

Department of the Interior  
BUREAU OF RECLAMATION  
ALBUQUERQUE AREA OFFICE

**2009**

**SUPPLEMENTAL WATER  
PROGRAM REPORT**

February 2010



## **Introduction**

The Rio Grande silvery minnow was listed as a federally endangered species on July 20, 1994. Dewatering of the river channel within the silvery minnow's habitat was identified as a key threat to the continued existence of the species. A sizeable portion of the silvery minnows' habitat is located within the mainstem of the Rio Grande between Cochiti Dam and San Marcial, which is a section of the river prone to critically low flows during the irrigation season.

## **Summary of the 2009 Supplemental Water Program**

The 2009 Supplemental Water Program was used to assist in achieving the targeted flows as described in the Biological and Conference Opinions on the Effects of Actions Associated with the Programmatic Biological Assessment of the Bureau of Reclamation's Water and River Maintenance Operations, Army Corps of Engineers' Flood Control Operation, and Related Non-Federal Actions on the Middle Rio Grande, New Mexico, dated March 2003 (BO).

No additional water under the Emergency Drought Water Agreement was stored in 2009. The EDWA pool for minnow purposes in El Vado is currently empty, however, there is still the opportunity to store 30,451 ac-ft if supplies warrant and there is inadequate sources of water to meet the demands of endangered species.

In addition to the EDWA releases, 22,113 ac-ft of leased SJ-C water was released throughout the year beginning in mid-July. A below average monsoon season from July through October made releases for endangered species necessary during that time frame.

Approximately 8,075 ac-ft was pumped from the Low Flow Conveyance Channel into the Rio Grande to keep the reach of river wet between San Acacia and Elephant Butte. The pumps were in operation from July 15 until October 30.

Table 1 summarizes the water used in 2009 to supplement flows in the Rio Grande between Cochiti and Elephant Butte Reservoir

**Table 1 – Water Used in 2009 to Supplement flows in the Rio Grande**

<b>Source of Water</b>	<b>Volume (ac-ft)</b>
Leased 2008 SJ-C Contractor Allocation released	22,113
Emergency Drought Water Agreement	0
Water Pumped from LFCC into Rio Grande	8,075
<b>TOTAL</b>	<b>30,188</b>

Representatives from USBR, U.S. Army Corps of Engineers (USACE), USFWS, NMISC, and MRGCD participated in conference calls throughout the irrigation season to exchange information and discuss Agency actions. These calls provided an efficient means to coordinate water operations, LFCC pumping operations, and related silvery minnow rescue operations.

**Stream Flow Forecast and Estimated Actual Runoff**

The National Resource Conservation Service’s (NRCS) May 1, 2009 stream flow forecast for the Rio Grande Basin<sup>1</sup> projected the total spring runoff to be slightly below average with March to July runoff volumes of 80-95%. The May 1<sup>st</sup> forecast projected the most probable stream flow to range from highs of 105% of average for the inflow into El Vado Reservoir to a low of 41% of average for the Jemez River. It should be noted that NRCS snowmelt forecasts are unregulated forecasts of stream flow that would occur naturally without any upstream influences.

The 2009 spring snowmelt runoff in the Rio Grande basin was a fairly good one with very manageable flows. A brief warm spell on the Rio Chama with temperatures some 20 degrees above normal caused a surprise spike near the peak, but overall the runoff hydrograph was very typical. March-July runoff stream flows at Otowi Bridge and San Marcial were estimated to be 86% and 84% of average, respectively. Table 2 presents the NRCS May 1, 2009 forecast volumes and estimated actual runoff for select stations within the Rio Grande Basin. Runoff stream flow volumes were estimated by adjusting actual stream flow data to account for existing upstream influences.

**Table 2 – May 1, 2009 NRCS Stream Flow Forecasts and Estimated Runoff (ac-ft)**

Forecast Point	Most Probable Runoff Volume (% 30 yr avg)	1971-2000 30 Year Average Volume	Estimated Runoff Volume (% 30 yr avg)
Embudo Creek at Dixon (Mar-Jul)	45,000 (88%)	51,000	30,000 (59%)
El Vado Reservoir Inflow (Mar-Jul)	240,000 (101%)	237,000	245,000 (103%)
Rio Grande at Otowi Bridge (Mar-Jul)	650,000 (86%)	757,000	665,000 (88%)
Santa Fe River near Santa Fe (Mar-Jul)	4,000 (87%)	4,600	3,300 (72%)
Jemez Canyon Reservoir Inflow (Mar-Jul)	19,500 (43%)	45,000	19,000 (42%)
Rio Grande at San Marcial (Mar-Jul)	480,000 (84%)	573,000	370,000 (65%)

**Leased SJ-C Water for 2009 Supplemental Water Releases**

Table 3 provides a summary of all SJ-C supplemental water leases and releases executed in 2009.

