

# Lower Rio Grande Rehabilitation Project

Jedediah S. Rogers  
Historic Reclamation Projects  
Bureau of Reclamation  
2009

Reformatted, reedited, reprinted by  
Andrew H. Gahan  
September 2013

## Table of Contents

Table of Contents .....	i
Lower Rio Grande Rehabilitation Project.....	1
Project Location .....	1
Historic Setting .....	2
Investigations .....	7
Project Authorization .....	9
Construction History .....	11
Mercedes Division .....	11
La Feria Division .....	14
Loan Program Projects.....	15
Post-Construction History.....	16
Project Benefits.....	18
Conclusion .....	19
Bibliography .....	21
Manuscript Collections .....	21
Government Documents .....	21
Secondary Sources .....	21
Other Sources .....	22
Index .....	23

## **Lower Rio Grande Rehabilitation Project**

The Lower Rio Grande Rehabilitation Project has the distinction of being the southern- and nearly eastern most project constructed by the Bureau of Reclamation in the United States. Situated deep in southern Texas adjacent to the Rio Grande in the lower Rio Grande valley—known simply as the “Valley”—the project provides water for agricultural use to four counties with a combined population of over 700,000 in 1990. Growth in southern Texas over the last fifty years is due in no small measure to the prominence of agriculture, spurred on through completion and operation of the Lower Rio Grande Rehabilitation Project.<sup>1</sup> Beginning in the 1950s when Congress authorized the project, thousands of miles of canals and laterals have been cleared, lined, and maintained, which in turn has successfully delivered water to thousands of acres of productive farmland in several local water districts.

### **Project Location**

The lower Rio Grande valley is a broad, open valley that extends from Falcon Dam to the north and west to the mouth of the Rio Grande at the Gulf of Mexico. Six Texas counties—Webb, Zapata, Starr, Hidalgo, Willacy, and Cameron—and ten *municipios* in the Mexican state of Tamaulipas lie within its geographic boundaries. In many ways, it is a place of intersections—the confluence of the arid deserts to the west, coastal areas to the east, temperate climate to the north, and subtropical zone to the south. These intersections produce a rich biodiversity zone that, for instance, attracts birders from all over; the Lower Rio Grande Valley National Wildlife Refuge represents eleven

---

<sup>1</sup> “Rio Grande Valley,” The Handbook of Texas Online, <http://www.tshaonline.org/handbook/online/articles/RR/ryr1.html> (accessed May 6, 2008).

distinct biotic communities that are host or home to 1,100 types of plants, 484 bird species, and over 300 species of butterflies.<sup>2</sup>

The main divisions of the Lower Rio Grande Rehabilitation Project are named after two small towns situated just off U.S. Highway 83. The Mercedes Division spans southeast Hidalgo County and western Cameron County. La Feria Division is located entirely in Cameron County. All project lands lie on the north side of the river within the United States and on the low-lying deltaic plain which is cut by an important floodway which carries flood waters of the Rio Grande during high water flows.<sup>3</sup>

### **Historic Setting**

The history of the Mexico-United States borderlands, in broad outlines, is a tale of conquest. Scholars know very little about the earliest peoples dating back at least 11,200 years, but at the time of European contact, south Texas was occupied primarily by Coahuiltecan, a general term to describe the hundreds of independent tribes who shared certain traits. By the end of the eighteenth these Indians had been displaced by aggressive Plains tribes and by the Spanish, the dominant force in the Southwest.<sup>4</sup> The Spanish held control of the territory until Mexican Independence in 1821. The balance of power again shifted with the declaration of Texas independence in 1836, and later with the signing of the Treaty of Guadalupe Hidalgo and the United States' acquisition of Mexico's northern frontier—present-day California, Nevada, Utah, and parts of

---

<sup>2</sup> Jim Norwine, John R. Giardino, and Sushma Krishnamurthy, *Water for Texas* (College Station: Texas A&M University Press, 2005), 259, 265; U.S. Fish and Wildlife Service, "Lower Rio Grande Valley National Wildlife Refuge," <http://www.fws.gov/southwest/refuges/texas/lrgv.html> (accessed April 30, 2008).

