Water-Data Report 2012

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIÁN, PR

RIO GRANDE DE AÑASCO BASIN

LOCATION.--Lat 18°17′05″, long 67°03′05″ referenced to North American Datum of 1927, Añasco Municipio, PR, Hydrologic Unit 21010003, on left bank, at downstream side of bridge on State Road 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.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--March 1963 to current year.

REVISED RECORDS.--WDR PR-2000-1: 1999: (M); WDR PR-2010-1: 2009: (M).

GAGE.--Water-stage recorder, satellite telemetry at station. 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 good. Trans basin diversion (except during floods) to Rio Yauco basin for hydroelectric power and irrigation above Lago Guayo, Lago Yahuecas, and Lago Prieto, combined useable storage 17,300 acre-ft (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.

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIÁN, PR—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	401	323	203	118	104	173	388	330	331	341	222	332
2	415	513	222	118	103	300	302	3,070	316	343	200	287
3	337	341	211	113	103	316	256	1,410	304	359	191	226
4	353	255	194	114	102	164	273	1,320	295	404	201	204
5	637	232	184	115	101	137	282	1,480	321	308	611	194
6	384	222	181	168	100	128	286	986	289	215	280	190
7	347	229	183	198	104	127	595	709	273	184	316	248
8	302	323	176	167	109	128	391	542	265	254	404	153
9	285	370	170	127	137	224	2,300	1,040	256	462	332	137
10	286	285	229	125	205	460	1,130	790	263	219	306	134
11	284	675	173	117	188	538	512	589	288	174	207	146
12	795	473	224	118	117	228	333	558	250	164	185	125
13	452	259	173	110	109	163	550	1,580	238	421	359	138
14	293	224	158	108	129	1,050	1,410	1,340	235	254	537	212
15	289	216	167	104	129	819	1,250	1,360	234	210	353	399
16	395	208	158	104	115	406	508	1,670	225	200	325	535
17	633	217	149	104	110	211	364	1,520	240	186	519	386
18	890	428	145	104	104	315	323	783	320	202	430	376
19	628	228	141	103	106	580	287	622	253	337	261	563
20	576	208	139	100	104	996	267	548	227	236	213	460
21	329	275	139	100	98	743	260	540	214	210	260	572
22	332	239	134	114	97	405	254	470	206	186	248	324
23	386	233	131	104	97	437	253	434	208	177	217	255
24	339	208	130	101	121	250	234	408	198	365	1,550	190
25	275	680	128	103	124	441	237	423	191	230	1,070	228
26	382	1,210	127	102	124	422	350	393	185	180	440	370
27	451	415	125	102	127	259	634	377	177	268	314	483
28	269	350	123	102	131	1,290	534	757	302	415	306	507
29	280	266	123	100	151	1,460	292	513	286	369	248	322
30	681	217	121	102	---	1,120	271	448	588	273	221	246
31	481	---	118	107	---	691	---	353	---	251	323	---
Total	13,187	10,322	4,979	3,572	3,449	14,981	15,326	27,363	7,978	8,397	11,649	8,942
Mean	425	344	161	115	119	483	511	883	266	271	376	298
Max	890	1,210	229	198	205	1,460	2,300	3,070	588	462	1,550	572
Min	269	208	118	100	97	127	234	330	177	164	185	125
Ac-ft	26,160	20,470	9,880	7,090	6,840	29,710	30,400	54,270	15,820	16,660	23,110	17,740
Cfsm	4.51	3.65	1.70	1.22	1.26	5.12	5.42	9.36	2.82	2.87	3.98	3.16
In.	5.20	4.07	1.96	1.41	1.36	5.91	6.05	10.79	3.15	3.31	4.60	3.53

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2012, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	724	500	247	146	115	115	186	421	311	282	397	714
Max	1,733	1,578	716	289	345	483	1,045	1,084	939	657	936	3,505
(WY)	(2006)	(2004)	(2008)	(2004)	(1996)	(2012)	(2002)	(1986)	(1999)	(1979)	(1979)	(1998)
Min	260	182	103	82.4	62.3	54.4	49.3	63.7	71.2	111	152	206
(WY)	(2007)	(1998)	(1992)	(1998)	(1992)	(1965)	(1968)	(1967)	(1977)	(1990)	(1967)	(1983)