**Table 3 – Summary of San Juan-Chama Contractor Water Leased in 2009**

<b>Dates of Release</b>	<b>Contractor</b>	<b>Volume (ac-ft)</b>
8/09-10/12	ABCWUA	10,772
9/22	Belen	470*
9/21-9/22	Espanola	850*
9/21	Los Alamos	1,200
9/22	Taos	400*
9/18-9/22	Jicarilla Apache	3,000*
9/22-9/23	Los Lunas	400*
9/23-9/26	Santa Fe	2,500
9/18-9/19	San Juan Pueblo	2,000
9/23	Bernalillo	320
9/23	Santa Fe County	375
9/24-9/25	Uncontracted	2,990*
9/22	Red River	60
9/22	Taos Ski Valley	15
	2008 Carryover	9,450
<b>Total Used in 2009</b>		<b>22,113</b>
<b>*stored in Abiquiu</b>		
<b>TOTAL 2009 LEASES AVAILABLE FOR 2010 (as of 01/01/10)</b>		<b>12,429</b>

**Low Flow Conveyance Channel Pumping**

USBR maintained 15 portable diesel driven pumps to transfer water from the LFCC to the Rio Grande during the 2009 irrigation season. The pumps are located between Socorro and Elephant Butte Reservoir, beginning at the Neil Cupp location approximately 2.8 miles north of Highway 380 and extending downstream approximately 5 miles south of San Marcial LFCC gage at Fort Craig. Figure 1 provides a map showing the general locations of LFCC pumping stations.

Pumping started this year on July 15 and continued until October 30. The approximate annual volume pumped by location is tabulated in Table 4. The Neil Cupp and North Boundary sites were only used to slow drying events so that isolated pools that developed during drying events could be seined for any minnows that were stranded. The South Boundary pumps were kept on for much of the summer since water was easily available, pumping at that site could keep the lower reach wet even past Ft Craig, and changes in pumping rates required removal/lowering of a berm constructed to build head at the pump intakes.

**Table 4 – Approximate Annual Volume by LFCC Pumping Location**

<b>Pumping Location</b>	<b>No. of Pumps</b>	<b>Jul vol</b>	<b>Aug vol</b>	<b>Sep vol</b>	<b>Oct Vol</b>	<b>Approximate Annual Volume (ac-ft)</b>
Neil Cupp	4	460	371	81	38	950
North Boundary Bosque del Apache NWR	3	398	111	143	150	802
South Boundary Bosque del Apache NWR	5	786	1642	1966	1929	6,323
Fort Craig	3	0	0	0	0	0
<b>TOTAL</b>	<b>15</b>	<b>1645</b>	<b>2124</b>	<b>2190</b>	<b>2116</b>	<b>8,075</b>

**Actual San Acacia and San Marcial Flows Compared to Target Flows**

Supplemental water was used to assist in achieving the targeted flows as described in the March 2003 BO. The elements of target flows are based on the April 1 runoff forecast for the Otowi Gage which determines whether the year will be declared a Dry, Average, or Wet year. Years in which Article VII of the Rio Grande Compact are in effect are declared Dry years. 2009 was classified as an Average year due to an April forecast at Otowi of 86% of average. Average year protocols were followed which included minimum flows of 100 cfs at Isleta Dam and 50 cfs at San Acacia after June 15.

Target flows at Isleta Dam and San Acacia as described in Reasonable and Prudent Alternative Water Operations Elements I and J are summarized in the following paragraphs.

**Element I**

Action agencies, in coordination with parties to the consultation, shall, from June 16 to July 1 of each year, ramp down the flow to achieve a target flow of 50 cfs over San Acacia Diversion Dam through November 15.