<sup>3</sup> United States Department of the Interior, Water and Power Resources Service, *Project Data* (Denver, Colorado: United States Government Printing Office, 1981), 587, 589.

<sup>4</sup> Thomas R. Hester, "Texas and Northeastern Mexico: An Overview," in *Columbian Consequences: Archaeological and Historical Perspectives on the Spanish Borderlands West*, edited by David Hurst Thomas (Washington, D.C.: Smithsonian Institution Press, 1989), 191-6.

Colorado, New Mexico, Arizona, and Wyoming—at the conclusion of the Mexican/American War in 1848.

Against the backdrop of European expansion and the displacement of indigenous peoples is a less known but no less significant history of water development and agriculture. No force played a more critical role in this unfolding story than the Rio Grande River, the third longest river in the United States, international boundary, and important symbol in North American history.<sup>5</sup>

Since the Rio Grande flows through some of the most barren and water-depleted deserts in the Southwest, the river sustains life for the people who live close to its banks. Though its waters are notoriously dirty, salty, and muddy, it is still highly valued for irrigation. When, in 1536, the Spaniard Alvar Núñez Cabeza de Vaca, a shipwreck victim wandering inland in search of a way to Mexico, led an expedition into the interior of the southwest his small group discovered an unexpected surprise. Near the present-day site of Juarez, Mexico, they found Indians irrigating and cultivating almost 30,000 acres of maize, beans, and calabashes. Probably even before then prehistoric peoples in the valleys of the Trans-Pecos area practiced irrigation. However, the Coahuiltecan living in the lower Rio Grande valley primarily subsisted on roots, herbs, and prickly pear cacti.<sup>6</sup>

For the Spanish, who found the geography of the Southwest ideal for cattle ranching, irrigated agriculture existed in pockets where there was a reliable water supply.

---

<sup>5</sup> See Paul Horgan, *Great River: The Rio Grande in North American History* (New York: Holt, Rinehart and Winston, 1968).

<sup>6</sup> *Inventories of Irrigation in Texas, 1958, 1964, 1969, and 1974: based on inventories made cooperatively by the Soil Conservation Service, U.S. Department of Agriculture, the Texas State Soil and Water Conservation Board, and the Texas Water Development Board*, Texas Water Development Board, Report 196, October 1975, 1-2; “The Indians of Texas,” <http://www.lsjunction.com/places/indians.htm> (accessed April 16, 2008).

Christian Pueblo Indians farmed in the towns of Ysleta and Socorro, New Mexico. The Spanish irrigated where they established towns and missions: at Laredo, San Jose, Concepcion, San Juan de Capistrano, La Espada, San Antonio, and San Saba. In 1745 the Spanish constructed an aqueduct at La Espada, the site of the first irrigation in the southwest. When Father Francisco Xavier Ortiz, from Querétaro, Mexico, visited the Spanish mission at La Espada he noted the melons, pumpkins, corn, and cotton growing on irrigated farms. At the dawn of the seventeenth century, a mission established by fathers at El Paso del Norte (modern-day Juarez) began schooling the Indians in more advanced methods of growing crops, aided by water provided by the *Acequia Madre* (Main Canal).<sup>7</sup>

Later, ethnic Mexicans and Anglo Americans irrigated in many of these same areas. After Mexican independence in 1821, Mexican settlers dug modest canals and built modest diversion structures such as a loose boulder dam near the site of modern-day El Paso. Irrigated agriculture in the middle Rio Grande and the Pecos river basins intensified after arrival of the railroad in the 1880s. The San Antonio area also continued to be heavily irrigated; in the 1880s, James B. Newcomb, a local resident, reported 50,000 acres of irrigated land in Bexar County valued at up to \$300 per acre.<sup>8</sup>

In the lower Rio Grande valley the environment was ideal for agriculture: moderate temperatures year round, a judicious amount of rain for the Southwest—twenty-six inches on average annually—and silt- and alluvium-rich soil.<sup>9</sup> Yet despite the

---

<sup>7</sup> “San Francisco de la Espada Mission,” The Handbook of Texas Online, <http://www.tshaonline.org/handbook/online/articles/SS/uqs12.html> (accessed April 18, 2008).

