
22	51.17	42.00	---	---	31.71	33.20	34.15	34.95	35.04	36.08	36.84	36.78
23	50.86	41.61	---	---	32.10	33.27	34.39	34.93	35.37	36.23	37.02	36.68
24	50.80	41.24	---	---	32.04	33.08	34.22	34.94	35.41	35.87	37.46	36.59
25	50.73	40.86	---	---	31.89	33.06	34.13	34.90	35.04	35.95	37.26	36.54
26	50.64	40.54	---	---	31.85	33.06	34.56	34.89	35.05	36.00	37.48	36.46
27	50.81	40.13	---	---	31.81	32.94	34.67	35.04	35.09	36.04	37.54	36.68
28	50.86	39.87	---	31.65	31.76	33.03	34.48	35.06	35.17	36.06	37.13	36.54
29	51.02	39.43	---	31.30	31.82	33.07	34.72	34.92	35.11	35.91	37.23	36.39
30	50.99	39.02	---	31.50	---	33.07	34.88	34.94	35.42	35.86	37.45	36.30
31	50.68	---	---	31.36	---	33.02	---	35.12	---	35.86	37.74	---
MEAN	51.31	45.61	---	---	31.73	32.68	33.97	34.87	35.08	35.67	36.79	37.24

WTR YR 2004 MEAN 37.46 HIGHEST 31.21 FEB 02, 2004 LOWEST 52.09 OCT 06, 2003



RIO SALINAS TO RIO JACAGUAS BASINS—Continued

175848066170700. Local number, 1256.

LOCATION.--Lat 17°58'48", long 66°17'07", Hydrologic Unit 21010004, 0.2 mi north of Hwy 3, 0.7 mi south of the intersection of Hwy 1 with Hwy 52, and 1.4 mi northeast of Punta Salinas, Name: Piezometer G Well, Salinas.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), screened 157-167 ft (47.8-50.9 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 40 ft (12.1 m), above mean sea level, from topographic map. Measuring point: On top of shelter floor 3.63 ft (1.11 m), above land-surface datum.

REMARKS.--Recording observation well. Formely published as 175903066165000.

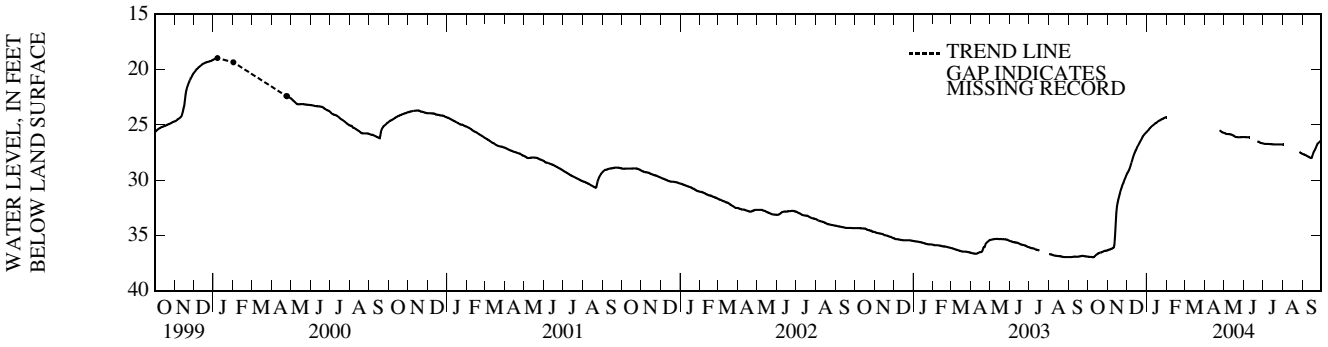
PERIOD OF RECORD.--September 25, 1991 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 16.46 ft (5.02 m), below land-surface datum, January 27, 28, 1999; lowest water level recorded, 36.97 ft (11.27 m), below land-surface datum, October 8-11, 2003.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36.92	36.36	29.50	25.65	24.30	---	---	25.71	26.10	26.67	26.77	27.62
2	36.93	36.33	29.37	25.61	24.30	---	---	25.73	26.10	26.68	26.78	27.65
3	36.94	36.29	29.26	25.51	24.30	---	---	25.74	26.10	26.70	26.78	27.65
4	36.95	36.27	29.18	25.46	---	---	---	25.81	26.11	26.71	26.79	27.68
5	36.94	36.26	29.05	25.40	---	---	---	25.82	26.11	26.72	---	27.72
6	36.94	36.25	28.90	25.32	---	---	---	25.82	26.12	26.72	---	27.73
7	36.94	36.19	28.72	25.24	---	---	---	25.82	26.12	26.72	---	27.77
8	36.96	36.18	28.51	25.19	---	---	---	25.83	26.12	26.71	---	27.81
9	36.97	36.16	28.32	25.13	---	---	---	25.83	26.12	26.72	---	27.84
10	36.97	36.12	28.15	25.10	---	---	---	25.84	26.13	26.72	---	27.86
11	36.93	36.06	27.94	25.04	---	---	---	25.85	26.13	26.73	---	27.89
12	36.87	35.66	27.76	25.00	---	---	---	25.86	---	26.73	---	27.94
13	36.82	34.41	27.59	24.93	---	---	---	25.87	---	26.74	---	27.97
14	36.78	33.32	27.48	24.90	---	---	---	25.93	---	26.74	---	27.99
15	36.73	32.57	27.33	24.86	---	---	---	25.93	---	26.75	---	28.00
16	36.67	32.22	27.23	24.83	---	---	---	25.96	---	26.75	---	27.95
17	36.62	31.89	27.07	24.78	---	---	---	25.99	---	26.76	---	27.73
18	36.63	31.66	26.93	24.73	---	---	---	26.05	---	26.76	---	27.58
19	36.59	31.43	26.85	24.68	---	---	---	26.08	---	26.76	---	27.41
20	36.56	31.21	26.73	24.64	---	---	---	26.09	---	26.76	---	27.32
21	36.54	31.01	26.65	24.62	---	---	---	26.10	---	26.76	---	27.22
22	36.54	30.82	26.51	24.59	---	---	---	26.11	26.49	26.77	---	27.10
23	36.52	30.66	26.42	24.56	---	---	---	26.11	26.50	26.77	---	26.95
24	36.49	30.49	26.29	24.51	---	---	25.47	26.11	26.53	26.77	---	26.78
25	36.46	30.37	26.23	24.49	---	---	25.52	26.11	26.54	26.77	---	26.69
26	36.43	30.23	26.06	24.45	---	---	25.55	26.11	26.59	26.77	---	26.64
27	36.40	30.07	26.00	24.43	---	---	25.61	26.11	26.62	26.77	27.44	26.58
28	36.39	29.90	25.91	24.41	---	---	25.66	26.11	26.64	26.77	27.46	26.52
29	36.38	29.80	25.85	24.38	---	---	25.68	26.10	26.64	26.77	27.53	26.45
30	36.37	29.63	25.77	24.33	---	---	25.70	26.10	26.66	26.77	27.55	26.41
31	36.37	---	25.70	24.31	---	---	---	26.10	---	26.77	27.59	---
MEAN	36.70	33.19	27.40	24.87	---	---	---	25.96	---	26.74	---	27.41

WTR YR 2004 MEAN 28.48 HIGHEST 24.30 FEB 01, 02, 03, 2004 LOWEST 36.97 OCT 08-11, 2003



RIO SALINAS TO RIO JACAGUAS BASINS—Continued

175943066224800. Local number 1257.

LOCATION.--Lat 17°59'43", long 66°22'48", Hydrologic Unit 2101004, 0.74 mi east of Hwy 153, 1.45 mi northeast of Estación Santa Isabel, and 1.98 mi north of Hwy 1, Name: Paso Seco 7 Well, Santa Isabel.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter is 15 in (0.38 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 89 ft (27.1 m) above mean sea level, from topographic map. Measuring point: Hole in horizontal steel plate, 0.8 ft (0.24 m) above land-surface datum.

REMARKS.--Recording observation well. Water levels affected by nearby pumping wells. For water years 2001 and 2002, tapedowns measurements only.

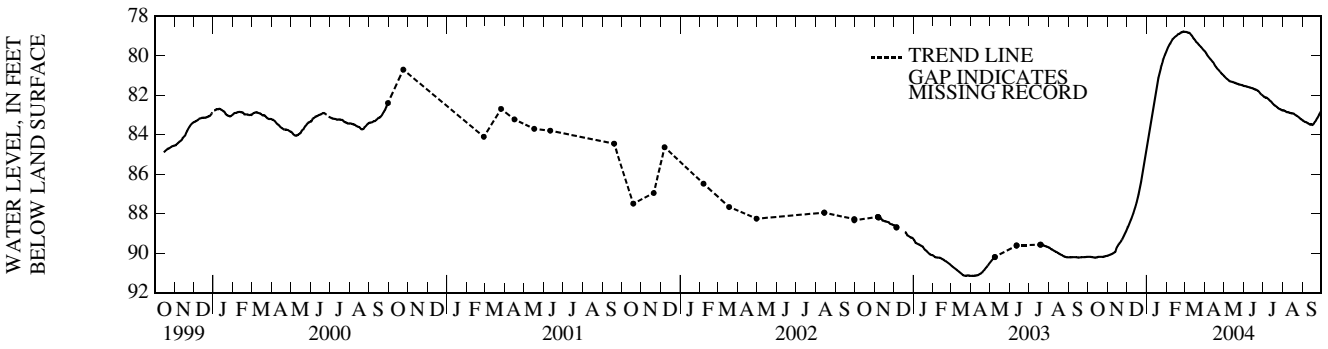
PERIOD OF RECORD.--March 27, 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 78.73 ft (23.99 m) below land-surface datum, February 28, 2004; lowest water level recorded, 104.4 ft (31.8 m) below land-surface datum, September 12, 1994.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90.18	90.13	88.82	84.74	79.78	78.78	79.76	81.00	81.51	82.02	82.77	83.27
2	90.18	90.12	88.74	84.52	79.70	78.78	79.80	81.04	81.53	82.05	82.74	83.28
3	90.18	90.10	88.68	84.29	79.62	78.78	79.85	81.08	81.53	82.08	82.77	83.30
4	90.18	90.09	88.60	84.06	79.54	78.80	79.91	81.11	81.54	82.09	82.78	83.33
5	90.18	90.08	88.52	83.85	79.49	78.82	79.97	81.15	81.54	82.12	82.81	83.35
6	90.19	90.06	88.44	83.62	79.42	78.82	80.00	81.17	81.55	82.12	82.82	83.35
7	90.19	90.05	88.35	83.40	79.37	78.83	80.04	81.20	81.57	82.11	82.84	83.36
8	90.20	90.04	88.29	83.18	79.32	78.83	80.08	81.22	81.58	82.15	82.86	83.38
9	90.20	90.02	88.20	82.97	79.25	78.87	80.13	81.25	81.58	82.18	82.85	83.40
10	90.21	90.00	88.11	82.75	79.20	78.91	80.16	81.29	81.59	82.20	82.86	83.42
11	90.22	89.98	88.02	82.57	79.15	78.94	80.19	81.29	81.61	82.22	82.88	83.44
12	90.22	89.95	87.93	82.38	79.11	78.98	80.24	81.30	81.62	82.28	82.88	83.46
13	90.22	89.94	87.82	82.18	79.09	79.04	80.28	81.31	81.62	82.29	82.91	83.49
14	90.21	89.85	87.72	81.99	79.05	79.10	80.31	81.31	81.63	82.31	82.90	83.48
15	90.22	89.72	87.61	81.82	79.04	79.13	80.36	81.33	81.64	82.36	82.91	83.44
16	90.21	89.67	87.50	81.65	79.00	79.17	80.42	81.34	81.66	82.40	82.92	83.51
17	90.19	89.61	87.37	81.50	78.99	79.21	80.49	81.35	81.67	82.43	82.91	83.49
18	90.18	89.57	87.23	81.34	78.93	79.27	80.53	81.35	81.70	82.47	82.92	83.48
19	90.18	89.53	87.09	81.19	78.92	79.31	80.56	81.38	81.70	82.50	82.94	83.42
20	90.18	89.48	86.95	81.05	78.89	79.33	80.62	81.39	81.71	82.52	82.97	83.38
21	90.18	89.44	86.79	80.92	78.89	79.36	80.66	81.40	81.73	82.54	83.00	83.33
22	90.18	89.39	86.62	80.79	78.87	79.41	80.69	81.42	81.74	82.57	83.01	83.28
23	90.18	89.34	86.47	80.67	78.82	79.45	80.72	81.42	81.77	82.59	83.03	83.23
24	90.19	89.28	86.29	80.55	78.81	79.48	80.75	81.45	81.78	82.62	83.05	83.16
25	90.19	89.23	86.11	80.44	78.80	79.52	80.80	81.45	81.82	82.67	83.08	83.12
26	90.17	89.17	85.94	80.33	78.81	79.54	80.83	81.45	81.86	82.67	83.10	83.06
27	90.16	89.10	85.73	80.20	78.78	79.58	80.87	81.46	81.90	82.69	83.12	83.01
28	90.16	89.03	85.53	80.11	78.76	79.62	80.92	81.47	81.94	82.70	83.16	82.93
29	90.15	88.97	85.33	80.02	78.79	79.66	80.94	81.48	81.96	82.71	83.19	82.87
30	90.14	88.90	85.16	79.93	---	79.71	80.97	81.49	81.99	82.74	83.21	82.81
31	90.13	---	84.94	79.86	---	79.73	---	81.50	---	82.76	83.22	---
MEAN	90.19	89.66	87.25	81.90	79.11	79.19	80.39	81.32	81.69	82.39	82.95	83.29

WTR YR 2004 MEAN 83.30 HIGHEST 78.73 FEB 28, 2004 LOWEST 90.24 OCT 10, 2003



RIO SALINAS TO RIO JACAGUAS BASINS—Continued

175829066232200. Local number, 87.

LOCATION.--Lat 17°58'29", long 66°23'22", Hydrologic Unit 21010004, 1.1 mi northeast of Santa Isabel plaza, 3.69 mi southeast of Playita Cortada School, and 1.07 mi southeast of Estación Experimental Santa Isabel, Name: Alomar 1 Well, Santa Isabel.

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 20 in (0.51 m), iron cased. Depth 105 ft (32 m), sounded depth measured on October 6, 2004.

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 39.4 ft (12 m), above mean sea level. Measuring point: Bottom of clean-out shelter door, 2.5 ft (0.76 m), above land-surface datum. Prior to August 1981, top of recorder shelter floor, 4 ft (1.22 m), above land-surface datum.

REMARKS.--Recording observation well. Water level affected by nearby pumping wells.

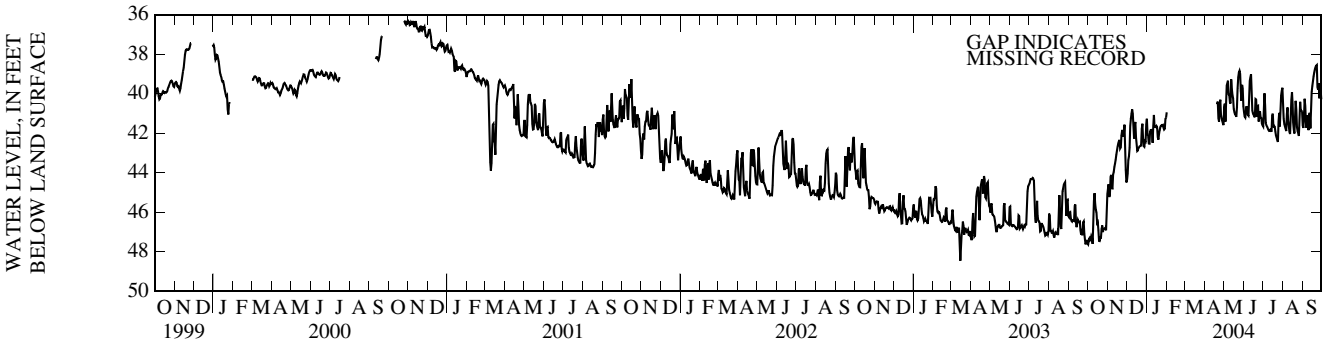
PERIOD OF RECORD.--April 1967 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 8.45 ft (2.58 m), below land-surface datum, December 10, 1970; lowest water level recorded, 49.18 ft (14.99 m) below land-surface datum, July 27, 1974.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47.78	45.02	44.68	40.61	41.66	---	---	41.60	40.73	41.62	39.60	41.59
2	47.49	44.61	44.09	41.93	40.24	---	---	39.78	41.12	41.72	41.16	41.63
3	47.35	44.56	44.01	42.10	---	---	---	41.24	41.20	40.21	41.38	41.83
4	47.32	45.91	42.74	42.19	---	---	---	41.59	41.21	39.75	41.69	40.58
5	47.54	44.29	43.62	42.85	---	---	---	39.75	40.51	41.40	41.64	39.93
6	47.26	44.18	41.86	42.20	---	---	---	39.42	40.77	41.57	41.90	41.32
7	47.16	44.05	41.41	41.66	---	---	---	39.51	41.04	41.61	41.90	41.63
8	47.42	45.53	41.14	42.03	---	---	---	39.17	41.11	41.72	40.16	41.83
9	47.80	44.07	40.89	41.65	---	---	---	40.88	41.12	41.73	41.23	40.46
10	45.69	44.12	40.72	42.15	---	---	---	39.32	39.50	41.93	41.56	41.81
11	45.18	43.81	41.32	42.82	---	---	---	41.55	39.22	41.84	41.72	41.89
12	44.90	43.62	42.05	40.46	---	---	---	39.46	39.13	41.91	42.13	40.26
13	46.28	43.47	42.49	41.69	---	---	---	39.10	38.90	41.74	41.96	41.69
14	45.47	43.22	40.74	41.66	---	---	---	40.40	40.76	41.98	40.60	41.83
15	46.60	42.98	42.12	41.70	---	---	---	39.75	40.94	41.88	40.02	40.08
16	46.50	42.79	42.31	41.68	---	---	---	40.73	41.05	40.35	39.81	39.74
17	46.51	42.59	42.81	41.59	---	---	---	40.81	41.07	41.67	41.31	39.50
18	47.32	42.46	42.99	41.83	---	---	---	41.06	41.24	41.77	41.58	39.24
19	47.60	42.38	42.75	42.57	---	---	---	41.03	41.06	41.49	42.03	39.01
20	47.34	42.30	42.78	42.08	---	---	41.33	41.11	39.49	41.85	42.00	38.84
21	47.25	43.26	42.64	42.01	---	---	39.73	41.24	41.12	41.99	40.61	38.70
22	47.34	42.17	42.69	41.69	---	---	41.08	40.13	41.25	42.26	40.11	38.64
23	46.38	42.07	42.57	41.71	---	---	41.41	39.31	40.01	42.18	41.53	38.52
24	46.98	41.83	42.68	41.55	---	---	41.43	39.03	41.22	42.50	41.85	38.58
25	47.04	41.85	40.91	41.64	---	---	39.62	38.84	41.60	42.40	41.94	40.73
26	46.69	42.50	42.14	41.59	---	---	41.00	38.86	40.37	40.41	42.03	38.86
27	46.99	41.64	42.35	41.59	---	---	41.14	39.15	41.41	41.54	42.25	40.08
28	46.71	41.51	42.97	41.86	---	---	41.36	40.55	41.04	41.79	40.66	40.38
29	46.89	43.40	42.41	41.78	---	---	41.39	40.17	41.42	40.27	40.16	39.34
30	46.95	44.32	42.39	41.78	---	---	41.59	38.93	41.61	39.93	41.53	40.24
31	45.16	---	42.48	40.77	---	---	---	40.55	---	39.79	40.20	---
MEAN	46.80	43.35	42.38	41.79	---	---	---	40.13	40.74	41.45	41.23	40.29

WTR YR 2004 MEAN 41.98 HIGHEST 38.49 SEPT 23, 2004 LOWEST 48.01 OCT 1, 2, 2003



RIO SALINAS TO RIO JACAGUAS BASINS—Continued

180020066261500. Local number, 1258.

LOCATION.--Lat 18°00'20", long 66°26'15", Hydrologic Unit 21010004, 1.04 mi north of the intersection of Hwy 536 with Hwy 1, 0.6 mi northwest of Central Cortada, and 0.1 mi west of Hwy 536, Name: Cabrera 1 Well, Juana Díaz.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 18 in (0.46 m). Sounced depth 71 ft (21.6 m), measured on October 2, 2002.

DATUM.--Elevation of land-surface datum is about 65.6 ft (20 m), above mean sea level, from topographic map. Measuring point: Hole in horizontal plexiglass plate, 3.14 ft (0.95 m), above land-surface datum. Prior to October 4, 1999, 3.12 ft (0.95 m), above land-surface datum.

REMARKS.--Observation well. Well level affected by nearby pumping well.