**Element J**

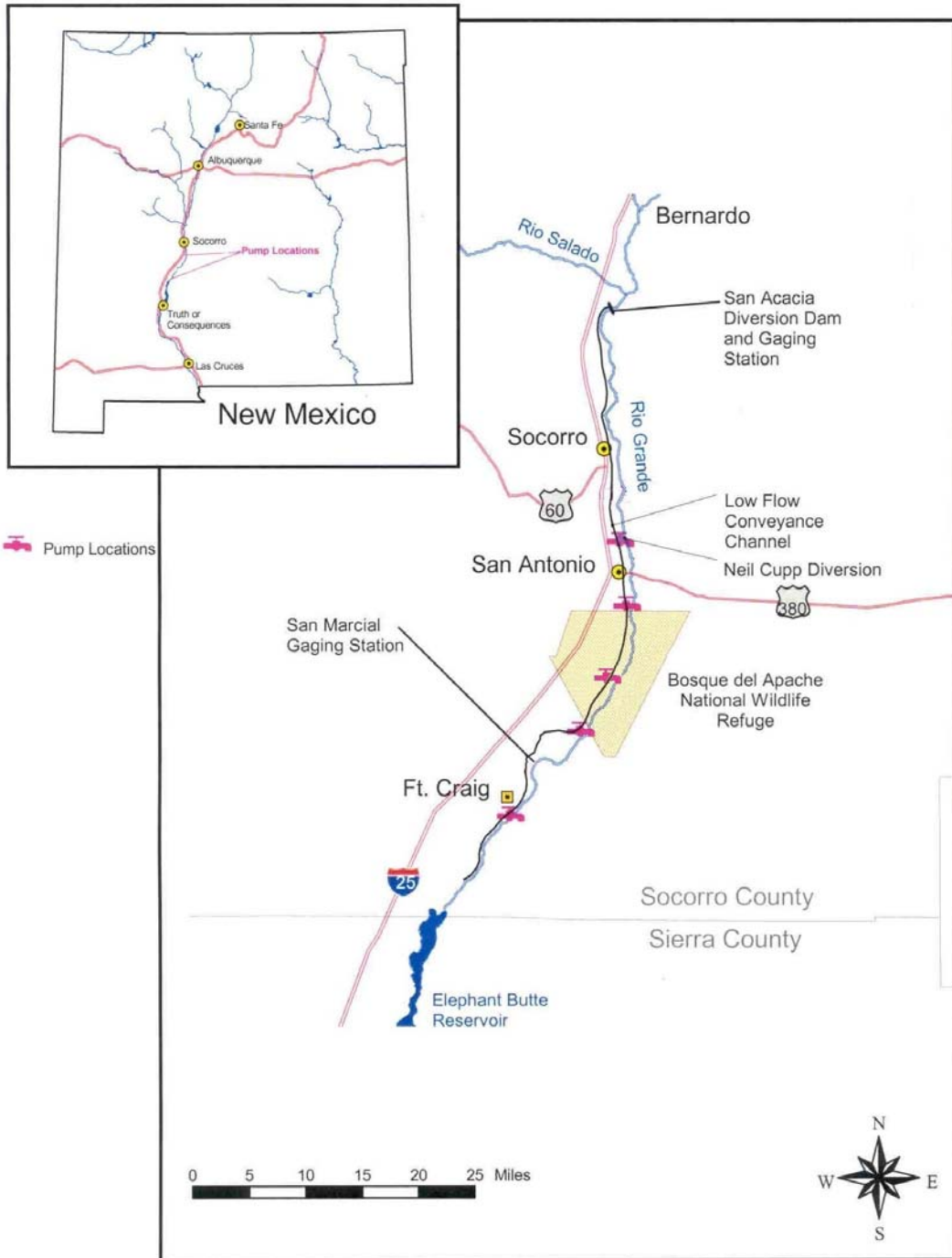
Action agencies, in coordination with parties to the consultation, shall provide year-round continuous river flow from Cochiti Dam to Isleta Diversion Dam with a target flow of 100 cfs over Isleta Diversion Dam.

Figure 2 shows the actual measured flow at the USGS gage 08330000 Rio Grande at Albuquerque, NM. This is the last gage above the Isleta Diversion Dam.

Figure 3 illustrates the streamflow of the lower section of the Middle Rio Grande Reach as measured at the USGS gage 08354900 Rio Grande Floodway at San Acacia, NM. The graph includes a line illustrating the 50 cfs flow target from June 15 through October 31.

Figure 4 illustrates the streamflow of the lower section of the Middle Rio Grande Reach as measured at the USGS gage 08358400 Rio Grande Floodway at San Marcial, NM.