<sup>8</sup> *Inventories of Irrigation in Texas*, 2.

<sup>9</sup> “Annual Project History, Lower Rio Grande Rehabilitation Project,” Volume I, 1959, 7, in Record Group 115, Records of the Bureau of Reclamation, Accession 8NN-115-88-053, Box 98, National Archives and Records Administration, Denver, Colorado; hereafter cited as “Project History” followed by appropriate volume and page numbers.

moderate climate, just a few miles inland of the Gulf of Mexico land could be dry and harsh, much like the rest of the Southwest. As the United States officer and surveyor of Texas, William H. Emory wrote that

west of the Nueces, and between that river and the Rio Bravo [Rio Grande], the want of rain makes agriculture a very uncertain business, and as we approach the last named river, this aridity becomes more marked, and the vegetation assumes a spinose stunted character indeed, so marked is the change, that when we get within a few miles of the river the vegetation is a complete chapparal.

The Spanish and, later, Anglo settlers found suitable places to irrigate in south Texas, where they divided the land into narrow strips along the river called *porciones* to ensure equal distribution of water.<sup>10</sup>

From the mid-eighteenth century, when General José de Escandón settled the state of Tamaulipas, to the late nineteenth century, people practiced mostly subsistence agriculture, since there was no way to transport the produce to outside markets. This had changed by the early twentieth century. The railroad, population growth, and land development transformed family farms into large-scale commercial farms. Most significant was the arrival in 1904 of the St. Louis, Brownsville, and Mexico Railroad, which lured people to the area and provided an outlet for the goods they produced. In 1905 the American Rio Grande Land and Irrigation Company organized and purchased 39,000 acres of land. At first, the company constructed an irrigation system to service about 20,000 acres, but by 1921 the development company had increased its landholdings to 100,000 acres and enlarged its works to irrigate 75,000 acres. After the land owners united to form the Hidalgo and Cameron Counties Water Control and Improvement

---

<sup>10</sup> The Lower Rio Grande Biological Profile, [http://www.fermatainc.com/nat\\_riogrande.html](http://www.fermatainc.com/nat_riogrande.html) (accessed April 16, 2008); Quote from William H. Emory, *Report on the United States and Mexican Boundary Survey Made under the Direction of the Secretary of Interior*, 3 Volumes (Austin: Texas State Historical Association, 1987 [original 1857]), 56.

District No. 9, or Mercedes District, in the late 1920s, the new district purchased the existing irrigation system and water rights of the American Rio Grande Land and Irrigation Company. The La Feria Mutual Canal Company formed in 1908 and was later bought out by La Feria District in 1919.<sup>11</sup>

The rapid land and irrigation developments contributed to growth and prosperity, but it also put increasing pressure on water resources in the Rio Grande basin. According to the International Boundary Commission in 1896, the river had decreased by 200,000 acre-feet a year since 1880. Heavy irrigation diversions in central New Mexico and Colorado meant less water for users downstream; in fact, by the time it reached El Paso, one sardonic wit suggested the Rio Grande was the “only river with its bottom side up.” Beyond this, users lost water to seepage as the water traveled to fields and municipalities.<sup>12</sup>

Congress authorized construction of Elephant Butte Dam in February 1905 to increase the water supply of the Rio Grande. The solution to the international competition over the Rio Grande was the joint Mexico-United States construction of storage reservoirs. The Bureau of Reclamation, the International Boundary and Water Commission, and local water users collaborated in the construction and completion of Falcon Dam in 1953 and in the effort that came to be known as the Lower Rio Grande Rehabilitation Project.<sup>13</sup>

---

<sup>11</sup> “Brownsville: ‘On the Border by the Sea,’” <http://www.ci.brownsville.tx.us/history.asp> (accessed April 16, 2008); “Project History,” Volume I, 1959, 8; also “Factual Data – Mercedes Division LRGR Project, Texas,” in “Project History,” Volume VI, 1964, no pg.