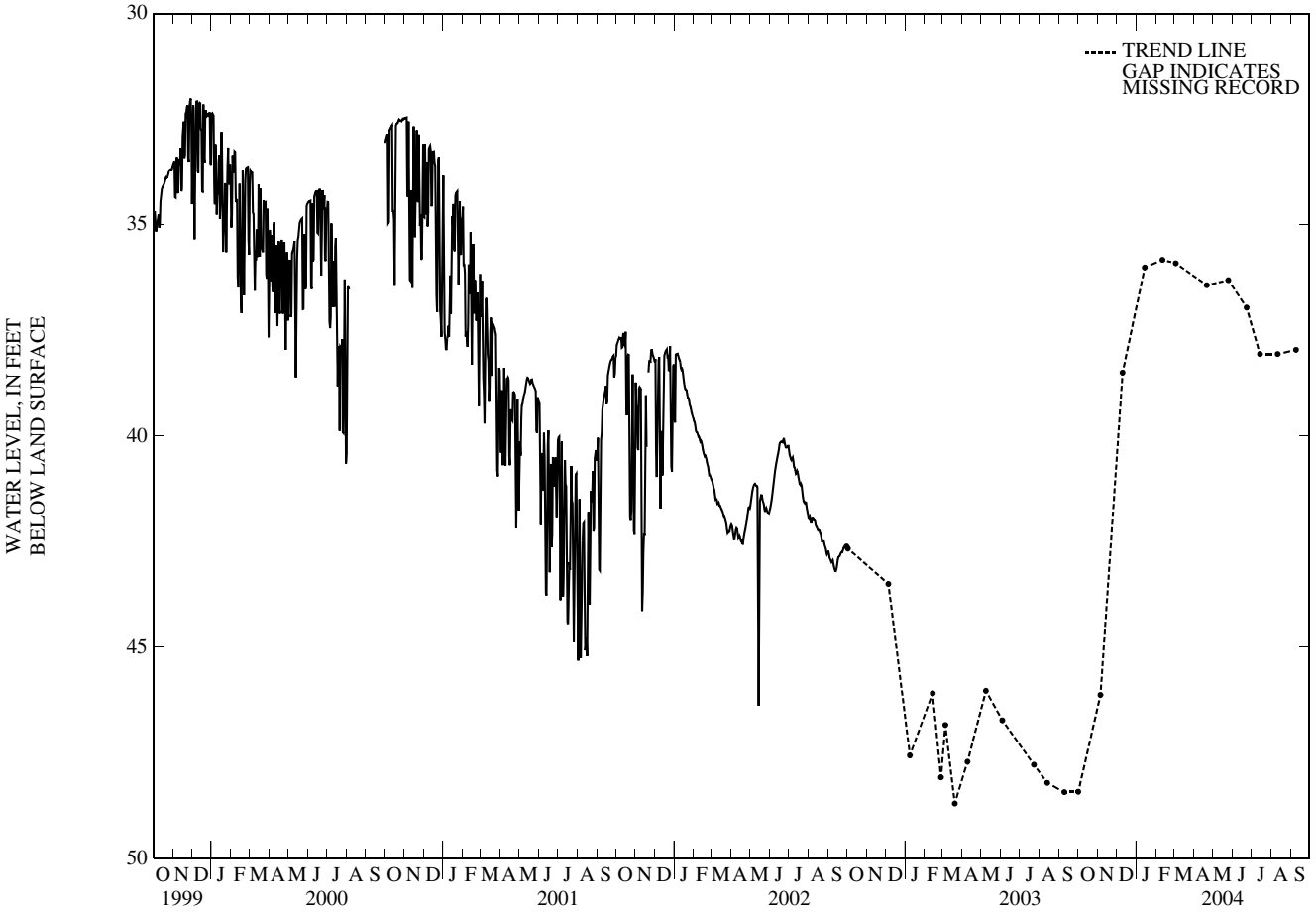
PERIOD OF RECORD.--March 18, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 31.93 ft (9.73 m), below land-surface datum, December 1, 1999; lowest water level recorded, 55 ft (16.8 m), below land-surface datum, April 14, 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	48.42	DEC 10	38.50	FEB 11	35.83	APR 21	36.43	JUN 23	36.96	AUG 11	38.06
NOV 05	46.13	JAN 14	36.01	MAR 03	35.91	MAY 25	36.31	JUL 14	38.06	SEP 09	37.96

WATER YEAR 2004 HIGHEST 35.83 FEB 11, 2004 LOWEST 48.42 OCT 01, 2003



RIO SALINAS TO RIO JACAGUAS BASINS—Continued

180602066133100. Local number, 1260.

LOCATION.--Lat 18°06'02", long 66°13'31", Hydrologic Unit 21010004, 130 ft (39.62 m) north of Hwy 1 km 68.9, 0.1 mi east of Hwy 162, and 4 mi west southwest of Cayey plaza, Name: Bauzá 1 Well, Aibonito.

AQUIFER.--Fractured rock volcanics.

WELL CHARACTERISTICS.--Unused production well, diameter 10 in (0.25 m), open screen 220-320 ft (67.1-97.5 m). Depth 320 ft (97.5 m).

DATUM.--Elevation of land-surface datum is about 2,178 ft (664 m), above mean sea level, from topographic map. Measuring point: Top of access hole, 0.49 ft (0.15 m), above land-surface datum.

REMARKS.--Observation well.

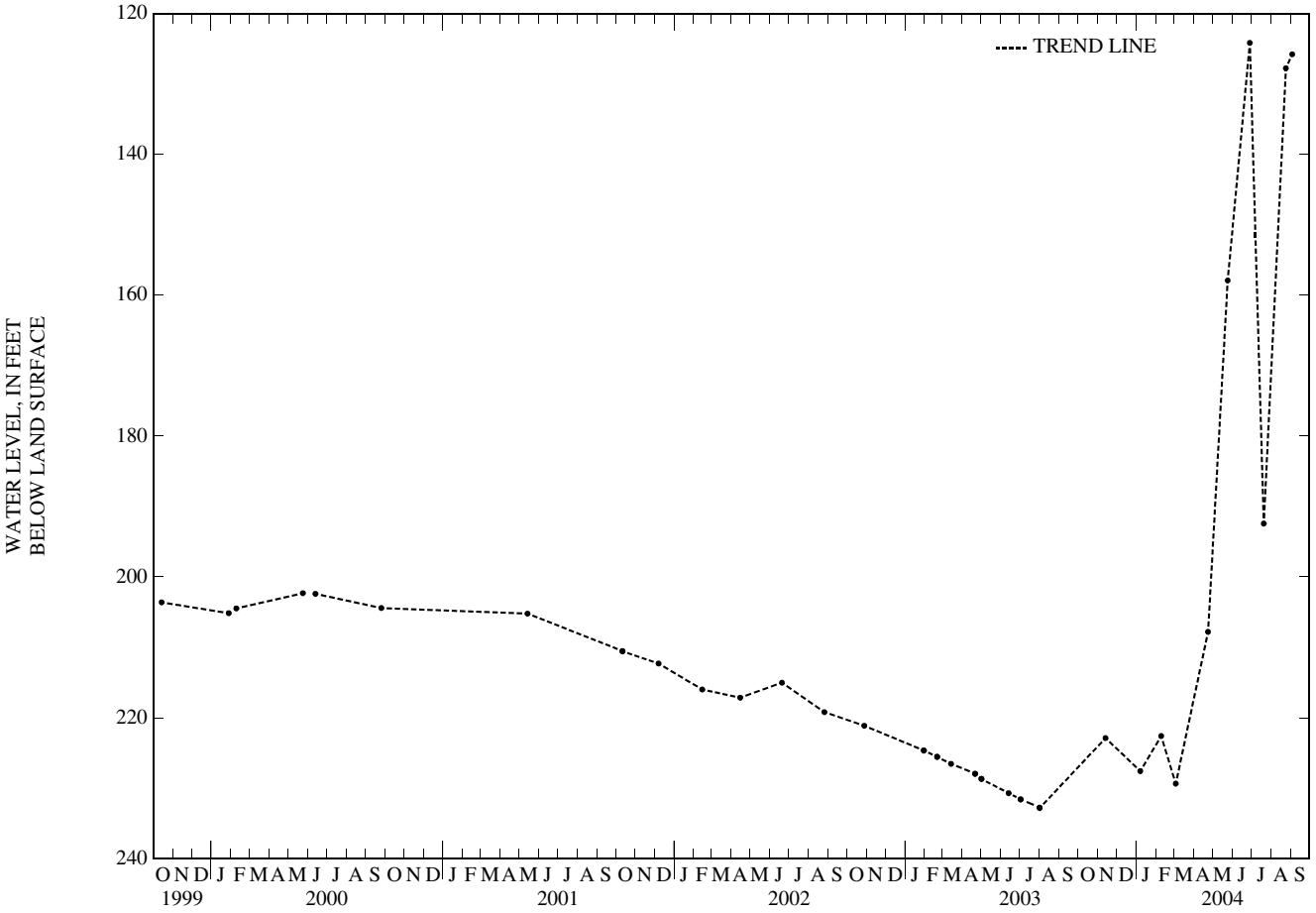
PERIOD OF RECORD.--October 20, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 124.16 ft (37.84 m), below land-surface datum, June 28, 2004; lowest water level measured, 232.84 ft (70.1 m), below land-surface datum, August 1, 2003.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	222.90	FEB 09	222.60	APR 23	207.82	JUN 28	124.16	AUG 24	127.77	SEP 03	125.78
JAN 07	227.59	MAR 03	229.37	MAY 24	157.90	JUL 20	192.44				

WATER YEAR 2004 HIGHEST 124.16 JUN 28, 2004 LOWEST 229.37 MAR 03, 2004



RIO SALINAS TO RIO JACAGUAS BASINS—Continued

175833066145800. Local number, 1261.

LOCATION.--Lat 17°58'33", long 66°14'58", Hydrologic Unit 21010004, 0.3 mi north of Hwy 3, 1.3 mi west of Colegio del Perpetuo Socorro, and 2.2 mi northwest of Central Aguirre, Name: Piezometer A RASA, Salinas.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), cased 0-154 ft (0-46.94 m).

INTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 90 ft (27.4 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor 3.83 ft (1.17 m), above land-surface datum.

REMARKS.--Recording observation well. Well was dry from May 18, 1994 to November 6, 1995.

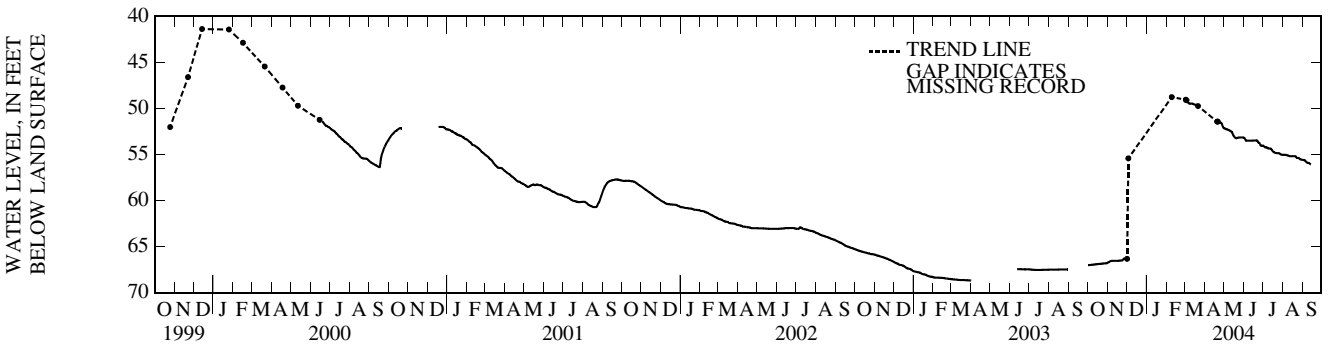
PERIOD OF RECORD.--September 17, 1992 to May 17, 1994, January 15, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.75 ft (11.2 m), below land-surface datum, January 20, 1999; lowest water level recorded, 70.28 ft (21.42 m), below land-surface datum, October 1-7, 1995.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67.02	66.76	66.33	---	---	---	---	52.16	53.16	54.04	55.03	55.56
2	67.01	66.68	66.33	---	---	---	---	52.16	53.19	54.03	55.02	55.58
3	67.00	66.68	---	---	---	49.08	---	52.16	53.26	54.12	55.02	55.60
4	66.99	66.67	---	---	---	49.12	---	52.25	53.47	54.22	55.02	55.62
5	66.99	66.60	---	---	---	49.29	---	52.25	53.50	54.22	55.03	55.62
6	66.98	66.56	---	---	---	49.39	---	52.25	53.50	54.21	55.03	55.72
7	66.97	66.54	---	---	---	49.43	---	52.26	53.49	54.21	55.06	55.80
8	66.96	66.55	---	---	---	49.48	---	52.35	53.50	54.27	55.08	55.86
9	66.95	66.54	---	---	---	49.46	---	52.35	53.50	54.34	55.10	55.91
10	66.95	66.54	---	---	---	49.46	---	52.37	53.50	54.34	55.10	55.91
11	66.94	66.53	---	---	---	49.46	---	52.43	53.49	54.34	55.17	55.91
12	66.93	66.54	---	---	---	49.46	---	52.50	53.49	54.34	55.18	55.95
13	66.92	66.54	---	---	---	49.47	---	52.50	53.49	54.35	55.18	56.02
14	66.91	66.54	---	---	---	49.52	---	52.57	53.49	54.37	55.18	56.06
15	66.91	66.54	---	---	---	49.54	---	52.78	53.48	54.52	55.18	56.06
16	66.90	66.54	---	---	---	49.58	---	52.93	53.48	54.59	55.18	---
17	66.89	66.54	---	---	---	49.57	---	53.04	53.48	54.70	55.18	---
18	66.88	66.54	---	---	---	49.64	---	53.11	53.47	54.74	55.18	---
19	66.87	66.52	---	---	---	49.69	---	53.20	53.47	54.74	55.18	---
20	66.87	66.51	---	---	---	49.69	---	53.24	53.47	54.81	55.18	---
21	66.86	66.50	---	---	---	49.71	51.43	53.23	53.47	54.85	55.18	---
22	66.85	66.51	---	---	---	49.76	51.42	53.19	53.46	54.85	55.21	---
23	66.84	66.51	---	---	---	---	51.42	53.16	53.57	54.85	55.35	---
24	66.83	66.50	---	---	---	---	51.44	53.15	53.74	54.85	55.37	---
25	66.83	66.49	---	---	---	---	51.54	53.15	53.73	54.85	55.37	---
26	66.82	66.32	---	---	---	---	51.54	53.15	53.73	54.86	55.37	---
27	66.81	66.32	---	---	---	---	51.56	53.15	53.98	54.87	55.41	---
28	66.81	66.33	---	---	---	---	51.65	53.14	54.05	54.93	55.51	---
29	66.81	66.33	---	---	---	---	51.88	53.14	54.04	55.00	55.55	---
30	66.80	66.33	---	---	---	---	52.03	53.14	54.04	55.00	55.55	---
31	66.79	---	---	---	---	---	---	53.14	---	55.03	55.55	---
MEAN	66.90	66.52	---	---	---	---	---	52.76	53.56	54.56	55.22	---

WTR YR 2004 MEAN 57.10 HIGHEST 49.09 MAR 02, 2004 LOWEST 67.02 OCT 1, 2003



RIO SALINAS TO RIO JACAGUAS BASINS—Continued

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	66.81	FEB 09	48.76	APR 20	51.43	MAY 03	52.15	JUL 07	54.21	AUG 26	55.37
DEC 03	55.42	MAR 02	49.05								

WATER YEAR 2004 HIGHEST 48.76 FEB 09, 2004 LOWEST 66.81 OCT 27, 2003

RIO SALINAS TO RIO JACAGUAS BASINS—Continued

175735066151800. Local number, 1262.

LOCATION.--Lat 17°57'35", long 66°15'18", Hydrologic Unit 21010004, 1 mi southeast of Salinas Speedway, 1.3 mi northeast of dock at Las Mareas, and 3.1 mi southeast of Salinas plaza, Name: Piezometer C RASA, Salinas.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m), screen cased 22-82 ft (6.7-24.99 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 14.8 ft (4.51 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor, 4.15 in (0.1 m), above land-surface datum.

REMARKS.--Recording observation well. Well is affected by nearby pumping.

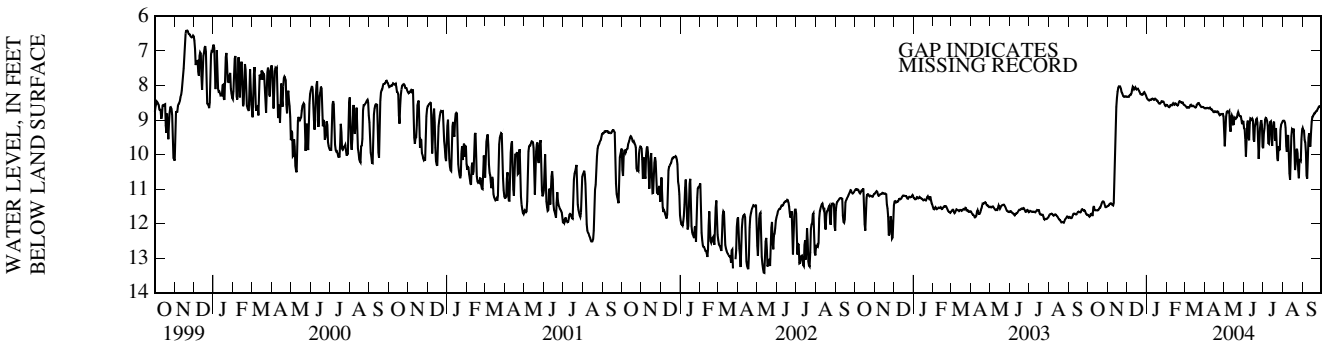
PERIOD OF RECORD.--September 24, 1991 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.36 ft (1.94 m), below land-surface datum, November 22, 1999; lowest water level recorded, 14.58 ft (4.44 m), below land-surface datum, June 25, 1998.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.73	11.49	8.33	8.33	8.56	8.59	8.66	8.96	9.09	10.28	9.04	9.23
2	11.77	11.49	8.33	8.40	8.57	8.58	8.66	9.86	9.36	9.35	9.01	9.24
3	11.79	11.47	8.33	8.40	8.58	8.63	8.66	9.66	9.15	9.44	9.03	9.38
4	11.81	11.43	8.33	8.42	8.61	8.65	8.66	9.01	9.98	9.05	9.02	9.24
5	11.73	11.43	8.33	8.44	8.63	8.64	8.64	8.81	10.13	8.93	9.11	9.92
6	11.73	11.40	8.25	8.43	8.63	8.62	8.66	8.74	9.24	8.95	9.34	9.38
7	11.71	11.43	8.29	8.39	8.59	8.65	8.66	8.76	9.03	8.96	10.17	10.48
8	11.80	11.46	8.25	8.42	8.54	8.64	8.66	8.79	9.01	9.06	9.67	10.74
9	11.71	11.46	8.20	8.40	8.59	8.60	8.63	8.75	9.96	9.26	9.33	10.65
10	11.39	11.49	8.03	8.39	8.56	8.54	8.65	8.73	9.22	10.08	9.54	9.66
11	11.60	11.31	8.04	8.38	8.52	8.58	8.72	9.67	8.98	9.30	10.35	9.39
12	11.62	9.96	8.09	8.41	8.52	8.61	8.67	9.01	8.93	9.06	10.74	9.38
13	11.61	9.31	8.13	8.42	8.58	8.59	8.72	8.87	9.01	9.05	10.72	10.03
14	11.62	8.77	8.04	8.39	8.54	8.59	8.74	8.85	8.97	9.02	9.62	9.51
15	11.61	8.47	8.06	8.38	8.50	8.60	8.79	8.98	8.95	10.08	9.32	9.20
16	11.62	8.24	8.12	8.42	8.55	8.62	8.76	9.27	9.06	9.42	9.22	8.92
17	11.62	8.12	8.12	8.44	8.56	8.64	8.75	8.97	10.06	9.11	9.37	8.90
18	11.60	8.03	8.09	8.43	8.56	8.64	8.78	8.90	9.19	9.07	9.27	8.90
19	11.54	8.02	8.10	8.47	8.60	8.60	8.73	9.03	9.18	9.02	9.23	8.81
20	11.55	8.03	8.16	8.52	8.52	8.55	8.78	8.91	9.03	10.02	10.25	8.81
21	11.52	8.02	8.16	8.52	8.47	8.52	8.77	8.93	8.94	9.18	10.65	8.81
22	11.46	8.14	8.24	8.51	8.45	8.51	8.74	8.91	8.99	9.28	9.90	8.74
23	11.40	8.21	8.26	8.54	8.48	8.51	8.81	8.74	9.16	9.92	9.88	8.76
24	11.36	8.21	8.26	8.46	8.49	8.58	8.86	8.80	10.22	10.28	9.79	8.72
25	11.36	8.28	8.26	8.46	8.51	8.57	8.87	8.86	10.03	10.09	10.15	8.69
26	11.37	8.33	8.28	8.46	8.47	8.62	8.83	8.90	9.30	9.42	10.77	8.64
27	11.41	8.32	8.24	8.47	8.51	8.63	8.83	8.89	9.17	10.32	10.60	8.61
28	11.50	8.32	8.18	8.47	8.57	8.62	8.84	8.90	8.98	9.39	9.71	8.59
29	11.54	8.32	8.21	8.55	8.55	8.62	8.81	9.07	9.03	9.18	10.59	8.61
30	11.51	8.31	8.25	8.58	---	8.63	8.84	9.17	9.26	9.11	9.76	8.62
31	11.51	---	8.27	8.61	---	8.65	---	8.96	---	9.08	9.35	---
MEAN	11.58	9.51	8.20	8.45	8.55	8.60	8.74	8.99	9.29	9.41	9.76	9.22

WTR YR 2004 MEAN 9.19 HIGHEST 7.91 DEC 10, 2003 LOWEST 11.84 OCT 4, 2003



RIO SALINAS TO RIO JACAGUAS BASINS—Continued

175734066233300. Local number, 146.

LOCATION.--Lat 17°58'43", long 66°24'43", Hydrologic Unit 21010004, 1 mi southeast of Santa Isabel plaza, 0.5 mi south of airport, 1.1 mi northeast of dock at Santa Isabel, Name: Pozo PRASA Alomar Oeste Well, Santa Isabel.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water table well, diameter 8 in (0.2 m). Constructed depth 70 ft (21.3 m).

INSTRUMENTATION.--Electronic water-level logger--60-minutes interval.

DATUM.--Elevation of land surface is about 17.4 ft (5.3 m) above mean sea level from topographic map. Measuring point: hole in side of steel casing, 2.19 ft (0.67 m) above land-surface datum.

REMARKS.--Recording observation well.

