

APPENDIX D
FLOW and FISH DATA

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Table D1: 2004 Flow Data in Rio Puerco (Arroyo Chijuilla to northern bnd Cuba) Assessment Unit

Site	Date	Flow (cfs)	Notes
Rio Puerco @ Hwy 550 Bridge 33RPuerc248.7	3/31/04	1.146	Estimated (fewer than 20 windows)
	4/14/04	6.60	Estimated (fewer than 20 windows)
	6/29/04	0.25	Visual estimation (no measurements)
	7/27/04	0.10	Visual estimation (no measurements)
	9/1/04	0.15	Visual estimation (no measurements)
	9/30/04	1.0	Visual estimation (no measurements)
	11/18/04	<1.0	Visual estimation (no measurements)
Rio Puerco abv WWTP 33RPuerc244.0	3/30/04	3.73	Estimated (fewer than 20 windows)
	4/14/04	27.97	Estimated (fewer than 20 windows)
	5/25/04	6.68	Estimated (fewer than 20 windows)
	6/29/04	1.00	Visual estimation (no measurements)
	9/1/04	0.05	Visual estimation (no measurements)
	9/21/04	<0.02 *	Visual estimation (no measurements)
	9/30/04	<1.0	Visual estimation (no measurements)
	11/18/04	<1.0	Visual estimation (no measurements)
Rio Puerco blw WWTP @ Sanchez Property 33RPuerc241.8	5/26/04	5.50	Visual estimation (no measurements)
	6/29/04	1.00	Visual estimation (no measurements)
	7/27/04	1.00	Visual estimation (no measurements)
	9/1/04	0.10	Visual estimation (no measurements)
	9/30/04	0.02	Visual estimation (no measurements)
	11/18/04	<1.0	Visual estimation (no measurements)

NOTES: *Sampling for SWQB-PSRS section, not part of intensive water quality survey.

Table D2: 2004 Effluent Discharge from Village of Cuba WWTP*

Month	30-day average (mgd)	30-day average (cfs)	7-day average (mgd)	7-day average (cfs)
January	0.036	0.056	0.066	0.102
February	0.035	0.054	0.038	0.059
March	0.034	0.053	0.046	0.071
April	0.0295	0.046	0.052	0.080
May	0.033	0.051	0.048	0.074
June	0.028	0.043	0.038	0.059
July	0.030	0.046	0.040	0.062
August	0.0298	0.046	0.042	0.065
September	0.0298	0.046	0.042	0.065
October	0.0287	0.044	0.042	0.065
November	0.0375	0.058	0.046	0.071
December	0.032	0.050	0.042	0.065

NOTE: *As of the NPDES permit (NM0024848) issued on October 31, 2005, the effluent limit is 0.144 mgd. The effluent limit was the same in 2004.

Figure D1: Annual Mean Discharge at USGS 08334000 (1925-2005)