<sup>12</sup> Quoted in Robert Autobee, “The Rio Grande Project” (Denver, Colorado: Bureau of Reclamation History Program, 1993); *Water for Texas*, 267.

<sup>13</sup> *Inventories of Irrigation in Texas*, 2.

## Investigations

In the 1940s Mexican and United States officials and waters users took steps to reach a cooperative international agreement to apportion and distribute the Rio Grande. The Texas side of the river had been developed to a much greater degree than the Mexican side. Although Mexico used a small volume of water from its El Retamal project to irrigate 74,100 acres, this was a relatively small percentage of the total acreage—583,200—irrigated in the valley. The United States had more at stake in the development of the river and made every attempt to broker a deal that would allow continued development on the Texas side. Federal Project No. 5, the most grandiose proposal to develop the waters of the Rio Grande, would ostensibly give the United States final control over the Rio Grande. According to Engineer Alba, “Mexico would not have resources nor physical possibilities for making an answer to these works, which as we say, would be equivalent to taking the Rio Grande to American territory.” Still, the United States tabled Federal Plan No. 5 with the commencement of the Second World War. Moreover, although Congress had approved the plan, nothing could be done until the United States brokered a water treaty with Mexico.<sup>14</sup>

An international treaty signed in 1906 provided for the storage of water from the Rio Grande upstream of Fort Quitman, Texas, in Elephant Butte Reservoir and allotted Mexico 60,000 acre feet of water per year. Another international agreement reached in 1932 initiated the Lower Rio Grande Valley Flood Control Project for better levees, channels and floodways. Yet, until 1944 there had been no agreement on water allocation of the lower Rio Grande, a critical issue since tributaries from both countries fed into the river—about two-thirds of its flow from Mexico and one-third from the

---

<sup>14</sup> Martin G. Glaeser, “The Mexican Water Treaty: Part II,” *Journal of Land & Public Utility Economics* 22:4 (November, 1946): 359; “Project History,” Volume I, 1959, 1.

United States. When representatives from both countries met they recognized the need not only to appropriate the water but also to protect water users from drought. The treaty, signed on February 2, 1944, and ratified by the U.S. Congress and Mexican Government, allocated to Texas the right to its water from its own tributaries and an assured 350,000 acre feet from Mexican tributaries. The treaty also contemplated the construction of storage reservoirs on the Rio Grande—Falcon Dam, completed in October 1953, and Amistad Dam, dedicated in 1969—and established the International Boundary Water Commission to coordinate the work between the two countries.<sup>15</sup> The passage and ratification of the water treaty between Mexico and the United States—lauded by one contemporary as “the most important of its kind in the history of the world” and “as a model for future treaties governing international streams”—for the first time provided a direction to development and international water management in the lower Rio Grande valley.<sup>16</sup>

Following the 1944 treaty, the United States resumed investigations in the lower Rio Grande valley. In December 1948, Reclamation released “Plan for the Development of the Valley Gravity Project, Texas,” which among other things recommended the construction of a diversion dam near Rio Grande City and the rehabilitation of the existing irrigation systems in the valley. Probably most water users in the area supported the plan, but it never made it to Congress for approval because reaching a contractual agreement was unlikely.<sup>17</sup>

---

<sup>15</sup> Martin G. Glaeser, “The Mexican Water Treaty: Part I,” *Journal of Land & Public Utility Economics* 22:1 (February, 1946): 2; “Rio Grande,” *The Handbook of Texas Online*, [http://www.tshaonline.org/handbook/online/articles/RR/rnr5\\_print.html](http://www.tshaonline.org/handbook/online/articles/RR/rnr5_print.html) (accessed May 1, 2008).