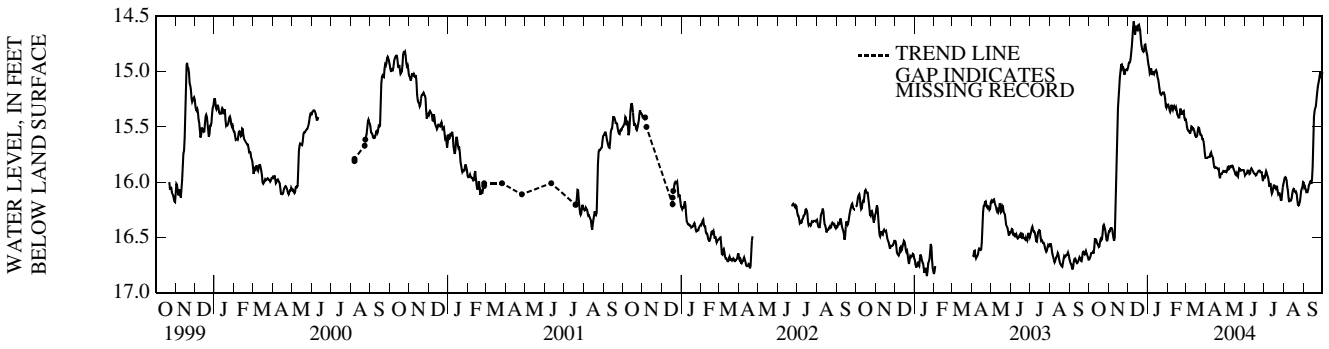
PERIOD OF RECORD.--June 1981 to March 1985, discontinued, September 27, 1991 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 7.43 ft (2.26 m), below land-surface datum, October 18, 1984; lowest water level recorded, 19.75 ft (6.02 m) below land-surface datum, December 17, 1997.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.71	16.44	15.00	14.86	15.29	15.45	15.78	15.90	15.93	15.94	16.00	15.96
2	16.69	16.45	14.93	14.94	15.32	15.45	15.78	15.90	15.95	15.96	15.98	16.05
3	16.69	16.44	14.93	14.94	15.28	15.54	15.78	15.91	15.91	15.95	15.94	16.05
4	16.66	16.40	14.90	15.00	15.36	15.51	15.78	15.91	15.94	15.90	15.97	16.03
5	16.63	16.43	14.93	15.04	15.34	15.56	15.77	15.88	15.90	15.90	15.95	16.09
6	16.65	16.40	14.84	14.98	15.39	15.52	15.77	15.85	15.89	15.93	16.01	16.09
7	16.63	16.45	14.81	14.96	15.30	15.56	15.77	15.87	15.90	15.96	16.07	16.09
8	16.63	16.49	14.72	15.04	15.30	15.56	15.77	15.89	15.91	15.95	16.08	16.09
9	16.66	16.52	14.65	15.02	15.36	15.51	15.71	15.86	15.94	16.03	16.20	16.05
10	16.52	16.54	14.54	14.99	15.33	15.48	15.75	15.85	15.90	16.05	16.16	16.01
11	16.51	16.46	14.55	15.02	15.31	15.52	15.77	15.86	15.87	15.98	16.16	16.03
12	16.52	16.26	14.66	15.02	15.31	15.52	15.76	15.86	15.88	16.05	16.17	15.96
13	16.52	16.04	14.67	14.98	15.35	15.51	15.80	15.84	15.89	16.10	16.16	16.02
14	16.57	15.64	14.57	15.00	15.33	15.54	15.86	15.87	15.90	16.11	16.12	16.01
15	16.55	15.38	14.60	14.97	15.32	15.56	15.87	15.89	15.91	16.07	16.08	15.93
16	16.58	15.28	14.64	15.04	15.38	15.60	15.87	15.89	15.93	16.04	16.06	15.78
17	16.59	15.16	14.61	15.06	15.40	15.58	15.86	15.92	15.92	16.02	16.06	15.45
18	16.57	15.09	14.55	15.07	15.40	15.60	15.88	15.94	15.93	16.04	16.07	15.37
19	16.51	15.01	14.60	15.14	15.43	15.56	15.86	15.93	15.95	16.06	16.10	15.34
20	16.52	14.98	14.60	15.16	15.40	15.51	15.89	15.91	15.92	16.06	16.08	15.33
21	16.53	14.90	14.66	15.21	15.36	15.50	15.88	15.97	15.92	16.02	16.09	15.29
22	16.50	14.97	14.76	15.20	15.31	15.52	15.88	15.93	15.90	16.06	16.12	15.22
23	16.43	14.97	14.77	15.22	15.42	15.56	16.00	15.88	15.90	16.10	16.20	15.16
24	16.36	14.95	14.82	15.18	15.36	15.58	15.93	15.87	15.89	16.12	16.21	15.12
25	16.41	14.99	14.80	15.20	15.38	15.56	15.92	15.89	15.90	16.08	16.21	15.09
26	16.40	15.05	14.84	15.19	15.34	15.60	15.93	15.90	15.92	16.12	16.19	15.06
27	16.46	14.99	14.78	15.19	15.37	15.62	15.92	15.89	15.90	16.14	16.17	15.01
28	16.48	14.98	14.74	15.22	15.46	15.60	15.90	15.89	15.92	16.18	16.09	15.00
29	16.55	14.99	14.77	15.28	15.41	15.66	15.90	15.89	15.98	16.14	16.07	15.06
30	16.52	14.97	14.81	15.34	---	15.70	15.91	15.89	16.00	16.07	16.05	15.06
31	16.50	---	14.84	15.31	---	15.78	---	15.89	---	16.03	16.04	---
MEAN	16.55	15.65	14.74	15.09	15.36	15.56	15.84	15.89	15.92	16.04	16.09	15.63

WTR YR 2004 MEAN 15.70 HIGHEST 14.46 DEC 10, 2003 LOWEST 16.71 OCT 1, 2003



RIO SALINAS TO RIO JACAGUAS BASINS—Continued

175843066244100. Local number, 1263.

LOCATION.--Lat 17°58'43", long 66°24'43", Hydrologic Unit 21010004, 0.4 mi east of new Hwy 1 bridge over Río Coamo, 0.9 mi northwest of Santa Isabel plaza, and 1.6 miles north-northwest of dock at Santa Isabel, Name: Jobitos Btr Well, Santa Isabel.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well.

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land surface is about 39 ft (11.9 m) above mean sea level from topographic map. Measuring point: Top of shelter floor, 2.7 ft (0.82 m) above land-surface datum. Prior to February 1997, 1.41 ft (0.43 m) above land-surface datum.

REMARKS.--Abandoned production well being used as recording observation well.

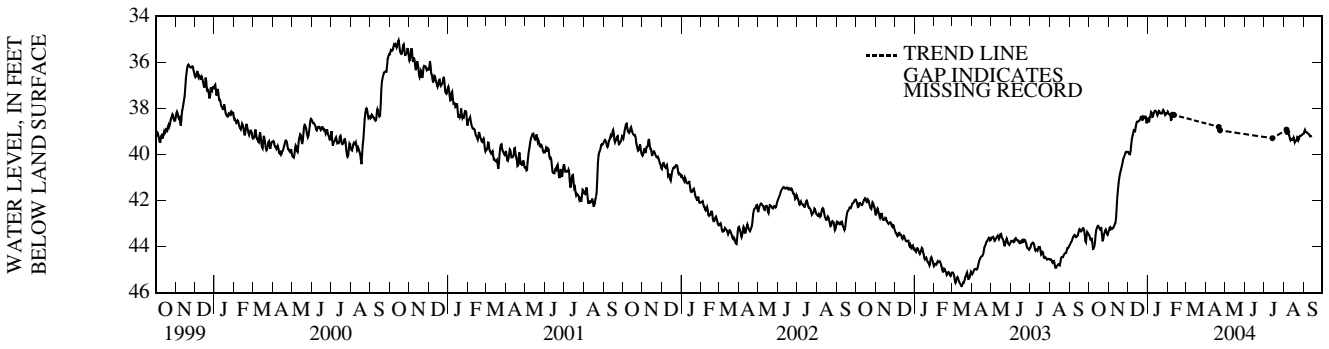
PERIOD OF RECORD.--September 26, 1991 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 34.86 ft (10.62 m), below land-surface datum, October 16, 2000; lowest water level recorded, 45.81 ft (13.96 m) below land-surface datum, March 15, 16, 2003.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43.43	43.29	39.86	38.43	38.12	---	---	---	---	---	---	39.10
2	43.53	43.30	39.90	38.37	38.16	---	---	---	---	---	---	39.09
3	43.60	43.05	39.94	38.75	38.24	---	---	---	---	---	---	38.90
4	43.79	43.26	40.02	38.37	38.24	---	---	---	---	---	---	38.95
5	43.65	43.24	39.95	38.37	38.28	---	---	---	---	---	38.86	39.06
6	43.60	43.20	39.77	38.24	38.32	---	---	---	---	---	38.97	39.00
7	44.06	43.25	39.36	38.08	38.67	---	---	---	---	---	39.07	39.07
8	44.15	43.13	39.28	38.32	38.29	---	---	---	---	---	39.12	39.07
9	44.03	43.23	39.13	38.42	38.19	---	---	---	---	---	39.09	39.11
10	43.98	42.99	39.00	38.28	38.35	---	---	---	---	---	39.20	39.12
11	43.69	43.08	38.90	38.15	---	---	---	---	---	---	39.38	39.17
12	43.33	42.89	39.04	38.14	---	---	---	---	---	---	39.37	39.25
13	43.26	42.65	38.93	38.06	---	---	---	---	---	---	39.28	39.14
14	43.16	41.98	38.69	38.14	---	---	---	---	---	---	39.36	39.26
15	43.09	41.68	38.63	38.13	---	---	---	---	---	---	39.36	39.13
16	43.10	41.40	38.53	38.26	---	---	---	---	---	---	39.34	---
17	43.16	41.09	38.61	38.33	---	---	---	---	---	---	39.19	---
18	43.25	40.95	38.53	38.12	---	---	---	---	---	---	39.48	---
19	43.26	40.78	38.57	38.09	---	---	---	---	---	---	39.46	---
20	43.16	40.70	38.48	38.14	---	---	---	---	---	---	39.36	---
21	43.23	40.55	38.44	38.23	---	---	---	---	---	---	39.44	---
22	43.71	40.47	38.31	38.20	---	---	---	---	---	---	39.35	---
23	43.83	40.35	38.41	38.23	---	---	---	---	---	---	39.11	---
24	43.55	40.16	38.56	38.20	---	---	---	---	---	---	39.36	---
25	43.43	40.12	38.41	38.05	---	---	---	---	---	---	39.36	---
26	43.40	40.08	38.33	38.07	---	---	---	---	---	---	39.20	---
27	43.23	39.97	38.49	38.14	---	---	---	---	---	---	39.20	---
28	43.29	39.87	38.35	38.29	---	---	---	---	---	---	39.17	---
29	43.41	39.90	38.28	38.26	---	---	---	---	---	---	39.19	---
30	43.49	39.90	38.59	38.19	---	---	---	---	---	---	39.13	---
31	43.49	---	38.70	38.29	---	---	---	---	---	---	39.12	---
MEAN	43.49	41.68	38.90	38.24	---	---	---	---	---	---	---	---

WTR YR 2004 MEAN 40.11 HIGHEST 37.96 JAN 26, 2004 LOWEST 44.24 OCT 7, 8, 2003



RIO SALINAS TO RIO JACAGUAS BASINS—Continued

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	43.43	FEB 11	38.28	APR 23	38.95	JUL 14	39.29	AUG 04	38.90	AUG 04	38.96
DEC 10	38.97	APR 21	38.80								

WATER YEAR 2004 HIGHEST 38.28 FEB 11, 2004 LOWEST 43.43 OCT 01, 2003

RIO SALINAS TO RIO JACAGUAS BASINS—Continued

175756066244001. Local number, 1264

LOCATION.--Lat 17°57'56", long 66°24'40", Hydrologic Unit 21010004, 0.43 mi west of Santa Isabel plaza, 0.65 mi north of Playa de Santa Isabel, and 1.16 mi northeast of Punta Cayito, Name: Playa 3 Well, Santa Isabel.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 2 in (0.05 m). Depth 243 ft (74.06 m).

DATUM.--Elevation of land-surface datum is about 20 ft (6.2 m), above mean sea level, from topographic map. Measuring point: On top of 8 in steel horsing, 2.97 ft (0.91 m), above land-surface datum.

REMARKS.--Observation well. Well level affected by nearby pumping well.

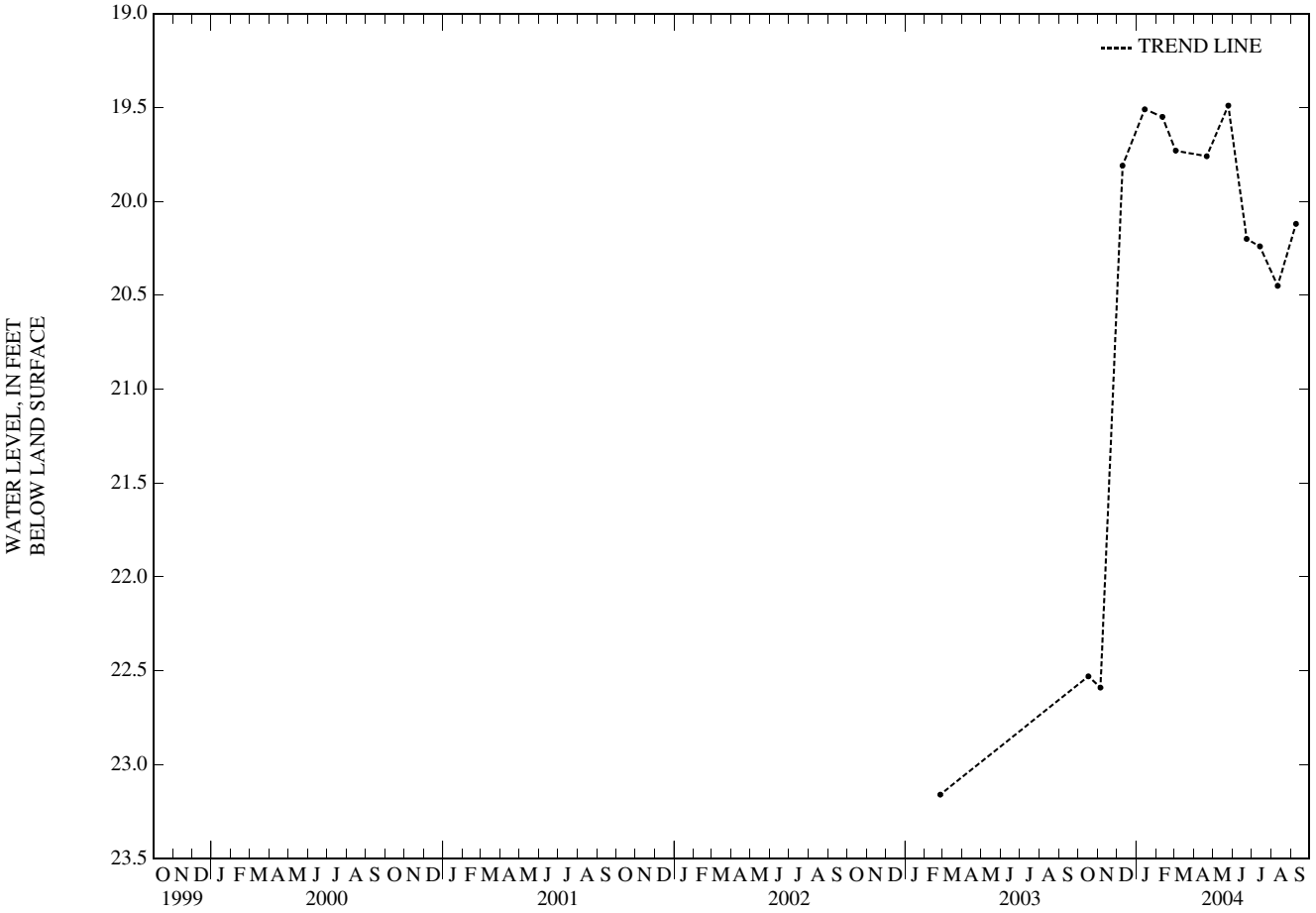
PERIOD OF RECORD.--February 25, 2003 to September 30, 2004.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 19.49 ft (5.94 m), below land-surface datum, May 25, 2004; lowest water level recorded, 23.16 ft (7.06 m), below land-surface datum, November 5, 2003.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	22.53	DEC 10	19.81	FEB 11	19.55	APR 21	19.76	JUN 23	20.20	AUG 11	20.45
NOV 05	22.59	JAN 14	19.51	MAR 03	19.73	MAY 25	19.49	JUL 14	20.24	SEP 09	20.12

WATER YEAR 2004 HIGHEST 19.49 MAY 25, 2004 LOWEST 22.59 NOV 05, 2003



RIO INABON TO RIO LOCO BASINS

175950066354200. Local number, 141.

LOCATION.--Lat 17°59'50", long 66°35'42", Hydrologic Unit 21010004, 1.71 mi southeast of Plaza Degetau at Ponce, 1.31 mi southeast of the intersection between Hwy 10 and Hwy 2, and 2.6 mi notheast of Muelle de Ponce, Name: Restaurada 8A Well, Ponce.

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Drilled unused public supply well, diameter 16-10 in (0.41-0.25 m), cased 16 in (0.41 m) 2-20 ft (0.6-6.1 m), perforated 20-130 ft (6.1-39.6 m), 10 in (0.25 m) 128-165 ft (39-50.3 m), perforated.

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 24 ft (7.3 m), above mean sea level, from topographic map. Measuring point: On shelter floor 3.54 ft (1.08 m), above land-surface datum, 26.2 ft (7.67 m), above mean sea level.

REMARKS.--Recording observation well.

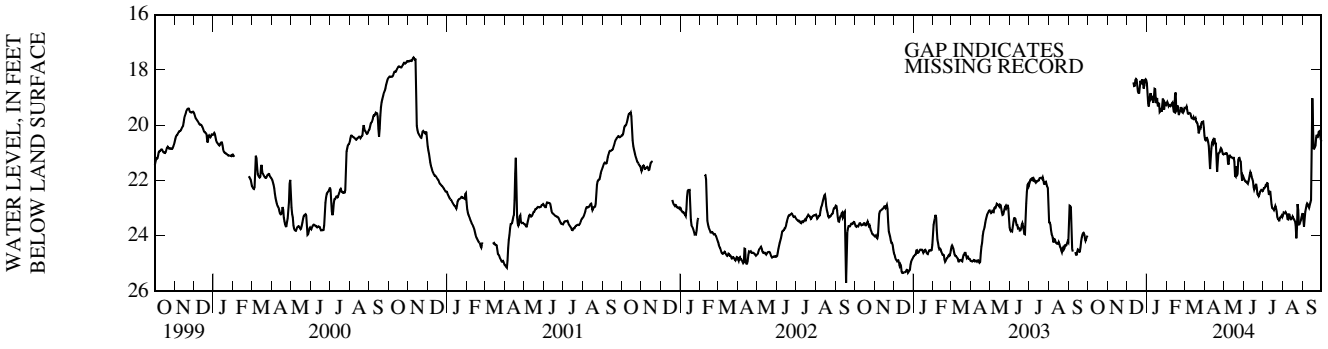
PERIOD OF RECORD.--October 1981 to March 1, 1986, discontinued, November 18, 1991 to November 8, 1994, discontinued, August 7, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 11.2 ft (3.41 m), below land-surface datum, October 9, 1985; lowest water level recorded, 28.6 ft (8.71 m), below land-surface datum, July 9, 1982.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.95	---	---	18.40	19.23	19.33	20.49	21.04	21.90	22.42	23.32	23.21
2	---	---	---	18.55	19.18	19.42	20.56	21.03	21.94	22.30	23.20	23.16
3	---	---	---	19.09	19.13	19.33	20.53	21.03	22.00	22.26	23.12	23.71
4	---	---	---	19.33	19.32	19.32	20.41	21.04	22.06	22.30	23.23	23.63
5	---	---	---	19.31	19.30	19.56	20.51	20.98	22.03	22.20	23.13	23.22
6	---	---	---	18.92	19.22	19.59	20.49	21.04	22.05	22.15	23.15	23.05
7	---	---	---	18.87	19.31	19.58	20.72	21.10	22.13	22.23	23.24	22.98
8	---	---	---	18.81	19.30	19.56	20.79	21.63	22.10	21.97	23.22	22.81
9	---	---	---	19.29	19.24	19.55	21.60	21.21	21.96	22.25	23.57	22.85
10	---	---	---	18.72	19.19	19.60	21.57	21.03	21.89	22.47	23.25	22.87
11	---	---	18.49	19.15	19.17	19.74	20.89	21.17	21.70	22.57	23.21	23.00
12	---	---	18.41	19.23	19.50	19.74	20.80	21.13	21.69	22.29	23.26	22.97
13	---	---	18.75	18.70	19.51	19.77	20.49	21.16	21.81	22.47	23.41	22.81
14	---	---	18.40	18.66	19.53	19.76	20.67	21.17	21.93	22.77	23.39	22.78
15	---	---	18.33	18.74	18.27	19.66	20.61	21.21	21.94	22.95	23.41	22.63
16	---	---	18.32	19.47	19.36	19.91	20.37	21.15	22.11	23.03	23.34	19.48
17	---	---	18.38	18.93	19.59	19.63	20.62	21.21	22.36	23.00	23.27	18.57
18	---	---	18.75	19.10	19.28	19.86	20.69	21.45	22.31	23.05	23.41	20.75
19	---	---	18.81	19.47	19.29	19.88	20.64	22.20	22.22	23.10	23.37	20.92
20	---	---	18.84	19.10	19.69	19.89	21.66	21.51	22.17	22.92	23.48	20.78
21	---	---	18.82	19.27	19.57	19.98	21.71	21.45	22.07	22.92	23.48	20.83
22	---	---	18.42	19.76	19.55	20.16	21.04	22.24	22.49	23.08	23.78	20.66
23	---	---	18.35	19.20	19.39	20.42	21.01	21.30	22.50	23.16	24.40	20.21
24	---	---	18.61	19.55	19.30	19.97	21.01	21.22	22.54	23.47	23.09	20.48
25	---	---	18.36	19.47	19.66	20.18	20.95	21.17	22.60	23.30	22.61	20.44
26	---	---	18.31	19.07	19.37	20.01	20.83	21.20	22.43	23.50	23.54	20.32
27	---	---	18.63	18.99	19.52	19.88	20.83	21.33	22.40	23.45	23.64	20.16
28	---	---	18.71	19.65	19.53	19.90	20.90	21.31	22.34	23.26	23.52	20.29
29	---	---	18.41	19.21	19.41	19.86	21.01	22.19	22.33	23.40	23.53	20.39
30	---	---	18.33	19.15	---	19.88	21.07	21.81	22.35	23.21	23.39	20.58
31	---	---	18.34	19.30	---	20.28	---	21.81	---	23.32	23.29	---
MEAN	---	---	---	19.11	19.34	19.78	20.85	21.34	22.14	22.80	23.36	21.68

WTR YR 2004 MEAN 20.99 HIGHEST 18.11 JAN 23, 2004 LOWEST 24.46 AUG 22, 2004



RIO INABON TO RIO LOCO BASINS—Continued

175934066364800. Local number, 1276.

LOCATION.--Lat 17°59'34", long 66°36'48", Hydrologic Unit 21010004, 0.35 mi southeast of the intersection of Hwy 10 with Hwy 2, 0.32 mi south of Hwy 2, 0.1 mi southwest of Plaza del Caribe Mall, and 1.9 mi north of Punta Carenero, Name: Constancia 3 Well, Ponce.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 13 in (0.33 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is 16 ft (4.9 m), above mean sea level, from topographic map. Measuring point: Hole in horizontal steel plate, 1.59 ft (0.48 m), above land-surface datum.

REMARKS.--Recording observation well.