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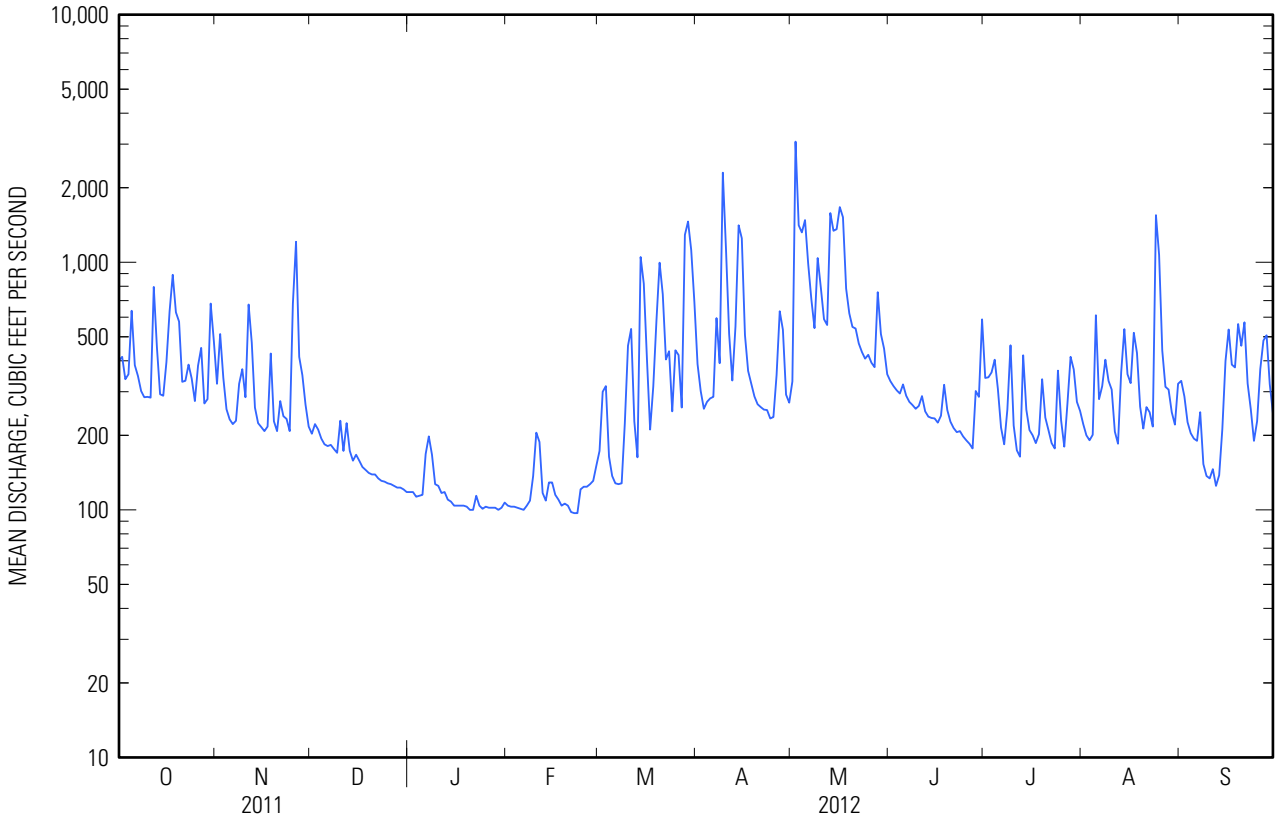
SUMMARY STATISTICS

	Calendar Year 2011		Water Year 2012		Water Years 1963 - 2012	
Annual total	143,346		130,145			
Annual mean	393		356		347	
Highest annual mean					556	1999
Lowest annual mean					189	1967
Highest daily mean	5,280	Sep 13	3,070	May 2	69,900	Sep 22, 1998
Lowest daily mean	53	Apr 10	97	Feb 22	32	Apr 18, 1965
Annual seven-day minimum	59	Mar 30	102	Jan 24	35	Apr 14, 1965
Maximum peak flow			14,200	May 2	162,000	Sep 22, 1998
Maximum peak stage			11.10	May 2	34.50	Sep 22, 1998
Instantaneous low flow					31	Apr 19, 1965
Annual runoff (ac-ft)	284,300		258,100		251,500	
Annual runoff (cfsm)	4.16		3.77		3.68	
Annual runoff (inches)	56.55		51.34		50.02	
10 percent exceeds	858		635		723	
50 percent exceeds	222		259		199	
90 percent exceeds	74		114		77	



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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963 to current year.