<sup>16</sup> Glaeser, “The Mexican Water Treaty: Part II,” 353.

<sup>17</sup> “Project History,” Volume I, 1959, 1.

Reclamation apparently did not resume investigations until 1954, when it began to investigate the Garza and Anzalduas dam sites and main canals used in the existing irrigation system. The report based on the investigations concluded that a water project was feasible but made no recommendations at that time.<sup>18</sup> At the request of the Hidalgo and Cameron Counties Water Control and Improvement District, No. 9 (referred to as the Mercedes District) and La Feria Water Control and Improvement District (referred to as the La Feria District), Reclamation investigated the option of rehabilitating irrigation works on several districts in south Texas. In April 1957 Reclamation submitted to Congress the report known as House Document 152 which recommended rehabilitation of the water system of the Mercedes District. Also in 1957 Reclamation drafted the report recommending the construction and rehabilitation of the La Feria District. The plan for construction and finance of the district morphed several times before the United States and the district settled on a final contract for construction and repayment of the La Feria Division.<sup>19</sup>

### **Project Authorization**

Congress authorized the Mercedes Division of the Lower Rio Grande Rehabilitation Project by Public Law 85-370. President Dwight D. Eisenhower signed the legislation into law on April 7, 1958. On July 18, the district entered into a repayment contract with the United States for repayment of the authorized cost of \$10,800,000 in thirty-five annual installments.<sup>20</sup>

---

<sup>18</sup> “Project History,” Volume I, 1959, 1-2.

<sup>19</sup> “Project History,” Volume I, 1959, 2; “Project History,” Volume II, 1960, 2-4.

<sup>20</sup> “Project History,” Volume I, 1959, 2; “Factual Data – Mercedes Division LRGR Project, Texas,” in “Project History, Lower Rio Grande Rehabilitation Project,” Volume VI, 1964, no pg; *Project Data*, 590. On September 13, 1960, Congress passed legislation that “provided that certain provisions of P[ublic]. L[aw]. 335 dated October 7, 1949, (63 Stat. 724) also apply to the Mercedes Division.”

Congress authorized the La Feria Division the following year. On April 22, 1957, the acting secretary of the interior approved the modified report on the proposed La Feria Division and then sent it to Texas, New Mexico, and Colorado, and various federal agencies for comment. The Department of the Interior submitted the revised report to the president through the Bureau of the Budget but then recalled the report by request of the La Feria District board members to reconsider the project authorization. Again, the Department revised the report, House Document 128, and sent it to the states and federal agencies for comment. Congress authorized the project on September 22, 1959, in Public Law 86-357, and the president approved the legislation authorizing construction of the La Feria Division. The district then voted to approve the project and entered into a contract with the United States agreeing to repay \$5,750,000 of the construction costs.<sup>21</sup>

Finally, aside from the Mercedes and La Feria divisions, the Small Reclamation Rehabilitation Act provided loans to several local water districts for rehabilitation and improvements. Passed in 1956 and amended numerous times thereafter, the act's purpose was to "encourage State and local participation in the development of projects under the Federal reclamation laws and to provide for Federal assistance in the development of similar projects in the seventeen western reclamation States by non-Federal organizations."<sup>22</sup> The first district ever to receive a loan under this act was the Harlingen Division, located adjacent to the La Feria Division in the western half of Cameron County. The district received \$4.6 million and agreed to a thirty-five year repayment schedule. In 1960 Congress authorized the Donna Division under this act with a loan

---

<sup>21</sup> "Project History," Volume II, 1960, 2-5; *Project Data*, 590.