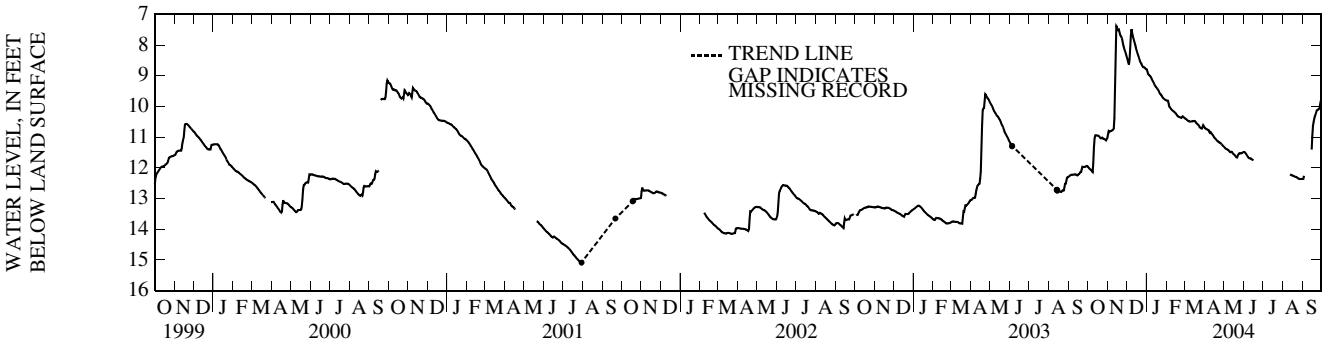
PERIOD OF RECORD.--May 30, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 7.18 ft (2.19 m), below land-surface datum, November 14, 15, 2003; lowest water level recorded, 17.96 ft (5.47 m), below land-surface datum, July 19, 20, 21, 1997.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.96	11.04	8.37	8.79	9.80	10.39	10.70	11.31	11.48	---	---	12.36
2	11.98	10.78	8.44	8.80	9.81	10.40	10.72	11.33	11.48	---	---	12.36
3	12.01	10.84	8.54	8.93	9.81	10.41	10.73	11.35	11.49	---	---	12.35
4	12.04	10.83	8.60	8.95	9.81	10.43	10.74	11.38	11.52	---	---	12.16
5	12.05	10.81	8.67	8.98	9.99	10.46	10.75	11.38	11.56	---	---	---
6	12.06	10.80	8.24	9.00	10.02	10.47	10.76	11.39	11.58	---	---	---
7	12.10	10.79	7.95	9.01	10.03	10.48	10.77	11.41	11.63	---	---	---
8	12.13	10.78	7.41	9.05	10.08	10.49	10.77	11.42	11.65	---	---	---
9	12.14	10.77	7.55	9.09	10.10	10.49	10.91	11.44	11.68	---	---	---
10	11.54	10.75	7.67	9.14	10.12	10.49	10.82	11.47	11.69	---	---	---
11	11.15	10.70	7.73	9.19	10.14	10.49	10.86	11.49	11.69	---	---	---
12	10.95	10.06	7.82	9.22	10.15	10.48	10.88	11.49	11.69	---	12.21	---
13	10.94	8.70	7.89	9.26	10.17	10.48	10.91	11.46	11.70	---	12.22	---
14	10.94	7.40	7.97	9.31	10.19	10.48	10.94	11.50	11.73	---	12.23	---
15	10.94	7.36	8.05	9.35	10.21	10.47	10.97	11.52	11.74	---	12.24	11.59
16	10.95	7.46	8.14	9.37	10.23	10.47	11.01	11.55	11.74	---	12.24	11.21
17	10.95	7.57	8.20	9.40	10.27	10.48	11.03	11.56	11.76	---	12.25	10.70
18	10.96	7.46	8.28	9.42	10.30	10.52	11.05	11.58	---	---	12.26	10.57
19	10.98	7.54	8.33	9.46	10.32	10.54	11.08	11.61	---	---	12.27	10.45
20	11.01	7.61	8.40	9.49	10.34	10.57	11.10	11.64	---	---	12.29	10.35
21	11.03	7.71	8.46	9.53	10.34	10.58	11.13	11.66	---	---	12.29	10.29
22	11.05	7.70	8.54	9.60	10.35	10.60	11.14	11.67	---	---	12.30	10.25
23	11.00	7.75	8.58	9.60	10.36	10.63	11.15	11.59	---	---	12.30	10.16
24	11.03	7.80	8.61	9.62	10.37	10.67	11.18	11.55	---	---	12.32	10.11
25	11.05	7.96	8.66	9.66	10.38	10.70	11.18	11.52	---	---	12.34	10.11
26	11.06	8.02	8.70	9.70	10.32	10.71	11.19	11.52	---	---	12.35	10.10
27	11.06	8.11	8.72	9.73	10.33	10.72	11.22	11.52	---	---	12.36	10.09
28	11.08	8.17	8.72	9.75	10.35	10.72	11.24	11.53	---	---	12.36	10.07
29	11.09	8.22	8.73	9.76	10.37	10.60	11.26	11.52	---	---	12.36	9.84
30	11.12	8.31	8.76	9.78	---	10.62	11.29	11.51	---	---	12.36	9.84
31	11.02	---	8.78	9.79	---	10.66	---	11.49	---	---	12.36	---
MEAN	11.33	8.99	8.31	9.35	10.17	10.54	10.98	11.50	---	---	---	---

WTR YR 2004 MEAN 10.41 HIGHEST 7.18 NOV 14, 15, 2003 LOWEST 12.36 AUG 26 TO SEPT 4, 2004



RIO INABON TO RIO LOCO BASINS—Continued

180045066381600. Local number, 1277.

LOCATION.--Lat 18°00'45", long 66°38'16", Hydrologic Unit 21010004, 0.27 mi east of the intersection of Hwy 10 with Hwy 132, 0.6 mi northwest of Parque Paquito Montaner, and 0.04 mi south of Hwy 132, Name: Albergue de Niños Well, Ponce.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 10 in (0.25 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 49 ft (14.9 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 5.42 ft (1.65 m), above land-surface datum.

REMARKS.--Recording observation well.

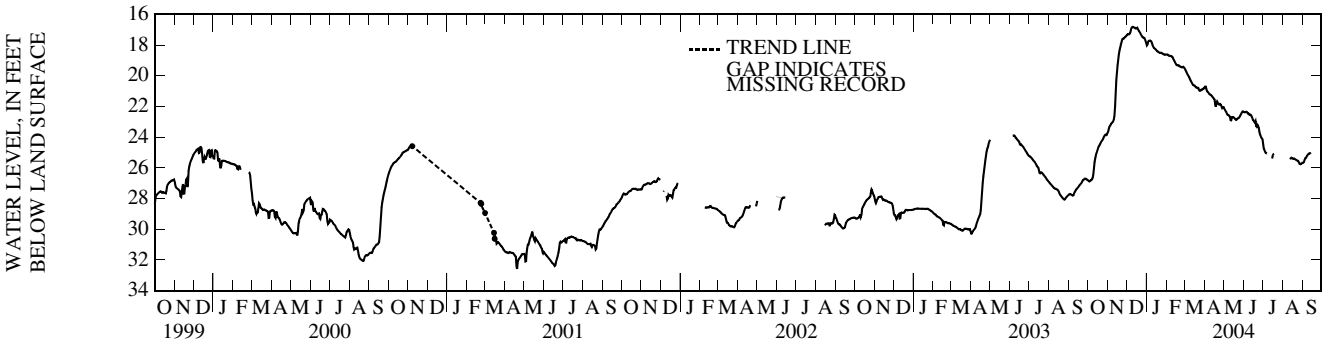
PERIOD OF RECORD.--September 30, 1991 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 16.77 ft (5.11 m), below land-surface datum, December 11, 2003; lowest water level recorded, 51.88 ft (15.81 m), below land-surface datum, August 30, 1994.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.80	23.72	17.38	17.96	18.61	19.55	20.75	22.07	22.35	24.23	---	25.68
2	26.83	23.63	17.28	18.07	18.61	19.64	20.66	22.15	22.37	24.74	---	25.65
3	26.88	23.38	17.30	17.84	18.62	19.71	20.76	22.26	22.38	24.79	---	25.67
4	26.90	23.29	17.30	17.74	18.64	19.80	20.96	22.30	22.37	24.89	---	25.57
5	26.81	23.24	17.30	17.73	18.73	19.91	21.01	22.36	22.34	24.99	---	25.40
6	26.80	23.15	17.26	17.71	18.69	19.98	21.05	22.47	22.35	25.06	---	25.36
7	26.79	23.10	17.12	17.71	18.70	20.05	21.09	22.57	22.43	25.05	---	25.35
8	26.72	23.05	16.93	17.74	18.71	20.10	21.17	22.53	22.46	25.09	---	25.22
9	26.61	23.03	16.86	17.77	18.73	20.22	21.23	22.59	22.46	---	---	25.16
10	26.29	22.94	16.81	17.96	18.74	20.31	21.22	22.63	22.59	---	---	25.14
11	25.79	22.82	16.82	18.07	18.81	20.40	21.26	22.69	22.51	---	---	25.05
12	25.49	22.45	16.85	18.16	18.91	20.48	21.29	23.08	22.56	---	25.48	25.05
13	25.28	21.64	16.85	18.20	19.01	20.56	21.37	22.71	22.57	---	25.41	25.05
14	25.12	20.56	16.88	18.23	19.06	20.62	21.40	22.70	22.72	---	25.35	25.04
15	24.99	19.98	16.92	18.27	19.17	20.60	21.45	22.68	22.74	25.53	25.33	24.98
16	24.88	19.49	16.93	18.31	19.24	20.64	21.54	22.69	22.99	25.25	25.41	---
17	24.73	19.12	16.87	18.38	19.32	20.68	21.55	22.75	22.81	25.11	25.37	---
18	24.60	18.75	16.88	18.41	19.30	20.75	22.18	22.78	23.17	25.10	25.44	---
19	24.53	18.46	17.01	18.43	19.33	20.77	21.87	22.81	22.93	25.08	25.39	---
20	24.47	18.25	17.07	18.46	19.31	20.78	21.64	22.89	22.98	---	25.40	---
21	24.38	18.08	17.14	18.50	19.34	20.78	21.70	22.87	23.56	---	25.45	---
22	24.29	17.94	17.21	18.52	19.40	20.78	21.77	22.81	23.08	---	25.47	---
23	24.23	17.78	17.28	18.49	19.41	20.94	21.92	22.77	23.31	---	25.52	---
24	24.19	17.64	17.37	18.51	19.41	20.97	21.83	22.75	23.22	---	25.51	---
25	24.11	17.57	17.43	18.52	19.43	20.98	21.83	22.72	23.49	---	25.55	---
26	23.99	17.59	17.50	18.56	19.48	20.95	21.87	22.64	23.79	---	25.54	---
27	23.90	17.54	17.52	18.57	19.40	20.88	21.89	22.58	23.83	---	25.73	---
28	23.86	17.48	17.52	18.61	19.43	20.92	22.12	22.48	23.96	---	25.71	---
29	23.80	17.45	17.54	18.64	19.49	20.86	22.08	22.41	24.08	---	25.76	---
30	23.94	17.43	17.68	18.61	---	20.83	22.02	22.33	24.06	---	25.77	---
31	23.77	---	17.77	18.61	---	20.83	---	22.31	---	---	25.70	---
MEAN	25.22	20.35	17.18	18.24	19.07	20.49	21.48	22.59	22.95	---	---	---

WTR YR 2004 MEAN 21.51 HIGHEST 16.77 DEC 11, 2003 LOWEST 26.92 OCT 04, 2003



RIO INABON TO RIO LOCO BASINS—Continued

180156066434000. Local number, 1278.

LOCATION.--Lat 18°01'56", long 66°43'40", Hydrologic Unit 21010004, 1.23 mi north of Hwy 2, 0.1 mi west of Hwy 385, and 0.14 mi east of Río Tallaboa, Name: Luciano Ventura Well, Peñuelas.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well. Depth 74 ft (22.5 m).

DATUM.--Elevation of land-surface datum is about 66 ft (20.1 m), above mean sea level, from topographic map.. Measuring point: Hole in horizontal plexiglass plate, 3.02 ft (0.92 m), above land-surface datum.

REMARKS.--Observation well.

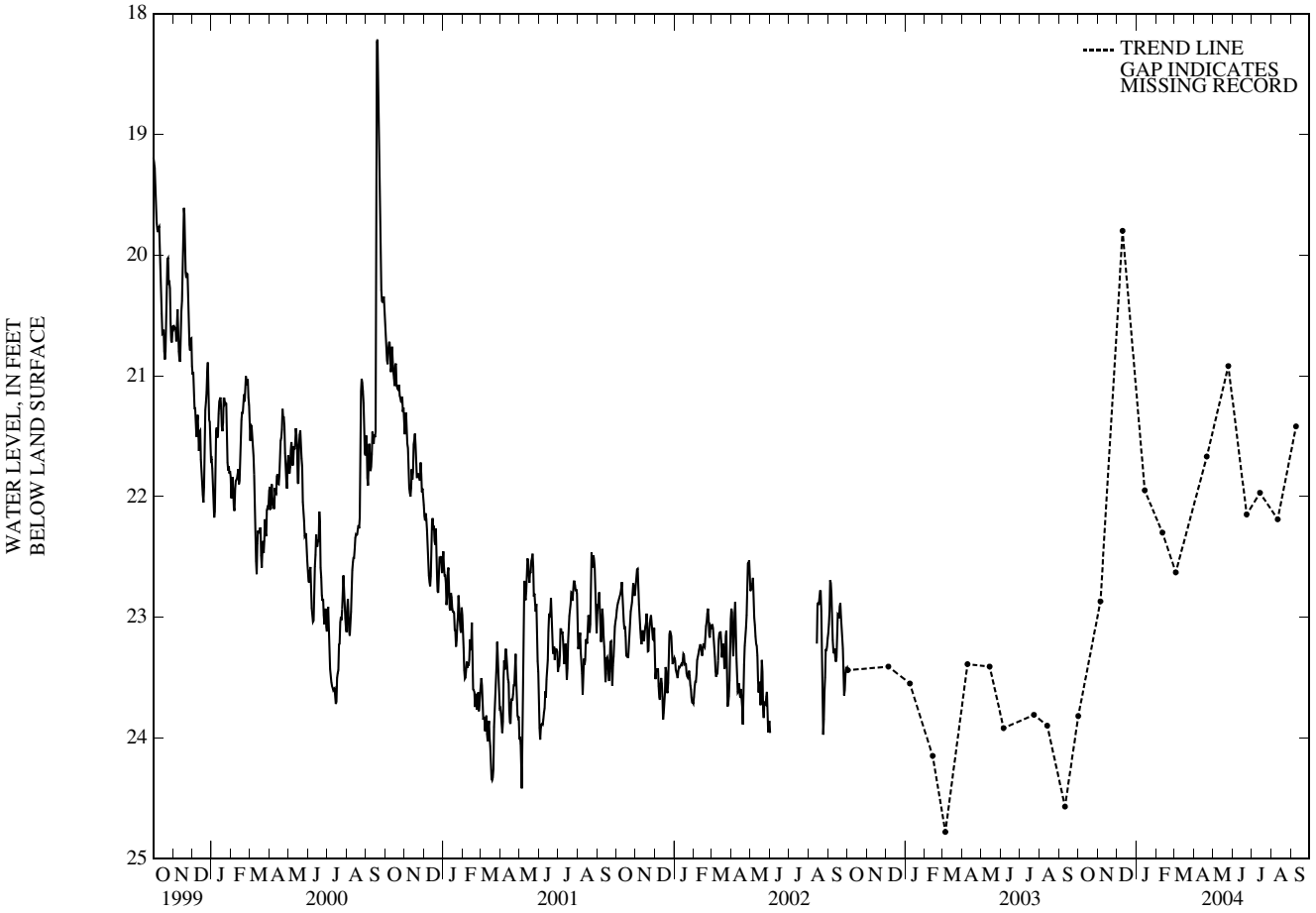
PERIOD OF RECORD.--September 5, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 16.65 ft (5.07 m), below land-surface datum, September 23, 1998; lowest water level recorded, 28.87 ft (8.8 m), below land-surface datum, September 28, 1997.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	23.82	DEC 10	19.80	FEB 11	22.30	APR 21	21.67	JUN 23	22.15	AUG 11	22.19
NOV 05	22.87	JAN 14	21.95	MAR 03	22.63	MAY 25	20.92	JUL 14	21.97	SEP 09	21.42

WATER YEAR 2004 HIGHEST 19.80 DEC 10, 2003 LOWEST 23.82 OCT 01, 2003



RIO INABON TO RIO LOCO BASINS—Continued

180133066503300. Local number, 132.

LOCATION.--Lat 18°01'33", long 66°50'33", Hydrologic Unit 21010004, 0.9 mi southeast of Yauco plaza, 3.46 mi west of Guayanilla plaza, and 1.32 mi north of Segunda Unidad Barinas School, Name: Pittsburg Plate Glass 4 Well, Yauco.

AQUIFER.--Limestone of Tertiary Age.

WELL CHARACTERISTICS.--Drilled observation well, cased 20 in (0.51 m) 0-20 ft (0-6.1 m), 12 in (0.3 m) perforated pipe 20-84 ft (6.1-25.6 m), 10 in (0.25 m) perforated pipe 84-190 ft (25.6-57.9 m). Depth 190 ft (57.9 m).

DATUM.--Elevation of land-surface datum is about 75 ft (22.9 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor, 3.8 ft (1.16 m), above land-surface datum.

REMARKS.--Observation well. [+, above land-surface datum]. The Río Yauco floods this station.

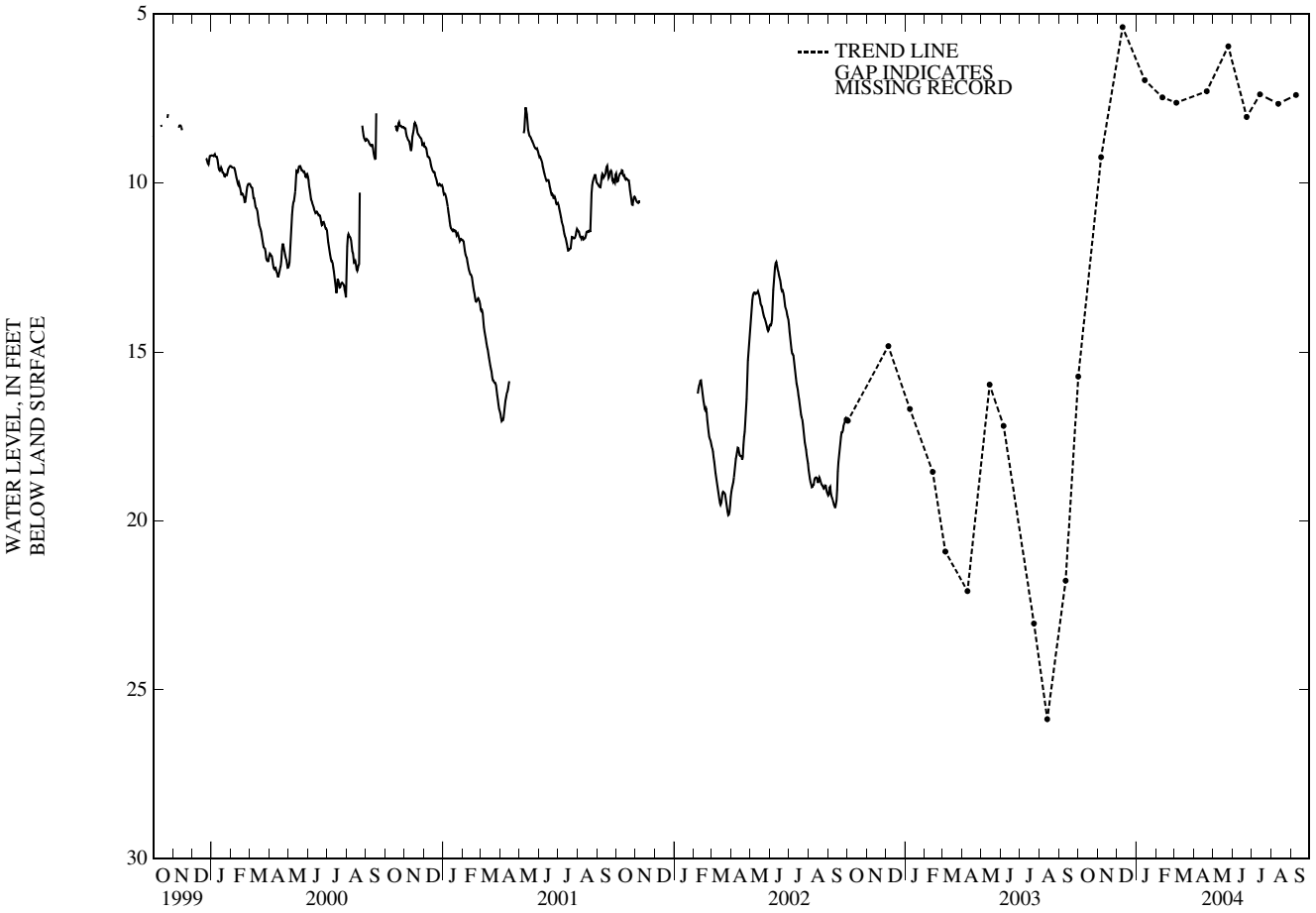
PERIOD OF RECORD.--July 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, +0.12 ft (+0.04 m), above land-surface datum, July 19, 1979; lowest water level recorded, 43.78 ft (13.3 m), below land-surface datum, July 30, 1997.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	15.73	DEC 10	5.39	FEB 11	7.39	APR 21	7.29	JUN 23	8.05	AUG 12	7.66
NOV 06	9.24	JAN 14	6.96	MAR 04	7.63	MAY 25	5.96	JUL 14	7.38	SEP 09	7.40

WATER YEAR 2004 HIGHEST 5.39 DEC 10, 2003 LOWEST 15.73 OCT 01, 2003



RIO GUANAJIBO BASIN

180132067033800. Local number, 143.

LOCATION.--Lat 18°01'33", long 67°03'25", Hydrologic Unit 21010003, 1.86 mi south of Lajas plaza, 1.27 mi southeast of the Estación Experimental Agrícola, and 1.3 mi northwest of the intersection of Hwy 116 with Hwy 305, Name: Vivoni-Col Amistad Well, Lajas.

AQUIFER.--Limestone of unknown age.

WELL CHARACTERISTICS.--Drilled unused irrigation well, diameter 12 in (0.3 m). Depth 200 ft (60.98 m).

DATUM.--Elevation of land-surface datum is about 52.5 ft (16 m), above mean sea level, from topographic map. Measuring point: Hole side of casing, 0.8 ft (0.24 m), above land-surface datum.

REMARKS.--Observation well.