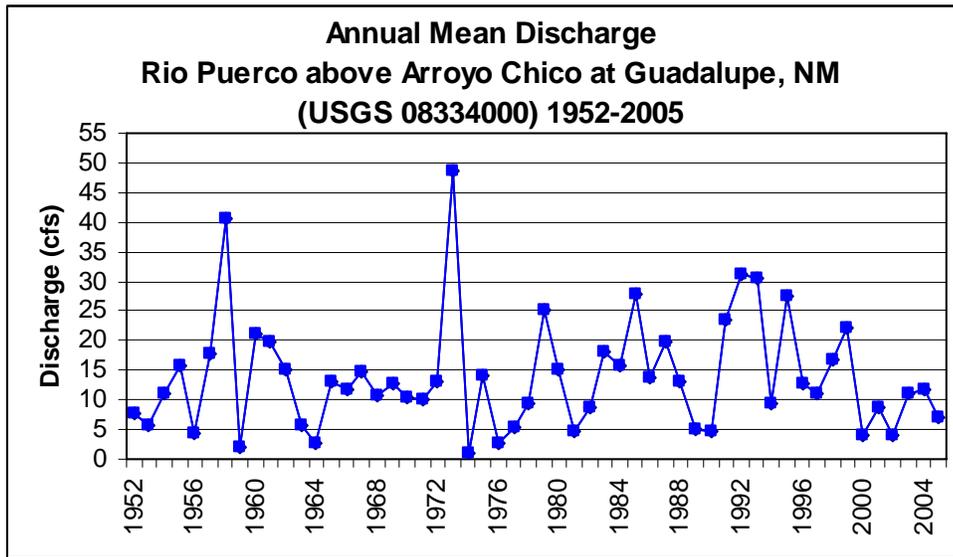


Table D3: Available Historic Fish Data*

Site	Date	Genus, Species	Species	Min SL (mm)	Max SL (mm)
Headwaters of Rio Puerco, east of Cuba	5/28/1956	<i>Oncorhynchus clarki</i>	11	82	135
Upper Rio Puerco, east of Cuba	6/20/1956	<i>Oncorhynchus clarki</i>	8	94	130
Rio Puerco, 3 miles north and 3 miles east of Cuba.	10/20/82	<i>Oncorhynchus clarki</i>	20	101	185
Rio Puerco, immediately below Cuba wastewater treatment plant outfall.	3/7/2006	<i>Pimephales promelas</i>	6	26	55
Rio Puerco, immediately upstream of NM State HWY 550 bridge in Cuba.	3/7/2006	<i>Pimephales promelas</i>	14	14	33

*obtained from the University of New Mexico Museum of Southwestern Biology, Division of Fishes

Species = # of individuals in the collection for the given date

SL = Standard length in millimeters

Sightings of fishes upstream of the Cuba WWTF

July 16, 2001: Members of the Rio Puerco Management Committee, Cuba SWCD, and EPA Region 6 participated in a site cleanup project on the Rio Puerco within the Village of Cuba (behind the local Hardware Store). A total of 600 tire carcasses were removed from the channel, immediately below a rock and wire gabion grade control structure, in an area where a former attempt at stream stabilization utilizing tire bales is in the process of failing. Cleanup crews could not help but disturb and scatter dozens of small fish as the tires were extricated from the channel, banks, and bars. (Guesses as to species were verbalized: 'one of several kinds of minnows?' 'chubs?' - nobody in the group is actually a fish biologist).

A 319 implementation project (FY03-I) was developed at the same site after the 2001 tire removal event. Minor numbers of generally small fish have continued to be observed in the project reach, in the stable and very well vegetated stream segment immediately upstream of the project site (on 7/25/01 small schools of fish were seen moving between pooled areas under very low flow conditions during longitudinal and cross-sectional laser surveys of the river); and downstream of the project, during a reconnaissance walk/wade to assess channel characteristics (natural dimensions and meandering pattern) of the river downstream of where the restoration project will be implemented (9/30/03).

Crews contracted to install a 20' square rock mattress at the toe of the gabion on the FY03-I project gathered local fist-size cobble and broken clasts of concrete that already occupied the channel bottom, for inclusion in the rock mattresses they were building. The SWQB Project Officer assisted in this effort and made note in his field notebook (6/15/04), noting that "I wish I knew what kind (species) of macroinvertebrate insect casts and tubes we were seeing on the bottoms and sides of some of the rocks we were gathering".

The report from a SWQB Water Quality Survey dated 6/20/89, documents the presence of fathead minnows at stations above the Cuba WWTP outfall in the Rio Puerco.

The Thermograph Deployment and Retrieval Field Sheet (for # 604216), dated 6/15/2004, notes an impressive quantity (>25) of small (minnow ?) fish were occupying a large pool area immediately below the Hwy. 550 bridge over the Rio Puerco, at the time the thermograph was installed along the river's left (east) bank. The fish scattered into the pooled area and dissipated upstream. (This site is upstream of the previously described Implementation Project site.)

Fish sightings downstream of CWWTF

(From field notes during NMED's 8/14/96 response to complaints regarding the Cuba Wastewater Treatment Plant: Ann Young, Peter Monahan, Mike Coleman). During the course of our conversation with Louie Wiese, local rancher, he expressed concern that there has been a decline in the presence of sizable fish - recently he is seeing only schools of much smaller fish. We observed several instances of these small (0.5 to 1.5"+) fish as we walked along the Rio Puerco on his property south of Cuba.

Section 319 FY98-I Implementation Project site visit and inspection of vegetation plantings on Forest Guardian's New Mexico State Lease sections, in June, 1999: Traversing the project with John Horning, Project Manager, we scattered several groups of small minnow-like fish. Horning commented that the presence of any fish at all further validates the need for their work in protecting and improving local ecology.

The report from a SWQB Water Quality Survey dated 6/20/89, documents the presence of fathead minnows at stations below the Cuba WWTP outfall in the Rio Puerco.