<sup>22</sup> United States Department of the Interior, Bureau of Reclamation, *Federal Reclamation Laws without Annotations*, Volume 2, 1947-1958 (Washington, D.C.: United States Government Printing Office, 1959), 449.

obligation of \$4,067,000. Other districts later received loans, including the Cameron County Water Control and Improvement District No. 5 in 1967 and the Cameron County Water Control and Improvement District No. 19 in 1976.<sup>23</sup>

### **Construction History**

The Lower Rio Grande Rehabilitation Project entailed the construction and rehabilitation of pumping plants, laterals, and drains, roughly in that order. The distribution system particularly presented a major undertaking, with its hundreds of miles of laterals and dilapidated condition. Moreover, since the irrigation system would stay in use during construction, some of the work on the pumping plants and distribution system could not be done from April 15 to July 15 and from December 15 to February 1. Private construction forces as well as district forces participated in construction of the project.<sup>24</sup>

### **Mercedes Division**

The Mercedes District encompasses 90,000 acres of flat, gently sloping land in the southeast corner of Hidalgo County and the western part of Cameron County. Reclamation's original water plan at the district was to build several small storage dams on the Rio Grande to capture the irrigation releases from Falcon Dam, but plans to construct the dams were tabled in favor of water-saving measures by rehabilitating the existing distribution system. Reclamation deferred construction of the storage dams until the end of the project, if needed, and instead proceeded to work on the main canal, lateral system, and pumping plant.<sup>25</sup>

---

<sup>23</sup> "Project History," Volume I, 1959, 3; "Project History," Volume II, 1960, 2; "Project History," Volume IX, 1967, 8; "Project History," Volume X, 1968, 3; "Project History," Volume XI, Book 2, 1969-76, 4.

<sup>24</sup> "Project History," Volume I, 1959, 24; "Project History," Volume II, 1960, 26.

<sup>25</sup> "Project History," Volume I, 1959, 2, 5, 14.

Rather than repair the old steam-powered pumps at the river pumping plant, as originally planned, Reclamation decided to replace the pumps with new natural gas engines, albeit at much higher cost. The Worthington Corporation, Buffalo, New York, manufactured the engines, and H & H Engineering, Inc., and Elus Corp. of Kansas City, Missouri, installed them—one at a time to ensure that two or three plants were continually in operation during the irrigation season. In anticipation that the three pump units would be in service in time for heavy irrigation use in the summer, the district urged the contractor to finish the first engine as soon as possible. However, the old unit in Plant No. 2 failed, leaving only one pump in operation during the peak irrigation season. Again, the district pressed the contractor to put the new engine in operation as soon as possible. By December 1960 the engines had been installed, inspected, and, with the exception of the engine air starting system, approved according to specifications.<sup>26</sup>

However, this did not put an end to the repair and installation of the new plants. The following parts came in need of repair: a coupling near the drive shaft on Unit No. 1 in Pumping Plant No. 3, the pump shaft extension and chain drive sprocket on the unit in Plant No. 3, and the engine in Unit No. 2 in Plant No. 3. In 1962 the engine stopped working after operating for 2,404 hours. The contractor shipped the crankshaft to the original manufacturer and the engine base to Worthington's plant in Buffalo for repair. In August, following the irrigation season, it repaired the engine's intake valves and exhaust valve inserts, and sent the valve heads to Houston for repair.<sup>27</sup>

Work on the lateral system began with award of the contract for the rehabilitation of the H Lateral to the Bushman Construction Company of St. Joseph, Missouri, in

---

<sup>26</sup> "Project History," Volume I, 1959, 13, 16; "Project History," Volume II, 1960, 24-26, Appendix 31, 35, 39, 65.

<sup>27</sup> "Project History," Volume III, 1961, 17-19; "Project History," Volume IV, 1962, 17-18, Appendix 33.