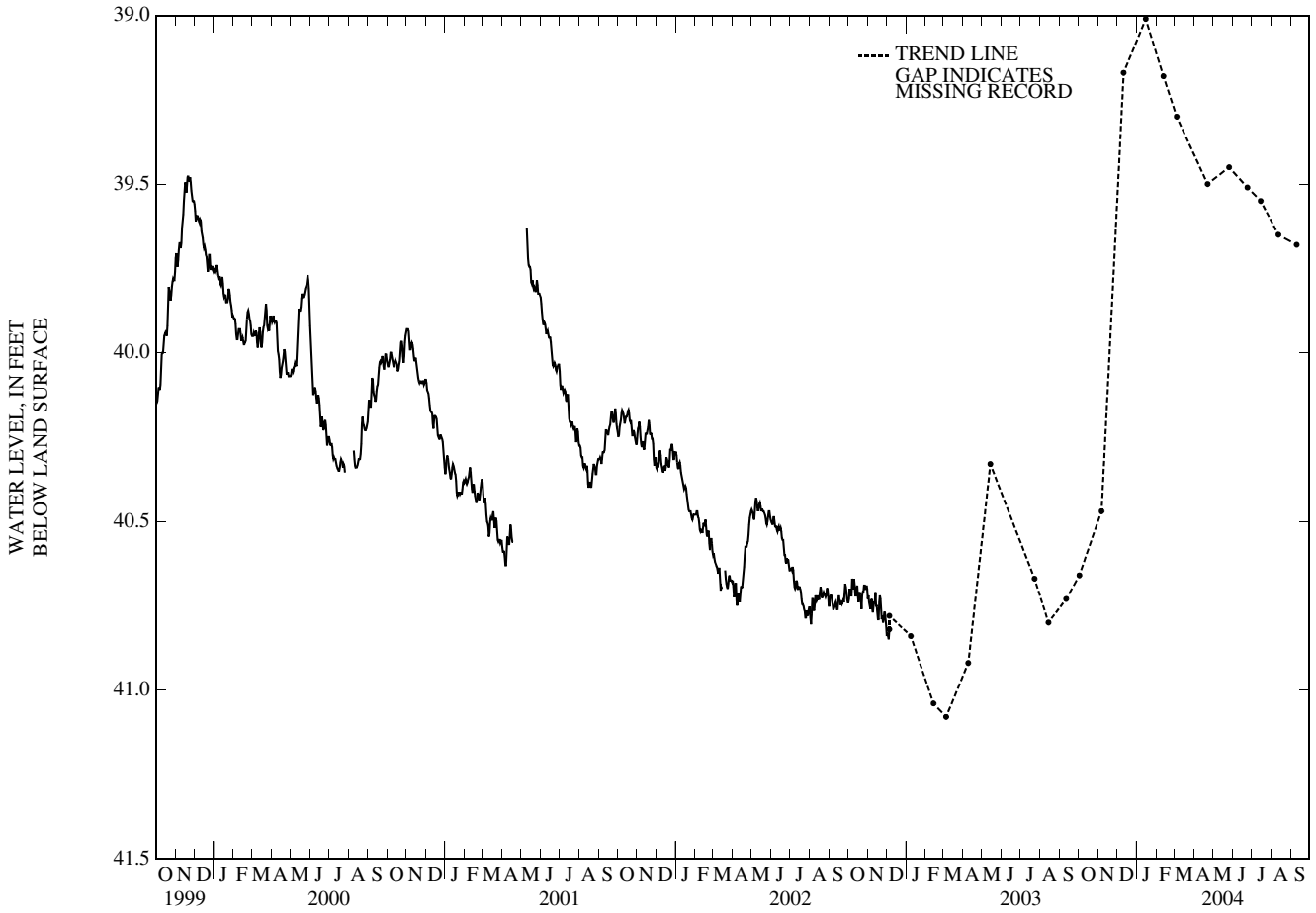
PERIOD OF RECORD.--December 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 37.4 ft (11.4 m), below land-surface datum, November 20, 1985; lowest water level measured, 41.17 ft (12.55 m) below land-surface datum, July 7, 1987.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	40.66	DEC 11	39.17	FEB 12	39.18	APR 22	39.50	JUN 24	39.51	AUG 12	39.65
NOV 06	40.47	JAN 15	39.01	MAR 04	39.30	MAY 26	39.45	JUL 15	39.55	SEP 10	39.68

WATER YEAR 2004 HIGHEST 39.01 JAN 15, 2004 LOWEST 40.66 OCT 02, 2003



RIO GUANAJIBO BASIN—Continued

180542067084000. Local number, 1301.

LOCATION.--Lat 18°05'42", long 67°08'40", Hydrologic Unit 21010003, 0.35 mi east of Hwy 311, 0.3 mi north of Hwy 102 in Central Cabo Rojo, and 0.5 mi northwest of the intersection of Hwy 102 with Hwy 103, Name: PRASA 1 Well, Cabo Rojo.

AQUIFER.--Coquí Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (0.3 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 39 ft (11.9 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor, 1.3 ft (0.4 m), above land-surface datum.

REMARKS.--Recording observation well. From May 12 to September 30, 2002, tapedowns measurements only.

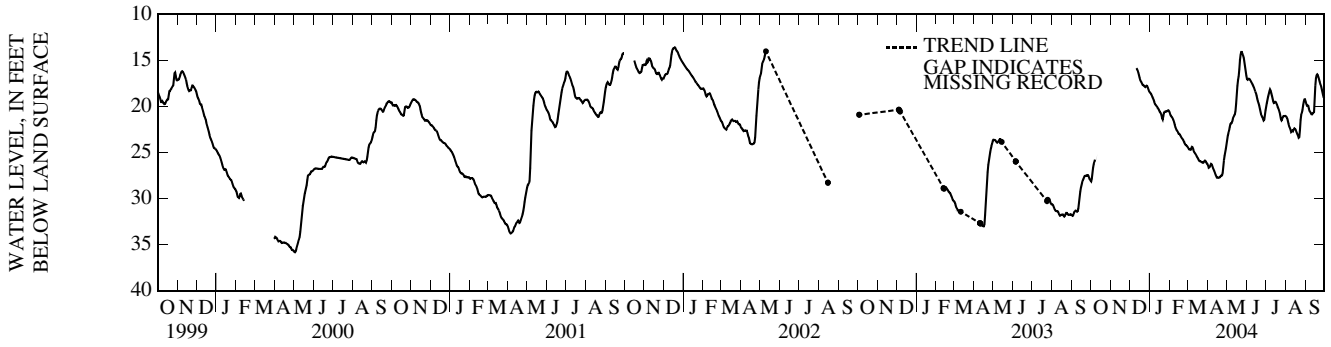
PERIOD OF RECORD.--May 25, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 9.37 ft (2.86 m), below land-surface datum, September 27, 1998; lowest water level recorded, 35.91 ft (10.94 m) below land-surface datum, May 3, 4, 2000.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.12	---	---	18.44	20.53	24.43	26.19	23.91	16.92	20.23	21.06	19.30
2	28.14	---	---	18.51	20.77	24.60	26.63	23.38	17.13	19.84	21.11	19.61
3	27.57	---	---	18.57	20.99	24.66	26.68	22.98	17.08	19.41	21.18	19.84
4	26.89	---	---	18.70	21.06	24.61	26.54	22.79	16.97	19.13	21.42	19.98
5	26.41	---	---	18.87	21.16	24.76	26.51	22.48	17.02	18.72	21.77	19.77
6	26.15	---	---	19.08	21.27	24.62	26.23	21.99	17.03	18.58	22.06	20.08
7	25.91	---	---	19.16	21.39	24.44	26.23	21.87	17.22	18.16	22.24	20.42
8	25.63	---	---	19.39	21.60	24.34	26.34	21.82	17.29	18.11	22.38	20.55
9	---	---	---	19.67	21.85	24.56	26.61	21.79	17.48	18.46	22.61	20.64
10	---	---	---	19.77	22.17	24.86	26.75	21.48	17.55	18.68	22.94	20.76
11	---	---	15.85	19.88	22.31	24.96	26.93	21.15	17.68	19.00	22.47	20.89
12	---	---	15.85	19.96	22.52	25.07	27.08	21.10	17.89	19.29	22.76	20.81
13	---	---	16.02	20.05	22.65	25.18	27.33	20.93	18.01	19.59	22.64	20.68
14	---	---	16.15	20.18	22.71	25.30	27.46	20.80	18.31	19.63	22.38	20.71
15	---	---	16.47	20.26	22.88	25.42	27.67	20.22	18.42	19.51	22.39	20.51
16	---	---	16.76	20.40	23.02	25.59	27.74	19.19	18.66	19.48	22.48	18.34
17	---	---	17.03	20.56	22.97	25.65	27.72	18.09	18.96	19.58	22.54	17.19
18	---	---	17.20	20.70	23.11	25.86	27.73	17.41	19.33	19.72	22.73	16.68
19	---	---	17.33	20.73	23.29	25.92	27.70	16.86	19.52	19.91	22.92	16.53
20	---	---	17.43	21.07	23.38	25.96	27.74	16.57	19.72	20.11	23.07	16.50
21	---	---	17.65	21.38	23.54	25.94	27.61	15.35	20.04	20.26	23.26	16.68
22	---	---	17.70	21.40	23.50	26.05	27.47	14.61	20.35	20.53	23.52	16.96
23	---	---	17.68	20.73	23.69	26.05	27.48	14.18	20.68	20.72	23.11	17.21
24	---	---	17.79	20.62	23.87	26.10	27.46	13.96	20.98	21.26	21.96	17.50
25	---	---	17.91	20.53	23.98	26.12	26.96	14.19	21.06	21.47	21.00	17.66
26	---	---	17.88	20.59	24.19	26.03	26.12	14.38	21.21	21.55	20.82	17.90
27	---	---	17.75	20.55	24.20	25.85	25.57	14.57	21.44	21.24	20.58	18.24
28	---	---	17.74	20.49	24.23	25.89	25.13	14.89	21.63	21.09	20.10	18.52
29	---	---	17.86	20.50	24.35	25.96	24.81	15.45	21.24	20.98	19.61	18.91
30	---	---	18.06	20.36	---	26.11	24.36	15.87	20.62	21.08	19.33	19.11
31	---	---	18.28	20.49	---	26.27	---	16.41	---	20.99	19.14	---
MEAN	---	---	---	20.05	22.66	25.39	26.76	18.73	18.91	19.88	21.86	18.95

WTR YR 2004 MEAN 21.31 HIGHEST 13.90 MAY 24, 2004 LOWEST 28.23 OCT 01, 2003



RIO GUANAJIBO BASIN—Continued

180103067042500. Local number, 1303

LOCATION.--Lat 18°01'03", long 67°04'25", Hydrologic Unit 21010003, 0.01 mi west of Hwy 303, 0.42 mi north of Hwy 305, and 2.47 mi southwest of Lajas plaza, Name: Piezometer Lajas Exp. Station, Lajas.

AQUIFER.--Coquí Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.1 m).

DATUM.--Elevation of land-surface datum is about 45 ft (13.7 m), above mean sea level, from topographic map. Measuring point: Top of PVC pipe, 2.11ft (0.64 m), above land-surface datum.

REMARKS.--Observation well.

PERIOD OF RECORD.--August 14, 2003 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 24.03 ft (7.32 m), below land-surface datum, May 26, 2004; lowest water level recorded, 25.58 ft (7.8 m) below land-surface datum, August 14, 2003.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

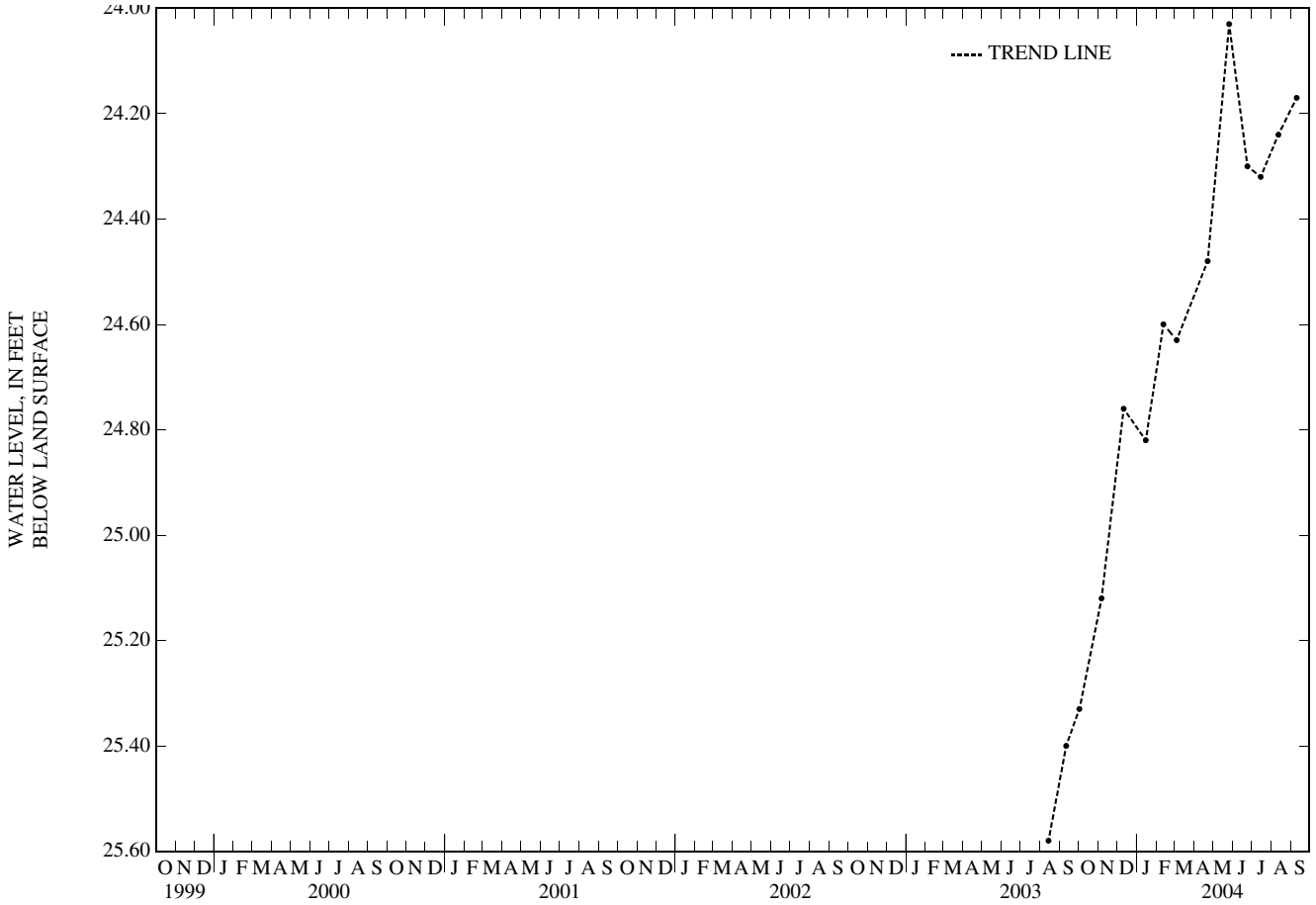
DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 14	25.58	SEP 11	25.40

WATER YEAR 2003 HIGHEST 25.40 SEP. 26, 2003 LOWEST 25.58 AUG 14, 2003

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	25.33	DEC 11	24.76	FEB 12	24.60	APR 22	24.48	JUN 24	24.30	AUG 12	24.24
NOV 06	25.12	JAN 15	24.82	MAR 04	24.63	MAY 26	24.03	JUL 15	24.32	SEP 10	24.17

WATER YEAR 2004 HIGHEST 24.03 MAY 26, 2004 LOWEST 25.33 OCT 02, 2003



RIO CULEBRINAS BASIN

182017067143300. Local number, 1352.

LOCATION.--Lat 18°20'17", long 67°14'33", Hydrologic Unit 21010003, 0.63 mi southeast of the intersection of Hwy 412 with Hwy 115, 1.13 mi south of the intersection of Hwy 413 with Hwy 115, and 0.01 mi north of Hwy 411, Name: Rincón 4 Well, Rincón.

AQUIFER.--Alluvium.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (0.3 m), cased 0-69 ft (0-21 m). Depth 102 ft (31.1 m).

DATUM.--Elevation of land-surface datum is about 39 ft (11.9 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of the 4 in (0.1 m) casing, 3.53 ft (1.08 m), above land-surface datum.

REMARKS.--Observation well.

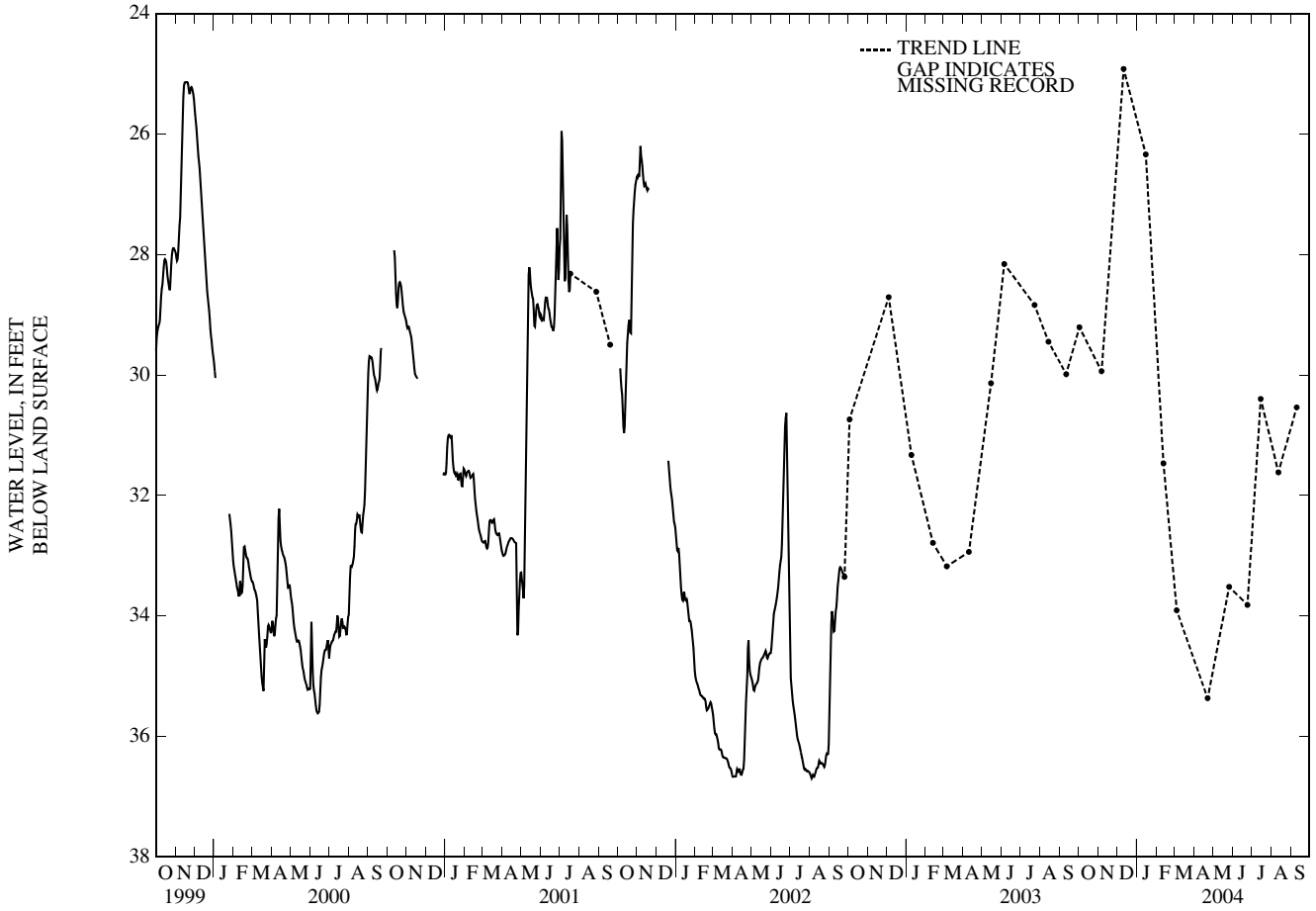
PERIOD OF RECORD.--May 30, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 20.8 ft (6.34 m), below land-surface datum, September 27, 1998; lowest water level recorded, 36.71 ft (11.19 m), below land-surface datum, August 5, 2002.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	29.21	DEC 11	24.92	FEB 12	31.47	APR 22	35.37	JUN 24	33.82	AUG 12	31.62
NOV 06	29.94	JAN 15	26.34	MAR 04	33.91	MAY 26	33.52	JUL 15	30.40	SEP 10	30.54

WATER YEAR 2004 HIGHEST 24.92 DEC 11, 2003 LOWEST 35.37 APR 22, 2004



RIO CULEBRINAS BASIN—Continued

182442067091700. Local number, 200.

LOCATION.--Lat 18°24'42", long 67°09'17", Hydrologic Unit 21010002, 1.4 mi south of Aguadilla plaza, 3.04 mi northeast of Aguada plaza, and 0.2 mi west of Hwy 2 km 146.4, Name: Aguadilla Cement North Well, Aguadilla.

AQUIFER.--Alluvial deposits.

WELL CHARACTERISTICS.--Abandoned water-table industrial well, diameter 4 in (0.1 m), cased 0-20 ft (0-6.1 m), perforated 11-20 ft (3.35-6.1 m).

INSTRUMENTATION.-Pressure transducer with integrated data logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 10 ft (3.05 m), above mean sea level, from topographic map. Measuring point: Shelter floor on top of 4 in (0.1 m) casing, 3.25 ft (0.99 m), above land-surface datum.

REMARKS.--Recording observation well. Water levels affected by nearby pumping well.