REMARKS.--Part of Water-Quality Synoptic survey at streams in the Río Grande de Añasco Basin during Water Year 2010.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
Part 1 of 4

[MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft³/s, cubic feet per second; mg/L, milligrams per liter; ng/L, nanograms per liter; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Discharge, instantaneous, ft³/s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	pH, water, unfiltered, field, standard units (00400)	Specific conductance, water, unfiltered, µS/cm at 25°C (00095)	Temperature, water, °C (00010)	Turbidity, water, unfiltered, broad band light source (400-680 nm), detectors at multiple angles including 90 +/- 30 degrees, ratiometric correction, NTRU (63676)	Calcium, water, unfiltered, recoverable, mg/L (00916)	Magnesium, water, unfiltered, recoverable, mg/L (00927)
11-09-2011	**1325**	241	8.3	7.8	203	24.5	53	--	--
02-08-2012	**0820**	105	8.4	7.8	237	22.8	--	26.8	9.03
05-09-2012	**0835**	684	8.3	7.6	203	24.2	180	--	--
08-29-2012	**1030**	246	8.3	8.0	225	25.6	22	23.1	7.80

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
Part 2 of 4

[MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft³/s, cubic feet per second; mg/L, milligrams per liter; ng/L, nanograms per liter; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Hydrogen ion, water, unfiltered, calculated, mg/L (00191)	Ammonia, water, unfiltered, mg/L as N (00610)	Nitrate plus nitrite, water, filtered, mg/L as N (00631)	Nitrite, water, filtered, mg/L as N (00613)	Phosphorus, water, unfiltered, mg/L as P (00665)	Total nitrogen, water, unfiltered, analytically determined, mg/L (62855)	Fecal coliform, M-FC MF (0.7 micron) method, water, col/100 mL (31625)	Total coliform, M-Endo MF method, immediate, water, col/100 mL (31501)
11-09-2011	**1325**	0.00002	< .02	0.711	0.002	0.097	0.93	4,500	41,000
02-08-2012	**0820**	.00001	< .02	.411	.002	.045	.46	E 54	320
05-09-2012	**0835**	.00002	< .02	.580	.002	.202	.96	3,900	29,000
08-29-2012	**1030**	.00001	< .02	.488	.002	.068	.66	E 1,400	6,800

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIÁN, PR—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
Part 3 of 4
[MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft³/s, cubic feet per second; mg/L, milligrams per liter; ng/L, nanograms per liter; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Cadmium, water, unfiltered, µg/L (01027)	Chromium, water, unfiltered, recover-able, µg/L (01034)	Copper, water, unfiltered, recover-able, µg/L (01042)	Lead, water, unfiltered, recover-able, µg/L (01051)	Mercury, water, unfiltered, ng/L (50286)	Zinc, water, filtered, µg/L (01090)	Arsenic, water, unfiltered, µg/L (01002)	Cyanide, water, unfiltered, milligrams per liter (00720)	Selenium, water, unfiltered, µg/L (01147)
11-09-2011	**1325**	--	--	--	--	--	--	--	--	--
02-08-2012	**0820**	< .016	< .6	.80	< .04	.59	< 1.4	.32	< .0050	.064
05-09-2012	**0835**	--	--	--	--	--	--	--	--	--
08-29-2012	**1030**	< .016	.8	1.8	.12	2.30	< 1.4	< .28	< .0050	.051

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
Part 4 of 4
[MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft³/s, cubic feet per second; mg/L, milligrams per liter; ng/L, nanograms per liter; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Methylene blue active sub-stances, water, unfiltered, recover-able, mg/L (38260)
11-09-2011	**1325**	--
02-08-2012	**0820**	< .050
05-09-2012	**0835**	--
08-29-2012	**1030**	< .050