December 1959. The work on this lateral entailed digging the trench, scraping out the ditch, laying polyethylene lining on the main channel, and placing concrete using a slip form.<sup>28</sup> When water seeped into the lateral during construction, it had to be drained before construction could continue. Care had to be made to ensure a good grade and finish on the concrete lining; on the curved sections, where it was impossible to use a slip form, workers placed the cement by hand. Bushman Construction Co., with the aid of sub-contractors that cleared the site, worked on the embankment, lined the canals, and completed the H Lateral one year after receiving the contract.<sup>29</sup>

The construction on the other laterals essentially followed a similar script. Reclamation also prepared specifications and awarded contracts for C, G, K, F, I, L, B, and D Lateral systems. Typically, the construction proceeded smoothly and quickly. Seldom was there any trouble at all—as when E. & M. Bohuskey Construction Company, awarded the contract for the rehabilitation of the K Lateral system, did not make the correct grade trimming and lining the canal and had to remove and replace 440 feet. The work was generally performed mechanically with the Buckeye Model 120-B or Buckeye Model 51 modified trencher and trimmer. These were efficient machines: the Buckeye Model 51 performed the work of a dozen men by digging the trench, depositing the debris, and smoothing the canals and laterals.<sup>30</sup>

The pipes had been purchased or manufactured by W. T. Liston Company of Harlingen, Texas, and Brown Supply Company, Inc., of Lubbock, Texas. By the end of 1962, the local district at Mercedes had placed a total of 118.17 miles of concrete pressure and culvert pipes. After the pipes on the I-6 Lateral had been laid, a crack

---

<sup>28</sup> “Project History,” Volume I, 1959, 16, 23, 26, 28, 29.

<sup>29</sup> “Project History,” Volume II, 1960, 26, 27.

<sup>30</sup> “Project History,” Volume II, 1960, 27-29; “Project History,” Volume III, 1961, photo.

appeared in the top of the pipe, ranging in length from eighteen inches to the full length of the pipe unit in thirty of the forty-six units inspected. The W. T. Liston Co. hired a subcontractor to repair the leak by replacing the cracked pipe with thirty-inch, class III, reinforced pipe.<sup>31</sup>

H. and H. Concrete Construction Company and K. F. Hunt Contractor, Inc., Corpus Christi, Texas, performed the rehabilitation of the drain and control structures on the Mercedes Division. The contract began in early 1963 and ended the following year.<sup>32</sup>

### **La Feria Division**

Because no funds were available for the fiscal year 1960, the La Feria District loaned Reclamation \$12,500 to prepare the definite plan report. The district had insisted on replacing several engines at the pumping plants before the start of the 1960 irrigation season. Therefore, it entered into a contract with Reclamation that allowed the district to do the work on the rehabilitation of the Second Lift and Tio Cano Pumping Plants, and later be reimbursed up to \$180,000.<sup>33</sup>

First, the River and Second Lift Pumps received new engines and repairs. The district awarded contracts for the purchase and installation of the engines to the Fairbanks Morse Company and for the repair work to Dixie Iron Works of Alice, Texas. The district dismantled the pumps and sent them to the contractor's plant in Alice where they were repaired. Then, in 1963, the district awarded the H. and H. Concrete Construction Company the contract to rehabilitate the Tio Cano Pumping Plant, which it completed in 1964.<sup>34</sup>

---

<sup>31</sup> "Project History," Volume IV, 1962, 20-21, 53; "Project History," Volume V, 1963, 17-19.

<sup>32</sup> "Project History," Volume V, 1963, 19.

<sup>33</sup> "Project History," Volume II, 1960, 4-5, 23.

<sup>34</sup> "Project History," Volume II, 1960, 23; "Project History," Volume 3, 1961, 15; "Project History," Volume VI, 1964, 9.

K. F. Hunt Contractor, Inc., from Taft, H. & H. Concrete Construction Company from Corpus Christi, and the Fitzgerald and Company, Inc., from Donna, Texas, received contracts for rehabilitation of the main canal and laterals. The main canal had to be dug out, trimmed, and lined with concrete. The work on the laterals entailed multiple operations, including embankment operations, trimming, lining, and in some cases placing concrete pipe.<sup>35</sup> In 1960 and, again, in 1962 the W. T. Liston Company and in 1963 the Valley Concrete Pressure Pipe Company, both from Harlingen, Texas, received contracts to furnish concrete pressure and culvert pipe. The district installed the pipe delivered under these contracts.<sup>36</sup>