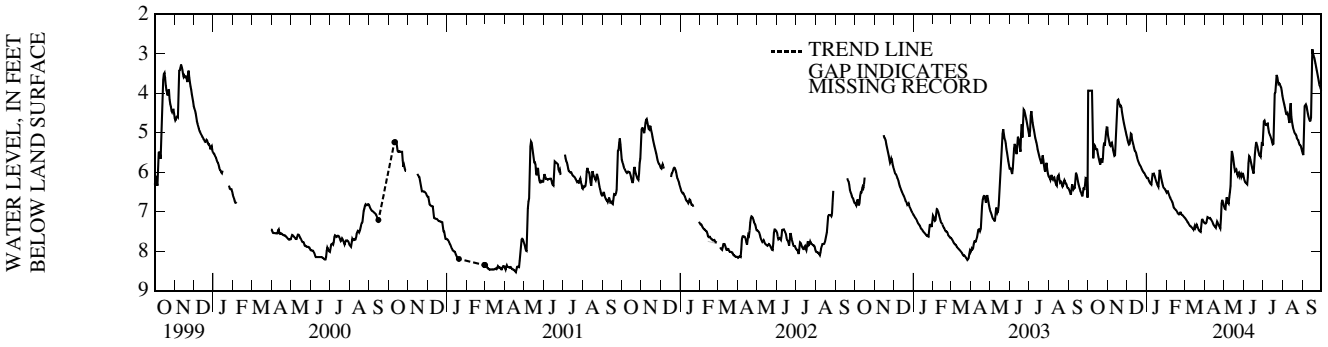
PERIOD OF RECORD.--October 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 1.61 ft (0.49 m), below land-surface datum, September 22, 1998; lowest water level recorded, 9.6 ft (2.93 m), below land-surface datum, February 20, 1992.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.93	5.01	5.09	6.13	6.50	7.15	7.29	6.84	6.12	5.38	4.11	5.49
2	3.93	5.12	5.14	6.16	6.53	7.18	7.30	6.90	6.19	4.73	4.18	5.54
3	3.93	5.19	5.24	6.12	6.44	7.20	7.29	6.95	6.23	4.70	4.26	5.59
4	3.93	5.27	5.27	6.18	6.52	7.23	7.26	6.92	6.28	4.69	4.32	4.34
5	3.93	5.35	5.33	6.23	6.56	7.26	7.12	6.60	6.26	4.85	4.41	4.31
6	3.93	5.31	5.23	6.25	6.61	7.28	7.16	6.67	6.31	4.75	4.49	4.29
7	3.93	5.24	5.12	6.29	6.65	7.30	7.14	6.74	6.30	4.86	4.56	4.26
8	3.93	5.27	4.92	6.30	6.68	7.35	7.18	6.80	5.95	4.69	4.50	4.38
9	5.90	5.40	5.15	6.32	6.72	7.36	7.15	6.79	5.59	4.84	4.51	4.47
10	5.39	5.48	5.21	6.01	6.74	7.37	7.17	6.48	5.59	4.94	4.62	4.55
11	5.30	5.54	5.28	6.08	6.78	7.38	7.19	6.53	5.64	5.03	4.71	4.63
12	5.33	5.62	5.34	6.02	6.87	7.41	7.23	6.17	5.72	5.02	4.79	4.66
13	5.36	5.51	5.43	6.05	6.91	7.42	7.25	5.43	5.79	5.11	3.99	4.73
14	5.46	5.01	5.47	6.11	6.92	7.44	7.29	5.49	5.87	5.12	4.51	4.65
15	5.36	4.80	5.46	6.17	6.94	7.48	7.33	5.58	5.94	5.21	4.67	4.58
16	5.47	4.24	5.54	6.22	6.96	7.32	7.36	5.69	6.00	5.27	4.77	2.85
17	5.57	4.11	5.61	6.27	6.98	7.39	7.37	5.83	6.06	5.32	4.86	2.91
18	5.64	4.21	5.67	6.31	7.01	7.42	7.39	5.93	5.55	5.24	4.89	3.06
19	5.72	4.24	5.72	6.35	7.04	7.31	7.42	6.02	5.54	4.00	4.97	3.04
20	5.78	4.30	5.75	6.38	7.06	7.35	7.23	5.89	5.21	4.02	4.99	3.14
21	5.83	4.35	5.80	5.89	7.07	7.39	7.27	5.98	5.26	3.94	5.05	3.20
22	5.57	4.28	5.83	5.99	7.05	7.44	7.29	6.05	5.31	3.55	5.02	3.30
23	5.72	4.42	5.85	6.07	6.99	7.48	7.34	6.10	5.40	3.52	5.11	3.38
24	5.80	4.51	5.89	6.16	7.05	7.49	7.37	5.94	5.47	3.64	5.18	3.46
25	5.51	4.61	5.93	6.23	7.08	7.51	7.40	6.07	5.54	3.74	5.15	3.57
26	5.22	4.71	5.96	6.30	7.08	7.51	7.44	6.15	5.60	3.79	5.22	3.63
27	5.28	4.78	6.00	6.36	7.10	7.23	6.91	5.99	5.56	3.71	5.28	3.74
28	5.37	4.87	6.01	6.41	7.12	7.18	6.68	6.09	5.66	3.81	5.32	3.82
29	4.96	4.93	6.03	6.41	7.14	7.22	6.72	6.16	5.19	3.82	5.30	3.82
30	5.00	5.01	6.07	6.43	---	7.25	6.78	6.00	5.28	3.87	5.37	3.93
31	4.73	---	6.10	6.46	---	7.28	---	6.03	---	4.01	5.43	---
MEAN	5.06	4.89	5.56	6.21	6.87	7.34	7.21	6.22	5.75	4.49	4.79	4.04

WTR YR 2004 MEAN 5.70 HIGHEST 2.76 SEPT 16, 2004 LOWEST 7.52 MAR 26, 2004



Ground-Water Records for U.S. Virgin Islands

ST. CROIX, U.S. VIRGIN ISLANDS

174225064472000. Local number, 2.

LOCATION.--Lat 17°42'25", long 64°47'20", Hydrologic Unit 21020002, 0.9 mi southeast of the Experimental Station, 6 mi southwest of Christiansted Plaza, and 0.18 mi northeast of the Alexander Hamilton Airport entrance on Hwy 64. Owner: U.S. Virgin Islands Water and Power Authority, Name: Fairplains 2 Well, St. Croix.

AQUIFER.--Alluvium and marl.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 20 ft (6.1 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor, 3.76 ft (1.15 m), above land-surface datum. Prior to November 19, 1999, top of 0.5 in (0.01 m), hole at concrete base wall, 3 ft (0.91 m), above land-surface datum.

REMARKS.--Recording observation well. Water level affected by nearby pumping well.

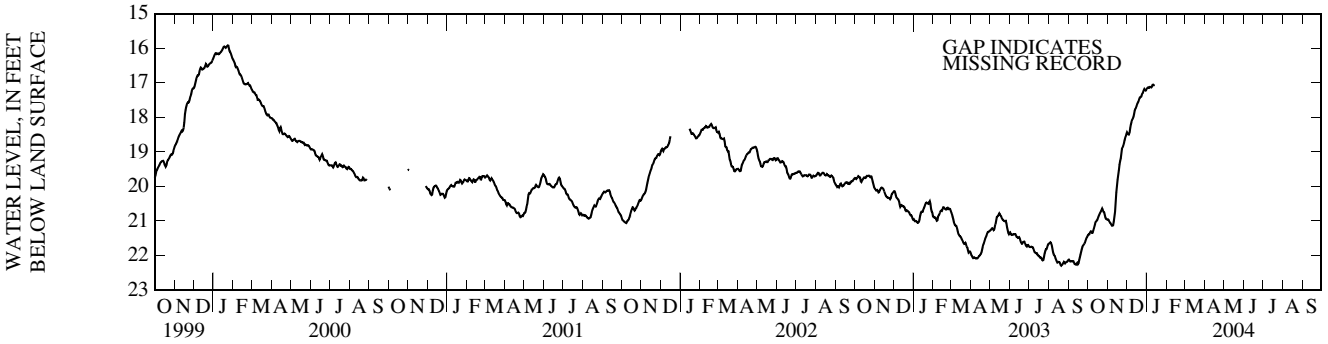
PERIOD OF RECORD.--June 1983 to January 14, 2004, discontinued.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 15.86 ft (4.83 m), below land-surface datum, January 24, 2000; lowest water level recorded, 26.46 ft (8.06 m), below land-surface datum, August 25, 1990.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.44	20.96	18.44	17.18	---	---	---	---	---	---	---	---
2	21.37	20.95	18.43	17.15	---	---	---	---	---	---	---	---
3	21.41	20.99	18.51	17.14	---	---	---	---	---	---	---	---
4	21.36	21.04	18.48	17.13	---	---	---	---	---	---	---	---
5	21.31	21.05	18.52	17.16	---	---	---	---	---	---	---	---
6	21.29	21.08	18.38	17.12	---	---	---	---	---	---	---	---
7	21.32	21.13	18.24	17.12	---	---	---	---	---	---	---	---
8	21.37	21.14	18.17	17.13	---	---	---	---	---	---	---	---
9	21.32	21.12	18.10	17.13	---	---	---	---	---	---	---	---
10	21.26	21.13	18.05	17.08	---	---	---	---	---	---	---	---
11	21.19	20.92	18.03	17.04	---	---	---	---	---	---	---	---
12	21.11	20.83	17.96	17.07	---	---	---	---	---	---	---	---
13	21.04	20.65	17.85	17.07	---	---	---	---	---	---	---	---
14	21.00	20.28	17.77	17.06	---	---	---	---	---	---	---	---
15	21.00	20.06	17.74	---	---	---	---	---	---	---	---	---
16	20.97	19.89	17.71	---	---	---	---	---	---	---	---	---
17	20.91	19.72	17.64	---	---	---	---	---	---	---	---	---
18	20.86	19.61	17.59	---	---	---	---	---	---	---	---	---
19	20.82	19.45	17.56	---	---	---	---	---	---	---	---	---
20	20.77	19.29	17.52	---	---	---	---	---	---	---	---	---
21	20.74	19.24	17.44	---	---	---	---	---	---	---	---	---
22	20.71	19.13	17.42	---	---	---	---	---	---	---	---	---
23	20.65	18.95	17.42	---	---	---	---	---	---	---	---	---
24	20.63	18.89	17.39	---	---	---	---	---	---	---	---	---
25	20.73	18.85	17.33	---	---	---	---	---	---	---	---	---
26	20.74	18.82	17.29	---	---	---	---	---	---	---	---	---
27	20.76	18.72	17.27	---	---	---	---	---	---	---	---	---
28	20.89	18.63	17.18	---	---	---	---	---	---	---	---	---
29	20.92	18.58	17.19	---	---	---	---	---	---	---	---	---
30	20.96	18.53	17.24	---	---	---	---	---	---	---	---	---
31	20.95	---	17.21	---	---	---	---	---	---	---	---	---
MEAN	21.03	19.99	17.78	---	---	---	---	---	---	---	---	---

WTR YR 2004 MEAN 19.26 HIGHEST 17.01 JAN 12, 2004 LOWEST 21.44 OCT 01, 2003



ST. CROIX, U.S. VIRGIN ISLANDS

174243064475100. Local number, 3.

LOCATION.--Lat 17°42'43", long 64°47'51", Hydrologic Unit 21020002, 0.75 mi northwest of the Alexander Hamilton Airport entrance on Hwy 64, 6.45 mi southwest of Christiansted plaza, and 0.57 mi southwest of the Experimental Station. Owner: U.S. Virgin Islands Government, Name: Golden Grove 6 Well, St. Croix.

AQUIFER.--Alluvium and marl.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 8 in (0.2 m), cased 8 in (0.2 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 40 ft (12.2 m), above mean sea level, from topographic map. Measuring point: Upper edge of hole at 8 in (0.2 m) casing, 4.2 ft (1.28 m), above land-surface datum.

REMARKS.--Recording observation well. From February 21, 2001 to May 21, 2002, tapedowns measurements only.

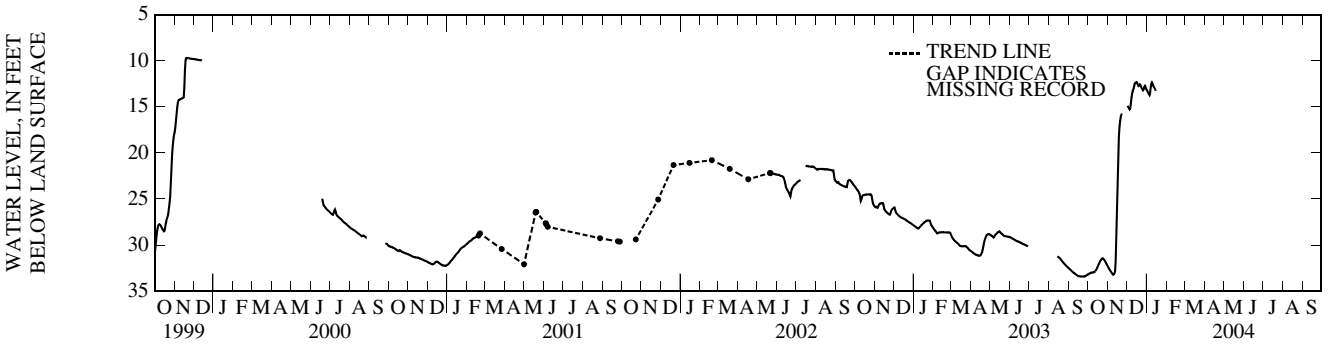
PERIOD OF RECORD.--March 1982 to January 17, 2004, discontinued.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 9.68 ft (2.95 m), below land-surface datum, November 19, 20, 1999; lowest water level recorded, 41.05 ft (12.5 m), below land-surface datum, September 15, 1995.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33.21	32.30	---	13.15	---	---	---	---	---	---	---	---
2	33.18	32.43	14.80	13.21	---	---	---	---	---	---	---	---
3	33.14	32.54	14.98	13.38	---	---	---	---	---	---	---	---
4	33.10	32.66	15.11	13.54	---	---	---	---	---	---	---	---
5	33.06	32.79	15.24	13.68	---	---	---	---	---	---	---	---
6	33.01	32.89	15.35	13.77	---	---	---	---	---	---	---	---
7	32.98	33.00	14.97	13.16	---	---	---	---	---	---	---	---
8	33.00	33.10	14.29	12.63	---	---	---	---	---	---	---	---
9	32.99	33.19	13.72	12.37	---	---	---	---	---	---	---	---
10	32.98	33.27	13.37	12.35	---	---	---	---	---	---	---	---
11	32.94	33.13	13.16	12.59	---	---	---	---	---	---	---	---
12	32.89	33.11	13.05	12.79	---	---	---	---	---	---	---	---
13	32.82	32.73	12.51	12.91	---	---	---	---	---	---	---	---
14	32.73	30.77	12.45	13.03	---	---	---	---	---	---	---	---
15	32.58	27.73	12.38	13.18	---	---	---	---	---	---	---	---
16	32.43	24.22	12.33	13.34	---	---	---	---	---	---	---	---
17	32.27	20.96	12.31	---	---	---	---	---	---	---	---	---
18	32.12	18.84	12.50	---	---	---	---	---	---	---	---	---
19	31.97	17.57	12.68	---	---	---	---	---	---	---	---	---
20	31.83	16.75	12.78	---	---	---	---	---	---	---	---	---
21	31.69	16.25	12.58	---	---	---	---	---	---	---	---	---
22	31.56	15.93	12.55	---	---	---	---	---	---	---	---	---
23	31.48	15.77	12.70	---	---	---	---	---	---	---	---	---
24	31.42	15.68	12.91	---	---	---	---	---	---	---	---	---
25	31.48	---	13.07	---	---	---	---	---	---	---	---	---
26	31.55	---	13.16	---	---	---	---	---	---	---	---	---
27	31.65	---	13.26	---	---	---	---	---	---	---	---	---
28	31.78	---	12.95	---	---	---	---	---	---	---	---	---
29	31.90	---	12.68	---	---	---	---	---	---	---	---	---
30	32.05	---	12.77	---	---	---	---	---	---	---	---	---
31	32.17	---	12.94	---	---	---	---	---	---	---	---	---
MEAN	32.39	---	---	---	---	---	---	---	---	---	---	---

WTR YR 2004 MEAN 22.38 HIGHEST 12.25 DEC 17, 2003 LOWEST 33.31 NOV 10, 2003



ST. CROIX, U.S. VIRGIN ISLANDS

174316064480800. Local number, 13.

LOCATION.--Lat 17°43'16", long 64°48'08", Hydrologic Unit 21020002, 5.25 mi east of Fort Frederick at Frederickstead, 0.95 mi southeast of Holy Cross Church, and 0.65 mi northeast of Adventure Ruins. Owner: U.S. Virgin Islands Water and Power Authority, Name: WAPA-17 Well, St. Croix.

AQUIFER.--Kingshill Limestone.

WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in (0.1 m), cased 0-95 ft (0-29 m), screened 10-40 ft (3.05-12.2 m). Depth 95 ft (29 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 75 ft (22.9 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor, 2.33 ft (0.71 m), above land-surface datum.

REMARKS.--Recording observation well. From October 1, 2000 to March 26, 2001, tapedowns measurements only.

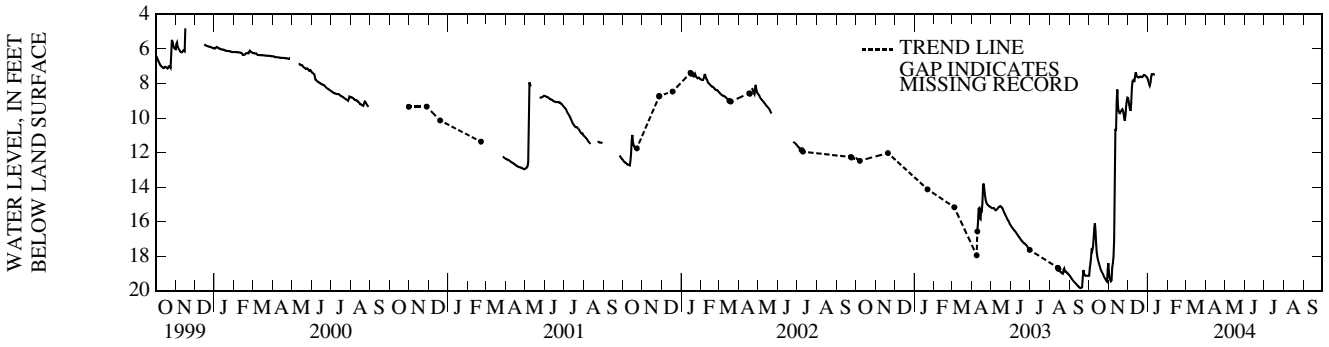
PERIOD OF RECORD.--February 28, 1990 to January 17, 2004, discontinued.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 0.27 ft (0.08 m), below land-surface datum, September 10, 1996; lowest water level recorded, 27.88 ft (8.5 m), below land-surface datum, September 6, 1995.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.14	18.82	8.74	7.67	---	---	---	---	---	---	---	---
2	19.14	19.19	8.94	7.83	---	---	---	---	---	---	---	---
3	18.24	19.31	9.16	7.97	---	---	---	---	---	---	---	---
4	18.62	19.43	9.42	8.09	---	---	---	---	---	---	---	---
5	17.48	19.50	9.53	8.19	---	---	---	---	---	---	---	---
6	17.61	19.32	9.63	7.82	---	---	---	---	---	---	---	---
7	17.68	18.01	8.58	7.49	---	---	---	---	---	---	---	---
8	17.22	18.86	7.96	7.46	---	---	---	---	---	---	---	---
9	16.76	17.26	7.77	7.46	---	---	---	---	---	---	---	---
10	15.99	16.99	7.85	7.45	---	---	---	---	---	---	---	---
11	16.18	10.20	7.88	7.48	---	---	---	---	---	---	---	---
12	16.97	11.06	7.86	7.50	---	---	---	---	---	---	---	---
13	17.72	10.42	7.28	7.50	---	---	---	---	---	---	---	---
14	17.98	7.62	7.43	---	---	---	---	---	---	---	---	---
15	18.18	9.09	7.56	---	---	---	---	---	---	---	---	---
16	18.30	9.54	7.62	---	---	---	---	---	---	---	---	---
17	18.43	9.65	7.64	---	---	---	---	---	---	---	---	---
18	18.56	9.74	7.66	---	---	---	---	---	---	---	---	---
19	18.70	9.70	7.66	---	---	---	---	---	---	---	---	---
20	18.82	9.61	7.59	---	---	---	---	---	---	---	---	---
21	18.89	9.57	7.61	---	---	---	---	---	---	---	---	---
22	18.97	9.50	7.61	---	---	---	---	---	---	---	---	---
23	19.03	9.49	7.63	---	---	---	---	---	---	---	---	---
24	19.10	9.62	7.64	---	---	---	---	---	---	---	---	---
25	19.21	9.87	7.56	---	---	---	---	---	---	---	---	---
26	19.29	10.12	7.52	---	---	---	---	---	---	---	---	---
27	19.34	10.20	7.50	---	---	---	---	---	---	---	---	---
28	19.41	9.53	7.53	---	---	---	---	---	---	---	---	---
29	19.47	9.11	7.56	---	---	---	---	---	---	---	---	---
30	19.48	8.90	7.61	---	---	---	---	---	---	---	---	---
31	17.99	---	7.64	---	---	---	---	---	---	---	---	---
MEAN	18.32	12.64	7.97	---	---	---	---	---	---	---	---	---

WTR YR2004 MEAN 12.33 HIGHEST 6.51 NOV 14, 2003 LOWEST 19.56 NOV 06, 2003



ST. THOMAS, U.S. VIRGIN ISLANDS

182038064550300. Local number, 6.

LOCATION.--Lat 18°20'38", long 64°55'03", Hydrologic Unit 21020001, 1.12 mi east of Charlotte Amalie, 0.75 mi southwest of Winterberg Peak, and 1.08 mi southeast of Canaan. Owner: U.S. Virgin Islands Government, Name: Grade School 3 Well, St. Thomas.

AQUIFER.--Volcanic breccia.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m). Depth 70 ft (21.3 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 52 ft (15.8 m), above mean sea level, from topographic map. Prior to June 30, 1999, is about 60 ft (18.3 m), above mean sea level. Measuring point: Top of 0.5 in (0.01 m) hole at 6 in (0.15 m) casing, 3.3 ft (1 m), above land-surface datum. Prior to June 30, 1999, top of 0.5 in (0.01 m) hole at 6 in (0.15 m) casing, 1.3 ft (0.4 m), above land-surface datum. Prior to June 27, 1983, top of 6 in (0.15 m) casing, 2.9 ft (0.88 m), above land-surface datum.

REMARKS.--Recording observation well. A datum correction was required after land-surface elevation in the area, changed from 60 ft (18.3 m) to 52 ft (15.8 m) on June 29, 1999. For water year 2004, tapedowns measurements only.

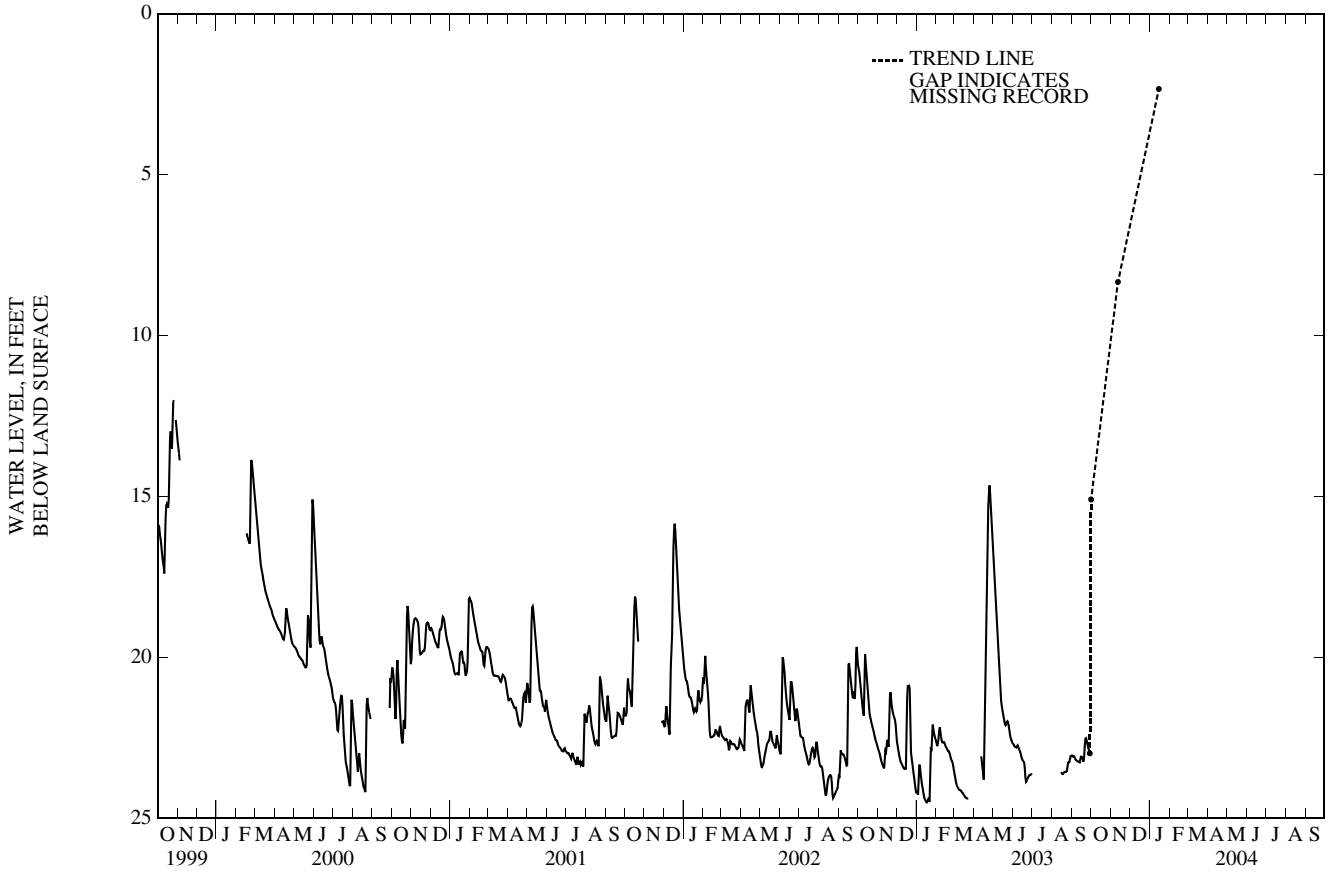
PERIOD OF RECORDS.--March 1982 to January 15, 2004, discontinued.