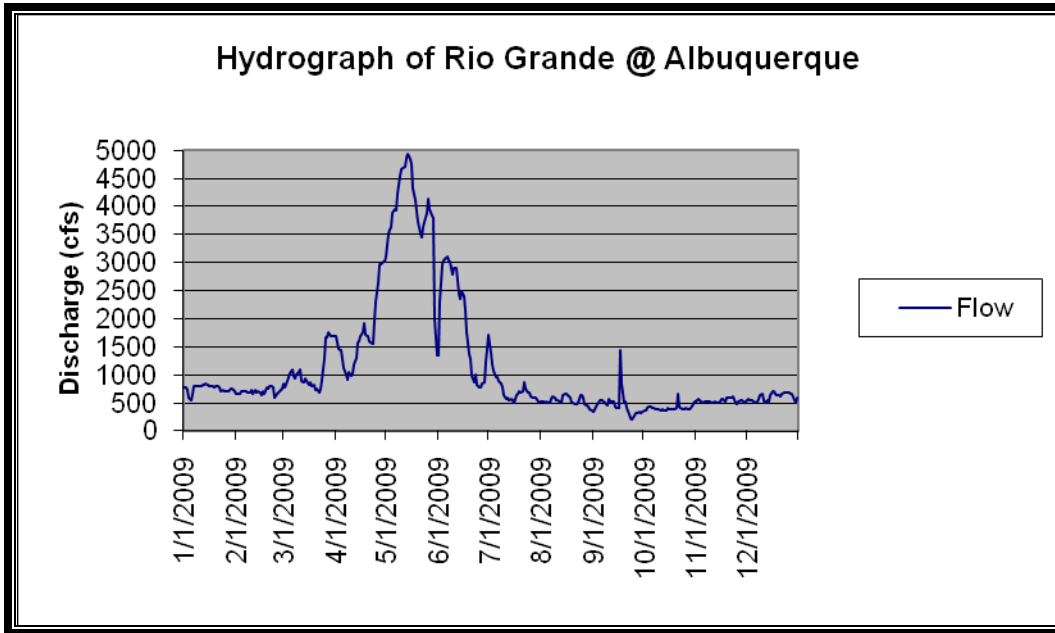
## LFCC PUMP LOCATION MAP



**Figure 1 – Map Showing Low Flow Conveyance Channel Pumping Locations**

<sup>1</sup> *New Mexico Basin Outlook Report, May 1, 2008 (USDA / NRCS 2008)*

**Figure 2 – Measured Albuquerque Flow**



**Figure 3 – Measured Flow @ San Acacia**

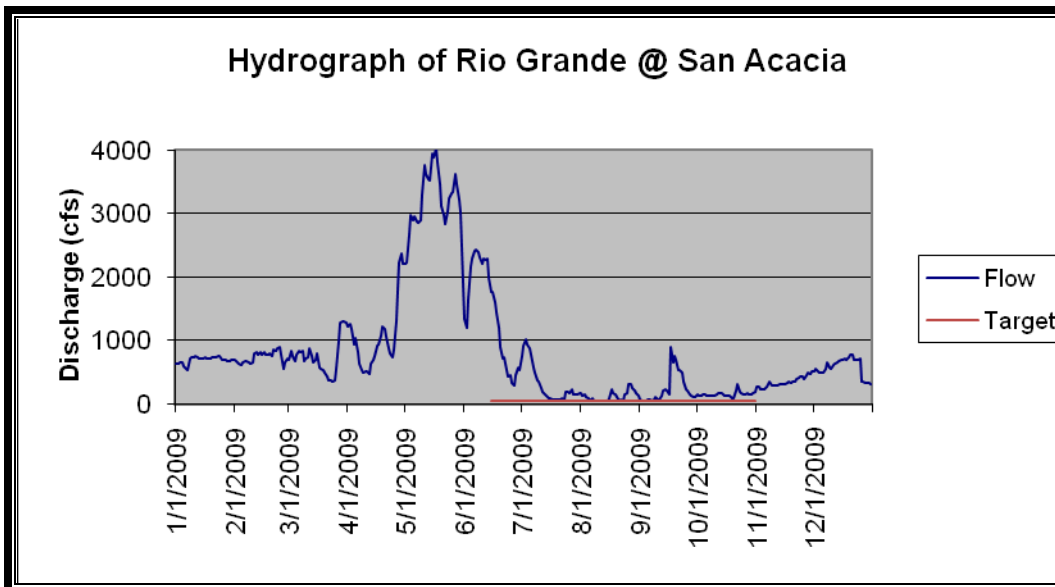




Figure 4 – Measured Flow @ San Acacia