EXTREMES FOR PERIOD OF RECORDS.--Highest water level recorded, 1.53 ft (0.47 m), below land-surface datum, October 1, 1989; lowest water level recorded, 35.38 ft (10.8 m), below land-surface datum, July 21, 1982.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	15.10	NOV 12	8.34	JAN 15	2.34

WATER YEAR 2004 HIGHEST 2.34 JAN 15, 2004 LOWEST 15.10 OCT 01, 2003



ST. THOMAS, U.S. VIRGIN ISLANDS

182038064580000. Local number, 8.

LOCATION.--Lat 18°20'38", long 64°58'00", Hydrologic Unit 21020001, 2.08 mi northwest of Charlotte Amalie, 0.5 mi northeast of Harry S. Truman Airport entrance on Hwy 302, and 1.15 mi southwest of Dorothea. Owner: U.S. Virgin Islands Water and Power Authority, Name: Kirwan Terrace, VIEO-6 Well, St. Thomas.

AQUIFER.--Alluvial deposits, volcanic rock.

WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in (0.1 m), cased 0-56 ft (0-17.1 m), screened 56-76 ft (17.1-23.2 m). Depth 76 ft (23.2 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 35 ft (10.7 m), above mean sea level, from topographic map. Measuring point: Top of shelter floor, 3 ft (0.91 m), above land-surface datum.

REMARKS.--Recording observation well.

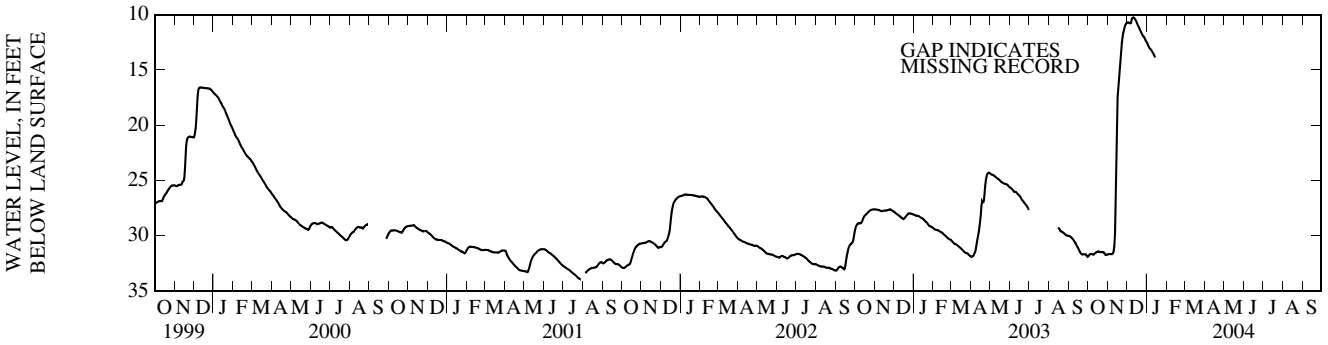
PERIOD OF RECORD.--October 2, 1991 to January 15, 2004, discontinued.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 10.22 ft (3.12 m), below land-surface datum, December 11, 2003; lowest water level recorded, 33.97 ft (10.35 m), below land-surface datum, July 29, 30, 2001.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31.91	31.70	10.72	12.46	---	---	---	---	---	---	---	---
2	31.84	31.67	10.69	12.55	---	---	---	---	---	---	---	---
3	31.76	31.66	10.70	12.69	---	---	---	---	---	---	---	---
4	31.69	31.65	10.71	12.81	---	---	---	---	---	---	---	---
5	31.66	31.66	10.73	12.96	---	---	---	---	---	---	---	---
6	31.65	31.66	10.75	13.06	---	---	---	---	---	---	---	---
7	31.65	31.66	10.81	13.08	---	---	---	---	---	---	---	---
8	31.68	31.66	10.70	13.17	---	---	---	---	---	---	---	---
9	31.70	31.65	10.38	13.27	---	---	---	---	---	---	---	---
10	31.72	31.49	10.29	13.37	---	---	---	---	---	---	---	---
11	31.66	31.20	10.24	13.46	---	---	---	---	---	---	---	---
12	31.59	30.49	10.26	13.58	---	---	---	---	---	---	---	---
13	31.55	29.02	10.31	13.68	---	---	---	---	---	---	---	---
14	31.52	25.68	10.38	13.80	---	---	---	---	---	---	---	---
15	31.48	20.52	10.49	13.93	---	---	---	---	---	---	---	---
16	31.44	18.08	10.62	---	---	---	---	---	---	---	---	---
17	31.41	16.87	10.70	---	---	---	---	---	---	---	---	---
18	31.42	16.00	10.91	---	---	---	---	---	---	---	---	---
19	31.45	15.22	11.02	---	---	---	---	---	---	---	---	---
20	31.47	14.50	11.14	---	---	---	---	---	---	---	---	---
21	31.49	13.83	11.25	---	---	---	---	---	---	---	---	---
22	31.48	13.27	11.37	---	---	---	---	---	---	---	---	---
23	31.48	12.74	11.49	---	---	---	---	---	---	---	---	---
24	31.48	12.29	11.65	---	---	---	---	---	---	---	---	---
25	31.48	11.81	11.75	---	---	---	---	---	---	---	---	---
26	31.52	11.54	11.87	---	---	---	---	---	---	---	---	---
27	31.55	11.30	12.00	---	---	---	---	---	---	---	---	---
28	31.71	11.09	11.98	---	---	---	---	---	---	---	---	---
29	31.72	10.91	12.09	---	---	---	---	---	---	---	---	---
30	31.72	10.80	12.23	---	---	---	---	---	---	---	---	---
31	31.72	---	12.37	---	---	---	---	---	---	---	---	---
MEAN	31.60	21.79	11.05	---	---	---	---	---	---	---	---	---

WTR YR2004 MEAN 20.31 HIGHEST 10.22 DEC 11, 2003 LOWEST 31.92 OCT 01, 2003



ST. JOHN, U.S. VIRGIN ISLANDS

181956064464500. Local number, 11.

LOCATION.--Lat 18°19'56", long 64°46'45", Hydrologic Unit 21020001, 1.05 mi southeast of Cruz Bay plaza, 0.25 mi southeast of Bethany Church, and 0.48 mi southeast of Margaret Hill. Owner: U.S. Virgin Islands Government, Name: Guinea Gut Well, St. John.

AQUIFER.--Louisenhoj Formation (Donnelly, 1959).

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m). Depth 85 ft (25.9 m).

INSTRUMENTATION.--Electronic water level logger--60-minutes interval.

DATUM.--Elevation of land-surface datum is about 280 ft (85.36 m), above mean sea level, from topographic map. Measuring point: Bottom of 0.5 in (0.01 m) hole at 6 in (0.15 m) casing, 1.5 ft (0.46 m), above land-surface datum. Prior to June 28, 1983, top of 6 in (0.15 m) casing, 1.8 ft (0.55 m), above land-surface datum.

REMARKS.--Recording observation well.

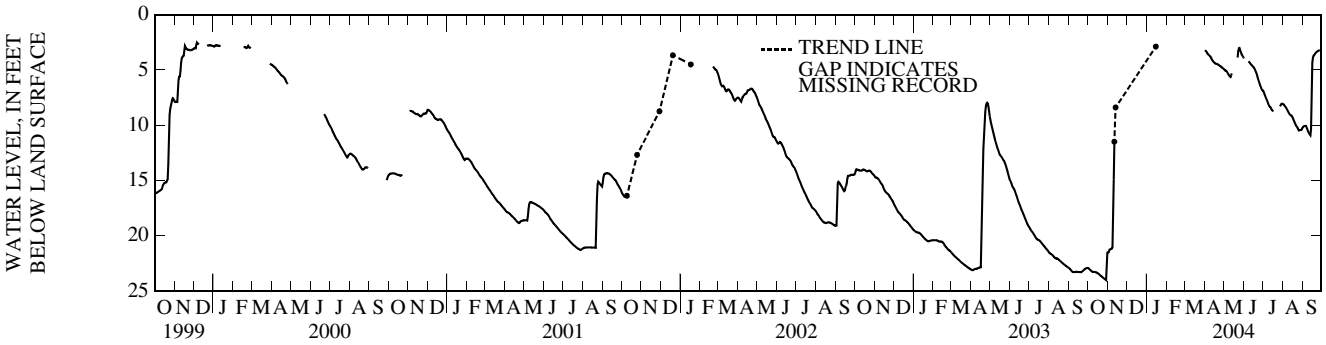
PERIOD OF RECORD.--March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 2.34 ft (0.71 m), below land-surface datum, December 7, 1998; lowest water level recorded, 34.18 ft (10.4 m), below land-surface datum, September 6, 1995.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 1200 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.91	21.48	---	---	---	---	3.18	4.90	3.89	6.85	8.06	10.26
2	22.94	21.52	---	---	---	---	3.24	4.99	3.98	6.90	8.09	10.17
3	23.00	21.46	---	---	---	---	3.31	5.06	---	7.08	8.14	10.11
4	23.05	21.26	---	---	---	---	3.37	5.04	---	7.25	8.26	10.08
5	23.10	21.23	---	---	---	---	3.47	5.07	---	7.39	8.29	10.05
6	23.16	21.19	---	---	---	---	3.54	5.18	---	7.55	8.39	10.05
7	23.22	21.18	---	---	---	---	3.61	5.28	---	7.67	8.49	10.09
8	23.26	21.17	---	---	---	---	3.66	5.37	4.20	7.81	8.60	10.24
9	23.27	20.98	---	---	---	---	3.74	5.48	4.26	7.98	8.70	10.39
10	23.27	16.81	---	---	---	---	3.78	5.56	4.29	8.14	8.82	10.57
11	23.27	12.96	---	---	---	---	3.86	5.63	4.38	8.29	8.94	10.67
12	23.27	10.02	---	---	---	---	4.02	5.64	4.48	8.35	9.01	10.78
13	23.29	---	---	---	---	---	4.11	5.37	4.53	8.33	9.09	10.86
14	23.31	---	---	---	---	---	4.20	5.26	4.58	8.49	9.09	10.94
15	23.33	---	---	---	---	---	4.26	---	4.65	8.64	9.14	9.76
16	23.38	---	---	---	---	---	4.33	---	4.71	8.66	9.24	4.57
17	23.41	---	---	---	---	---	4.39	---	4.79	8.72	9.34	4.09
18	23.45	---	---	---	---	---	4.42	---	4.89	8.80	9.47	3.71
19	23.50	---	---	---	---	---	4.45	---	4.99	---	9.60	3.70
20	23.55	---	---	---	---	---	4.45	---	5.14	---	9.74	3.63
21	23.62	---	---	---	---	---	4.47	---	5.27	---	9.88	3.50
22	23.67	---	---	---	---	---	4.52	4.29	5.47	---	10.01	3.43
23	23.70	---	---	---	---	---	4.55	3.46	5.68	---	10.11	3.39
24	23.75	---	---	---	---	---	4.58	3.16	5.90	---	10.18	3.33
25	23.81	---	---	---	---	---	4.65	2.94	6.05	---	10.28	3.30
26	23.85	---	---	---	---	---	4.64	3.09	6.24	---	10.44	3.27
27	23.90	---	---	---	---	---	4.72	3.28	6.43	8.30	10.51	3.25
28	23.95	---	---	---	---	---	4.80	3.42	6.53	8.24	10.44	3.22
29	23.98	---	---	---	---	---	4.80	3.58	6.71	8.18	10.41	3.17
30	24.04	---	---	---	---	---	4.87	3.71	6.85	8.07	10.44	---
31	21.57	---	---	---	---	---	---	3.81	---	8.05	10.38	---
MEAN	23.38	---	---	---	---	---	4.13	---	---	---	9.34	---

WTR YR2004 MEAN 9.73 HIGHEST 2.83 MAY 24, 25, 2004 LOWEST 24.04 OCT 30, 2003



WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	22.90	NOV 13	8.39	JAN 15	2.88	JUNE 1	64.65	AUG 25	3.29

WATER YEAR 2004 HIGHEST 2.88 JAN 15, 2004 LOWEST 22.90 OCT 01, 2003

A
Access to U.S. Geological Survey Water Data 32
Accuracy of field data and computed results 24
Acid neutralizing capacity 33
Acre-foot, definition of 33
Adenosine triphosphate, definition of 33
Adjuntas, Lago Garzas near 80
Adjuntas, Río Grande de Arecibo near 82
Adjusted discharge, definition of 33
Aguada, Río Culebrinas at Margarita Dam near 442
Aguada, Río Culebrinas near 444
Aguas Buenas, Río de Bayamón near 227
Algae,
  Blue-green, definition of 34
  Fire, definition of 38
  Green, definition of 39
Algal growth potential, definition of 33
Alkalinity, definition of 33
Añasco, Río Grande de Añasco near 434
Annual runoff, definition of 33
Annual 7-day minimum, definition of 33
Aquifer
  Confined, definition of 35
  Unconfined, definition of 49
  Water-table, definition of 50
Arenas, Río de Bayamón at 221
Aroclor, definition of 33
Arrangement of records 25
Artificial substrate, definition of 33
Ash mass, definition of 33
Aspect, definition of 33

B
Bacteria, definition of 34
  Enterococcus, definition of 37
  Escherichia coli, definition of 37
  Fecal coliform, definition of 38
  Fecal streptococcal, definition of 38
  Total coliform, definition of 48
Bahía de San Juan No. 5 at San Juan 246
Bairoa near Caguas, Río 270
Bankfull stage, definition of 34
Base discharge, definition of 34
Base flow, definition of 34
Bauta near Orocovis, Río 171
Bayamón at Arenas, Río 221
Bayamón at Flood Channel at Bayamón, Río de 232
Bayamón below Lago de Cidra, Río de 225
Bayamón near Aguas Buenas, Río de 227
Bayamón near Bayamón, Río 228
Bayamón, Río Guaynabo near 230
Bayaney, Río Camuy near 76
Bed material, definition of 34
Bedload, definition of 34
Bedload discharge, definition of 34
Benthic organisms, definition of 34
Biochemical oxygen demand, definition of 34
Biomass, definition of 34
Biomass pigment ratio, definition of 34
Blank samples 28
Blasina near Carolina, Quebrada 248
Blue-green algae, definition of 34
Boriquén, Río Turabo above 257
Bottom material, definition of 34
Bulk electrical conductivity, definition of 34

C
Caguas, Río Bairoa near 270
Caguas, Río Cagüitas at Highway 30 at 269
Caguas, Río Cagüitas at Villa Blanca at 267
Caguas, Río Grande de Loíza at 259
Cagüitas at Highway 30 at Caguas, Río 269
Cagüitas at Villa Blanca at Caguas, Río 267
Campo Rico, Río Canóvanas near 288
Camuy near Bayaney, Río 76
Canadian Geodetic Vertical Datum 1928, definition of 34
Canal de Moca below Hwy 112 68
Canal de Riego de Lajas above Majinas Filtration Plant 400
Canal de Riego de Lajas at 408
Canal de Riego de Lajas below Lago Loco Dam 398
Canal de Riego de Lajas below Lajas Filtration Plant at Lajas 406
Canal de Riego de Lajas below Majinas Filtration Plant 402
Canal de Riego de Moca below Forebay 64
Canal de Riego de Patillas above Guayama Filtration Plant . . . 339
Canal de Riego de Patillas below Guayama Filtration Plant . . . 341
Canal Moca (M216) above Aguadilla Plant 70
Canal Moca above Lago Regulador 66
Canal Principal de Diversiones at Lago Guajataca 62
Canal Principal de Riego Valle de Lajas Basin 404
Canóvanas near Campo Rico, Río 288
Caonillas above Lago Caonillas near Jayuya, Río 124
Caonillas at Paso Palma, Río 119
Caonillas below Lago Caonillas Tunnel, Río 128
Carolina, Quebrada Blasina near 248
Castañer, Lago Guayo at Damsite near 427
Cataño, Río Hondo at Flood Channel near 220
Cayaguas at Cerro Gordo, Río 253
Cayey, Lago Carite at Gate Tower near 194
Cell volume, definition of 35
Cells/volume, definition of 35
Central Cambalache, Río Grande de Arecibo at 150
Central Pellejas, Río Pellejas above 86
Central Rufina, Río Guayanilla at 390
Cerrillos above Lago Cerrillos near Ponce, Río 368
Cerrillos near Ponce, Río 372
Cerro Gordo, Río Cayaguas at 253
Cfs-day, definition of 35
Channel bars, definition of 35
Charco Hondo, Río Tanamá at 148
Chemical oxygen demand, definition of 35
Chico at Providencia, Río 331
Ciales, Río Cialitos at Highway 649 at 177
Ciales, Río Grande de Manatí at 173
Ciales, Río Grande de Manatí at Highway 149 at 175
Cialitos at Highway 649 at Ciales, Río 177
Cibuco at Vega Baja, Río 190
Cibuco below Corozal, Río 186
Cidra, Lago de Cidra at Damsite near 223
Classification of records 25
Clostridium perfringens, definition of 35
Coamo at Hwy 14 at Coamo, Río 348
Coamo near Coamo, Río 350
Coliphages, definition of 35

Color unit, definition of 35
Comerío, Río de la Plata at 198
Comerio, Río de la Plata near 203
Conductivity, definition of 46
Confined aquifer, definition of 35
Contents, definition of 35
Continuous-record station, definition of 35
Control, definition of 35
Control structure, definition of 35
Cooperation 2
Corozal, Río Cibuco below 186
Cubic foot per second, definition of 36
Cubic foot per second-day, definition of 36
Cubic foot per second per square mile, definition of 36
Culebrinas at Highway 404 near Moca, Río 440
Culebrinas at Margarita Dam near Aguada, Río 442
Culebrinas near Aguada, Río 444
Culebrinas near San Sebastián, Río 438
Curías Dam, Quebrada Las Curías below 236

D

Daily mean suspended-sediment concentration, definition of . . . 36
Daily record station, definition of 36
Data collection and computation 19, 30
Data collection platform, definition of 36
Data logger, definition of 36
Data presentation 20, 27, 31
Data table of daily mean values 22
Datum, definition of 36
Definition of terms 33
Descalabrado near Los Llanos, Río 352
Diatoms, definition of 36
Diel, definition of 36
Discharge, definition of 36
Dissolved, definition of 36
Dissolved oxygen, definition of 36
Dissolved solids concentration, definition of 37
Diversity index, definition of 37
Drainage area, definition of 37
Drainage basin, definition of 37
Dry mass, definition of 37
Dry weight, definition of 37

E

El Mango, Río Gurabo below 272
El Señorial, Río Piedras at 238
El Verde, Quebrada Sonadora near 290
El Verde, Río Grande near 297
Embeddedness, definition of 37
Enterococcus bacteria, definition of 37
EPT Index, definition of 37
Escherichia coli (*E. coli*), definition of 37
Espíritu Santo near Río Grande, Río 294
Estimated (E) value, definition of 38
Euglenoids, definition of 38
Explanation of records 14
Explanation of stage- and water-discharge records 19
Extractable organic halides, definition of 38

F

Fajardo below Fajardo, Río 311
Fajardo near Fajardo, Río 307
Fecal coliform bacteria, definition of 38
Fecal streptococcal bacteria, definition of 38
Fire algae, definition of 38
Florida, Río Blanco near 316
Florida, Río Grande de Arecibo below Lago Dos Bocas near 140
Florida, Río Yunes at Hwy 140 near 130
Flow, definition of 36
Flow-duration percentiles, definition of 38

G

Gage datum, definition of 38
Gage height, definition of 38
Gage values, definition of 38
Gaging station, definition of 38
Gas chromatography/flame ionization detector, definition of . . . 38
Geomorphic channel units, definition of 38
Grande de Añasco near Añasco, Río 434
Grande de Añasco near Lares, Río 429
Grande de Arecibo below Lago Dos Bocas near Florida, Río . 140
Grande de Arecibo near Adjuntas, Río 82
Grande de Arecibo near San Pedro, Río 142
Grande de Arecibo near Utuado, Río 106
Grande de Arecido at Central Cambalache, Río 150
Grande de Loíza at Caguas, Río 259
Grande de Loíza at Highway 183 near San Lorenzo 255
Grande de Loíza at Quebrada Arenas, Río 249
Grande de Loíza below Damsite 284
Grande de Loíza below Trujillo Alto, Río 286
Grande de Manatí at Highway 149 at Ciales, Río 175
Grande de Manatí at Highway 2 near Manatí, Río 179
Grande de Manatí, Río 160
Grande de Manati near Morovis, Río 164
Grande de Manatí, Río, at Ciales 173
Grande de Patillas near Patillas, Río 332
Grande near El Verde, Río 297
Green algae, definition of 39
Grid showing system for numbering wells and miscellaneous sites (latitude and longitude) 19
Ground water 6
Ground-water levels at selected wells in Puerto Rico and the U.S. Virgin Islands 7
Ground-water levels, records of 30
Ground-water stations in Puerto Rico, map showing location of 17
Ground-water stations in the U.S. Virgin Islands, maps showing location of 18
Guabá near Naguabo, Quebrada 312
Guadiana near Guadiana, Río 205
Guadiana near Naranjito, Río 210
Guajataca above mouth near Quebradillas, Río 72
Guanajibo near Hormigueros, Río 420
Guanajibo near San Germán, Río 414
Guánica, Río Loco at 410
Guayanés above mouth at Playa de Guayanés, Río 326
Guayanés at Yabucoa, Río 324
Guayanilla at Central Rufina, Río 390
Guayanilla near Guayanilla, Río 388
Guaynabo near Bayamón, Río 230
Gurabo below El Mango, Río 272
Gurabo near Gurabo, Río 279

H
Habitat, definition of 39
Habitat quality index, definition of 39
Hacienda El Progreso, Río Viví below 90
Hardness, definition of 39
Hato Rey, Río Piedras at 242
Hato Rey, Río Piedras at 244
High tide, definition of 39
Highest ground-water levels recorded during 2003 water year and previous high ground-water levels at selected wells in Puerto Rico, table showing 8
Hilsenhoff's Biotic Index, definition of 39
Hondo at Flood Channel near Cataño, Río 220
Horizontal datum, definition of 39
Hormigueros, Río Guanajibo near 420
Hormigueros, Río Rosario near 416
Humacao at Highway 3 at Humacao, Río 322
Humacao at Las Piedras, Río 320
Hydrographs 32
Hydrologic index stations, definition of 39
Hydrologic unit, definition of 39

I
Icacos near Naguabo, Río 314
Identification numbers, stations 14
Identifying estimated daily discharge 24
Inabón at Real Abajo, Río 365
Inch, definition of 39
Instantaneous discharge, definition of 39
International Boundary Commission Survey Datum, definition of 39
Introduction 1
Island, definition of 39
Islandwide monthly rainfall for the water year 2001 and annual averages for the 30-year reference period, 1961-1990, table showing 3

J
Jacaguas at Juana Díaz, Río 363
Jauca at Paso Palma, Río 113
Jayuya, Río Caonillas above Lago Caonillas near 124
Jayuya, Río Saliente at Coabey near 108
Juana Díaz, Lago Guayabal at Damsite near 361
Juana Díaz, Río Jacaguas at 363
Juncos, Río Valenciano near 277

L
La Plata at Comerío, Río 198
La Plata at Highway 2 near Toa Alta 216
La Plata at Proyecto La Plata, Río de 196
La Plata below La Plata Dam, Río 214
La Plena, Río Majada at 346
Laboratory measurements 27
Laboratory reporting level, definition of 40
Lago Caonillas at Damsite near Utuado 126
Lago Caonillas Tunnel, Río Caonillas below 128
Lago Carite at Gate Tower near Cayey 194
Lago Cerrillos at Damsite near Ponce 370
Lago Cerrillos near Ponce, Río Cerrillos above 368
Lago de Cidra at Damsite near Cidra 223
Lago de Cidra, Río de Bayamón below 225
Lago de Guajataca, Canal Principal de Diversiones at 62
Lago de Matrullas at Damsite near Orocovis 169
Lago Dos Bocas at Damsite near Utuado 138
Lago Dos Bocas, Río Limón above 135
Lago El Guineo at Damsite near Villalba 167
Lago Garzas near Adjuntas 80
Lago Guajataca at Damsite near Quebradillas 60
Lago Guayabal at Damsite near Juana Díaz 361
Lago Guayo at Damsite near Castañer 427
Lago La Plata at Damsite near Toa Alta 212
Lago Las Curías at Damsite near Río Piedras 234
Lago Loco at Damsite near Yauco 396
Lago Loíza at Damsite near Trujillo Alto 281
Lago Lucchetti at Damsite near Yauco 392
Lago Patillas at Damsite near Patillas 337
Lago Toa Vaca at Damsite near Villalba 359
Lago Toa Vaca, Río Toa Vaca above 354
Laguna San José No. 2 at San Juan 245
Laguna Tortuguero outlet near Vega Baja 183
Lajas, Canal de Riego de Lajas 408
Lajas, Canal de Riego de Lajas below Lajas Filtration Plant at 406
Lajas, Canal de Riego de Lajas Filtration Plant at 404
Land-surface datum, definition of 40
Lapa near Rabo del Buey, Río 344
Lares, Río Grande de Añasco near 429
Las Piedras, Río Humacao at 320
Latent heat flux, definition of 40
Light-attenuation coefficient, definition of 40
Limón above Lago Dos Bocas, Río 135
Lipid, definition of 40
Lizas, Río Maunabo at 327
Location of ground-water stations in Puerto Rico 17
Location of maximum concentrations of fecal coliform bacteria at the water-quality sampling sites in Puerto Rico . . 10
Location of maximum concentrations of fecal streptococci bacteria at the water-quality sampling sites in Puerto Rico . . . 11
Location of Río Camuy basin 75
Location of Río Cibuco basin 185
Location of Río Culebrinas basin 437
Location of Río de la Plata basin 193
Location of Río Grande de Arecibo basin 79
Location of Río Grande de Loíza basin 247
Location of Río Grande de Manatí basin 155
Location of Río Guajataca basin 57
Location of Río Guanajibo basin 413
Location of Río Hondo to Río Puerto Nuevo basins 219
Location of Río Yagüez to Río Grande de Añasco basins 425
Location of south coast river basins -- Río Inabón to Río Loco basins 367
Location of south coast river basins -- Río Salinas to Río Jacaguas basins 343
Location of southeastern river basins -- Río Humacao to Quebrada Aguas Verdes basins 319
Location of surface-water stations in Puerto Rico 15
Location of surface-water stations in the U.S. Virgin Islands . . . 18
Location of water-quality stations in Puerto Rico 16
Locations of northeastern river basins -- Río Herrera to Río Antón Ruíz basins 293
Long-term method detection level, definition of 40
Los Llanos, Río Descalabrado near 352
Low flow, 7-day, 10-year, definition of 46

Low tide, definition of 40
Lowest ground-water levels recorded during 2003 water year and previous high ground-water levels at selected wells in Puerto Rico, table showing 8

M

Macrophytes, definition of 40
Majada at La Plena, Río 346
Majinas Filtration Plant, Canal de Riego de Lajas above 400
Majinas Filtration Plant, Canal de Riego de Lajas below 402
Mameyes at Mameyes, Río 301
Mameyes near Sabana, Río 299
Mameyes, Río Mameyes at 301
Manatí, Río Grande de Manatí at Highway 2 near 179
Marín near Patillas, Río 335
Maunabo at Lizas, Río 327
Maunabo at Maunabo, Río 329
Maximum concentrations of fecal streptococci bacteria at the water-quality sampling sites in Puerto Rico, map showing location of 11
Maximum concentrations of total coliform bacteria at the water-quality sampling sites in Puerto Rico, map showing location of 10
Mayagüez, Río Yagüez near 426
Mean concentration of suspended sediment, definition of 40
Mean discharge, definition of 40
Mean high tide, definition of 40
Mean low tide, definition of 40
Mean sea level, definition of 40
Measuring point, definition of 41
Megahertz, definition of 41
Membrane filter, definition of 41
Metamorphic stage, definition of 41
Method detection limit, definition of 41
Method of Cubatures, definition of 41
Methylene blue active substances, definition of 41
Micrograms per gram, definition of 41
Micrograms per kilogram, definition of 41
Micrograms per liter, definition of 41
Microsiemens per centimeter, definition of 41
Milligrams per liter, definition of 41
Minimum reporting level, definition of 41
Miscellaneous site, definition of 41
Moca, Canal above Lago Regulador 66
Moca, Canal de Moca below Hwy 112 68
Moca, Canal de Riego de Moca below Forebay 64
Moca, Río Culebrinas at Highway 404 near 440
Monthly-mean discharge of selected streams in Puerto Rico 5
Morovis, Río Grande de Manatí near 160
Most probable number, definition of 41
Multiple-plate samplers, definition of 41

N

Naguabo, Quebrada Guabá near 312
Naguabo, Río Icacos near 314
Nanograms per liter, definition of 42
Naranjito, Río Guadiana near 210
National Geodetic Vertical Datum of 1929, definition of 42
Natural substrate, definition of 42
Nekton, definition of 42
Nephelometric turbidity unit, definition of 42
Networks and programs, special 13
North American Datum of 1927, definition of 42
North American Datum of 1983, definition of 42
North American Vertical Datum of 1988, definition of 42
Northeastern river basins -- Río Herrera to Río Antón Ruíz basins, map showing locations of 293
Numbering system for wells and miscellaneous sites 19

O

On-site measurements and sample collection 25
Open interval, definition of 42
Organic carbon, definition of 42
Organic mass, definition of 42
Organism count,
  Area, definition of 42
  Total, definition of 49
  Volume, definition of 42
Organochlorine compounds, definition of 42
Orocovis, Lago de Matrullas at Damsite near 169
Orocovis, Río Bauta near 171
Orocovis, Río Orocovis at 156
Orocovis, Río Orocovis near 158
Other data records available 25

P

Parameter code, definition of 42
Partial-record station, definition of 42
Particle size, definition of 43
Particle-size classification, definition of 43
Paso Palma, Río Caonillas at 119
Paso Palma, Río Jauca at 113
Patillas, Lago Patillas at Damsite near 337
Patillas, Río Grande de Patillas near 332
Patillas, Río Marín near 335
Peak flow, definition of 43
Peak stage, definition of 43
Pellejas above Central Pellejas, Río 86
Percent composition, definition of 43
Percent of total, definition of 43
Percent shading, definition of 43
Periodic-record station, definition of 43
Periphyton, definition of 43
Pesticides, definition of 43
pH, definition of 43
Phytoplankton, definition of 44
Picocurie, definition of 44
Piedras at El Señorial, Río 238
Plankton, definition of 44
Polychlorinated biphenyls, definition of 44
Polychlorinated naphthalenes, definition of 44
Ponce, Lago Cerrillos at Damsite near 370
Ponce, Río Cerrillos above Lago Cerrillos near 368
Ponce, Río Cerrillos near 372
Ponce, Río Portugués at 386
Ponce, Río Portugués at Highway 14 at 384
Ponce, Río Portugués near 382
Pool, definition of 44
Portugués at Highway 14 at Ponce, Río 384
Portugués at Ponce, Río 386
Portugues at Tibes, Río 376
Portugués near Ponce, Río 382
Precipitation 3
Preface iii

Primary productivity, definition of 44
Carbon method, definition of 44
Oxygen method, definition of 44
Programs, special networks and 13
Providencia, Río Chico at 331
Proyecto La Plata, Río de la Plata at 196
Publications on Techniques of Water-Resources Investigations 51

Q

Quebrada Arenas, Río Grande de Loíza at 249
Quebrada Las Curias below Las Curias Dam 236
Quebradillas, Lago Guajataca at Damsite near 60
Quebradillas, Río Guajataca above mouth near 72

R

Rabo del Buey, Río Lapa near 344
Radioisotopes, definition of 44
Reach, definition of 44
Real Abajo, Río Inabón at 365
Records of Ground-Water Levels 30
Records of surface-water quality 25
Records, explanation of 14
Recoverable from bed (bottom) material, definition of 45
Recurrence interval, definition of 45
Reference samples 29
Remark 28
Remark Codes 28
Replicate Samples 29
Replicate samples, definition of 45
Return period, definition of 45
Riffle, definition of 45
Río Blanco near Florida 316
Río Cibuco basin, map showing location of 185
Río Culebrinas basin, map showing location of 437
Río de la Plata basin, map showing location of 193
Río de la Plata near Comerio 203
Rio Fajardo at Paraíso near Fajardo, Río 305
Río Grande de Añasco near San Sebastian 431
Río Grande de Arecibo above Utuado 88
Río Grande de Arecibo basin, map showing location of 79
Río Grande de Arecibo below Utuado 100
Río Grande de Loíza basin, map showing location of 247
Río Grande de Manatí basin, map showing location of 155
Río Grande, Río Espíritu Santo near 294
Rio Guajataca basin, map showing location of 57
Río Guajataca basin, map showing location of 75
Río Guanajibo basin, map showing location of 413
Río Hondo to Río Puerto Nuevo basins, map showing location of 219
Río Limón above Lagos Dos Bocas 137
Río Loco at Guánica 410
Río Piedras at Hato Rey 244
Río Piedras near Río Piedras 240
Río Piedras, at Hato Rey 242
Río Piedras, Lago Las Curías at Damsite near 234
Río Saliente at Coabey near Jayuya 108
Río Yagüez to Río Grande de Añasco basins, map showing locations of 425
Río Yauco above Diversion Monserrate near Yauco 394
River mileage, definition of 45
Rosario near Hormigueros, Río 416
Run, definition of 45
Runoff, definition of 45

S

Sabana at Sabana, Río 303
Sabana, Río Mameyes near 299
Salvatierra near San Lorenzo, Quebrada 251
San Germán, Río Guanajibo near 414
San Juan, Bahía de San Juan No. 5 at 246
San Juan, Laguna San José No. 2 at 245
San Lorenzo, Quebrada Salvatierra near 251
San Lorenzo, Río Grande de Loíza at Highway 183 near 255
San Pedro, Río Grande de Arecibo near 142
San Sebastián, Río Culebrinas near 438
Screened interval, definition of 42
Sea level, definition of 45
Sediment 26
Sediment, definition of 45
Sensible heat flux, definition of 45
Seven-day, 10-year low flow, definition of 46
Shelves, definition of 46
Site identification numbers 30
Sodium adsorption ratio, definition of 46
Soil heat flux, definition of 46
Soil-water content, definition of 46
Sonadora near El Verde, Quebrada 290
South coast river basins -- Río Inabón to Río Loco basins, map showing locations of 367
South coast river basins -- Río Salinas to Río Jacaguas basins, map showing locations of 343
Southeastern river basins -- Río Humacao to Quebrada Aguas Verdes basins, map showing locations of 319
Special networks and programs 13
Specific electrical conductance (conductivity), definition of . . . 46
Spike samples 30
Stable isotope ratio, definition of 46
Stage- and water-discharge records, explanation of 19
Stage, definition of 46
Stage-discharge relation, definition of 46
Station identification numbers 14
Station manuscript 21
Statistics of montly mean data 22
Streamflow, definition of 46
Substrate, definition of 46
Artificial, definition of 33
Natural, definition of 42
Substrate embeddedness class, definition of 46
Summary of hydrologic conditions 3
Summary statistics 22
Surface area of a lake, definition of 46
Surface water 4
Surface-water quality, records of 25
Surface-water stations in Puerto Rico, map showing location of 15
Surficial bed material, definition of 46
Surrogate, definition of 47
Suspended, definition of 47
Recoverable, definition of 47
Total, definition of 47
Suspended sediment, definition of 47
Suspended-sediment concentration, definition of 47
Suspended-sediment discharge, definition of 47

Suspended-sediment load, definition of 47
Suspended solids, total residue at 105 °C concentration, definition of 47
Synoptic studies, definition of 47

T
Tanamá at Charco Hondo, Río 148
Tanamá near Utuado Río 144
Taxa (Species) richness, definition of 47
Taxonomy, definition of 48
Techniques of Water-Resources Investigations, publications on 51
Thalweg, definition of 48
Thermograph, definition of 48
Tibes, Río Portugues at 376
Time-weighted average, definition of 48
Toa Alta, Lago La Plata at Damsite near 212
Toa Alta, Río de la Plata at Highway 2 near 216
Toa Vaca above Lago Toa Vaca, Río 354
Tons per acre-foot, definition of 48
Tons per day, definition of 48
Total, definition of 48
Total coliform bacteria, definition of 48
Total discharge, definition of 48
Total in bottom material, definition of 48
Total length, definition of 49
Total load, definition of 49
Total organism count, definition of 49
Total recoverable, definition of 49
Total sediment discharge, definition of 49
Total sediment load, definition of 49
Transect, definition of 49
Trujillo Alto, Lago Loíza at Damsite near 281
Trujillo Alto, Río Grande de Loíza below 286
Turabo above Borinquén, Río 257
Turbidity, definition of 49

U
U.S. Geological Survey Water Data, access to 32
Ultraviolet (UV) absorbance (absorption), definition of 49
Unconfined aquifer, definition of 49
Utuado, Lago Caonillas at Damsite near 126
Utuado, Lago Dos Bocas at Damsite near 138
Utuado, Río Grande de Arecibo above 88
Utuado, Río Grande de Arecibo below 100
Utuado, Río Grande de Arecibo near 106
Utuado, Río Tanamá near 144

V
Valenciano near Juncos, Río 277
Vega Baja, Laguna Tortuguero outlet near 183
Vega Baja, Río Cibuco at 190
Vertical datum, definition of 49
Villalba, Lago El Guineo at Damsite near 167
Villalba, Lago Toa Vaca at Damsite near 359
Viví below Hacienda El Progreso, Río 90
Volatile mass, definition of 42
Volatile organic compounds, definition of 49

W
Water quality 9
Water table, definition of 49
Water-table aquifer, definition of 50
Water temperature 26
Water year, definition of 50
Water-level tables 31
Water-quality control data 28
Water-quality stations in Puerto Rico, map showing location of 16
Water-Resources Investigations, publications on Techniques of 51
Watershed, definition of 50
WDR, definition of 50
Weighted average, definition of 50
Wells - Puerto Rico
  Camuy Basin, Río
    Well 1026 - Zanja 4 495
  Cibuco Basin, Río
    Well 1102 - Piezometer Tortuguero 3 505
    Well 211 - Rosario 2 506
    Well 213 - Pampano 2 508
    Well 70 - Sabana Hoyos 507
  Grande de Arecibo Basin, Río
    Well 1052 - Encantada 497
    Well 1053 - Tiburones 498
    Well 1057 - PRASA Florida 1 500
    Well 204 - Gilberto Rivera 496
  Grande de Arecibo Basin, Río
    Well 1056 - Santana 1 499
  Grande de Manatí Basin, Río
    Well 1076 - Piezometer Hill 2 503
    Well 205 - NC-5 Cruce Dávila 501
    Well 210 - Gelo Martínez 504
  Guajataca Basin, Río
    Well 165 - Saltos 1 492
    Well 202 - Carmelo Barreto García 493
  Hondo to Río Puerto Nuevo Basins, Río
    Well 1153 - Piezometer Salud Mental 1 518
    Well 1154 - Piezometer Alsacia 2 519
    Well 1158 - Piezometer Jardín Botánico 3 520
    Well 1159 - Piezometer Ft. Buchanan 1 521
    Well 219 - Buchanan Park Well 516
    Well 652 - Piezometer USGS Building 652 517
  Humacao to Quebrada Aguas Verdes Basins, Río
    Well 1228 - Algarrobos Domestic 531
    Well 1229 - Barranca Dug 532
    Well 1230 - Phillips Petroleum 13 533
    Well 1233 - Piezometer Aguirre HW 5B 535
    Well 1239 - Jobos 536
    Well 6 - Juana 5 534
  Inabón to Río Loco Basins, Río
    Well 1276 - Constancia 3 554
    Well 141 - Restaurada 8A 553
  La Plata Basin, Río de
    Well 1127 - Piezometer Santa Rosa USGS 2 509
    Well 1128 - Piezometer Maguayo USGS 2 510
    Well 1130 - Piezometer Higuillar USGS 4 512
    Well 1133 - Piezometer USGS 1, Toa Baja 513
    Well 216 - Campanilla Navy Well 514
  Salinas to Río Jacaguas Basins, Río
    Well 1251 - Coqui Battery 1 537
    Well 1254 - Piezometer USGS D 540
    Well 1256 - Godreau 7 541
    Well 1257 - Paso Seco 7 542

Well 1261 - Piezometer A RASA 546
Well 1262 - Piezometer C RASA 548
Well 87 - Alomar 1 543
Wells - U.S. Virgin Islands
St. Croix
Well 13 - WAPA-17 566
Well 2 - USGS-10, Fairplains 2 564
Well 3 - Golden Grove 6 565
St. John
Well 11- Guinea Gut 569
St. Thomas
Well 6 - Grade School 3 567
Well 8 - Kirwan Terrace, VIEO-6 568
Wells Puerto Rico
Culebrinas Basin, Río
Well 1352 - Rincón 4 561
Well 200 - Aguadilla Cement North 562
Grande de Loíza Basin, Río
Well 1176 - Piezometer CJ 19A 522
Well 1177 - Piezometer Caguas-Juncos 11 523
Well 1179 - Piezometer Caguas-Juncos 15 524
Well 222 - Piezometer Campo Rico TW-1 525
Guanajibo Basin, Río
Well 1303 - Lajas Experimental 560
Well 1301 - PRASA 1 Cabo Rojo 559
Well 143 - Vivoni-Col Amistad 558
Herrera to Río Antón Ruiz Basins, Río
Well 1203 - Piezometer Carlos Arroyo 1 526
Well 1205 - Piezometer USGS RP-4 527
Well 1207 - Piezometer RF-12 528
Well 1208 - Piezometer Quebrada Mata de Plátanos 1 529
Humacao to Quebrada Aguas Verdes Basins, Río
Well 96 - Yabucoa 7 530
Inabón to Río Loco Basins, Río
Well 1277 - Albergue de Niños 555
Well 1278 - Luciano Ventura 556
Well 132 - Pittsburg Plate Glass 4, Yauco 2 557
La Plata Basin, Río de
Well 1134 - Mínima 515
Salinas to Río Jacaguas Basins, Río
Well 1264 - Playa 3 552
Well 1253 - Piezometer RM 10 539
Well 1258 - Cabrera 1 544
Well 1260 - Bauzá 1 545
Well 1263 - Jobitos Battery 550
Well 146 - Alomar Oeste 549
Wet mass, definition of 50
Wet weight, definition of 50
WSP, definition of 50

Y

Yabucoa, Río Guayanés at 324
Yagüez near Mayagüez, Río 426
Yauco, Canal de Riego de Lajas below Lago Loco Dam 398
Yauco, Lago Loco at Damsite near 396
Yauco, Lago Lucchetti at Damsite near 392
Yauco, Río Yauco above Diversion Monserrate near 394
Yunes at Hwy 140 near Florida, Río 130

Z

Zooplankton, definition of 50

Conversion Factors

Multiply	By	To obtain
	Length	
inch (in.)	2.54×10^{1}	millimeter (mm)
	2.54×10^{-2}	meter (m)
foot (ft)	3.048×10^{-1}	meter (m)
mile (mi)	1.609×10^{0}	kilometer (km)
	Area	
acre	4.047×10^{3}	square meter (m^2)
	4.047×10^{-1}	square hectometer (hm^2)
	4.047×10^{-3}	square kilometer (km^2)
square mile (mi^2)	2.590×10^{0}	square kilometer (km^2)
	Volume	
gallon (gal)	3.785×10^{0}	liter (L)
	3.785×10^{-3}	cubic meter (m^3)
	3.785×10^{0}	cubic decimeter (dm^3)
million gallons (Mgal)	3.785×10^{3}	cubic meter (m^3)
	3.785×10^{-3}	cubic hectometer (hm^3)
cubic foot (ft^3)	2.832×10^{-2}	cubic meter (m^3)
	2.832×10^{1}	cubic decimeter (dm^3)
cubic-foot-per-second day [(ft^3/s) d]	2.447×10^{3}	cubic meter (m^3)
	2.447×10^{-3}	cubic hectometer (hm^3)
acre-foot (acre-ft)	1.233×10^{3}	cubic meter (m^3)
	1.233×10^{-3}	cubic hectometer (hm^3)
	1.233×10^{-6}	cubic kilometer (km^3)
	Flow	
cubic foot per second (ft^3/s)	2.832×10^{1}	liter per second (L/s)
	2.832×10^{-2}	cubic meter per second (m^3/s)
	2.832×10^{1}	cubic decimeter per second (dm^3/s)
gallon per minute (gal/min)	6.309×10^{-2}	liter per second (L/s)
	6.309×10^{-5}	cubic meter per second (m^3/s)
	6.309×10^{-2}	cubic decimeter per second (dm^3/s)
million gallons per day (Mgal/d)	4.381×10^{-2}	cubic meter per second (m^3/s)
	4.381×10^{1}	cubic decimeter per second (dm^3/s)
	Mass	
ton (short)	9.072×10^{-1}	megagram (Mg) or metric ton

Temperature in degrees Celsius (•C) may be converted to degrees Fahrenheit (°F) as follows:

°F = (1.8 x•°C) + 32

PR
04
1

Carlos Figueroa-Alamo and others—Water Resources Data, Puerto Rico and the U.S. Virgin Islands, Water Year 2004—PR-04-1

Printed on recycled paper