In addition to the canals, laterals, and pipes, La Feria Division included contracts for rehabilitation of drains and drain control structures and construction of the Second Lift Pumping Plant building and a new shop building. After 1966 only minor construction and repairs on the pipeline and siphons remained to be done.<sup>37</sup>

### **Loan Program Projects**

In 1959 the Cameron County Water Control and Improvement District No. 1 (referred to as the Harlingen District) spearheaded the placement of 55,878 feet of concrete pipeline and 17,296 feet of canal lining, construction of two re-lift pumping plants, and rehabilitation of the river pumping plant at the Harlingen Division. In early 1960 the district excavated the ditches using a dragline to prevent the banks from caving in and then laid the pipe in the ditches. Unfortunately, the district had to re-lay about 300

---

<sup>35</sup> "Project History," Volume III, 1961, 15, 16; "Project History," Volume VI, 1964, 9.

<sup>36</sup> "Project History," Volume II, 1960, 23; "Project History," Volume VI, 1964, 9.

<sup>37</sup> "Project History," Volume III, 1963, 15; "Project History," Volume VIII, 1966, 8.

feet of pipeline because heavy rains in April caused the pipe to shift in the sections not yet backfilled.<sup>38</sup>

At the Donna Division, another small loan program project, Reclamation awarded contracts for construction of the pumping plants, laterals, and drains. The work on these features progressed nicely, though in 1962, at the Upper West Main Canal, Unit No. 11, the Donna District repaired cracks in the brick lining by removing the cracked bricks, adding a twelve-inch-wide strip of 4X4 reinforcing mesh, and refilling the space with gunite.<sup>39</sup> In later years other small loan programs at Cameron County Water Control and Improvement District No. 5 and Hidalgo and Wallace Counties Water Control and Improvement District No. 1 resulted in furnishing and laying concrete pipe, as well as construction of pumping plants, roads, and drains. Sometimes the projects underwent modifications. District No. 5, for instance, decided to use “*resacas*” (former channels of the Rio Grande) for water storage instead of constructing reservoirs, to replace mortar joint pipelines and lined and unlined laterals with rubber gasket pipe, and to build ten small re-lift pumping plants.<sup>40</sup>

By 1968 the construction on all the project features had been completed, with the exception of miscellaneous contracts on the Mercedes Division and several small loan projects.

### **Post-Construction History**

Each district signed repayment contracts with the United States. La Feria District signed a contract with the United States for a thirty-five year repayment schedule of

---

<sup>38</sup> “Project History,” Volume I, 1959, 24-25; “Project History,” Volume II, 1960, Appendix 21, 23, 32.

<sup>39</sup> “Project History,” Volume III, 1961, 23-25; “Project History,” Volume IV, 1962, 12, 89.

<sup>40</sup> “Project History,” Volume X, 1968, 3; “Project History,” Volume XI, 1969-76, Book II, 19-22.

\$5,774,453; the Mercedes District signed a repayment contract worth \$10,800,000.<sup>41</sup> The operation and maintenance of the rehabilitated irrigation facilities also fell to the districts. These annual costs varied by year and also by division. In 1976 the Donna District paid \$602,825, the Cameron County No. 5 \$148,851, and Cameron County No. 19 \$165,570.<sup>42</sup>

Following construction and rehabilitation, the districts typically spent available resources maintaining existing project features and installing new ones. To use the Harlingen District as an example, the project features generally required little maintenance and performed seamlessly—with the possible exception of the lining of Canal #15—though repairs still became necessary. The district used its surplus funds to improve the drainage system situated near the city of Harlingen and install electric motors at the River Pumping Plant, meters in each pump, re-lift pumps on lateral canals, and a drain ditch in the north end of the district. By 1980, however, the district had run out of surplus funds needed to make additional improvements and replace old equipment. M. T. Martin, district manager, then contacted Reclamation and inquired into the possibility of receiving another multi-million dollar loan for the needed purchases and repairs.<sup>43</sup>

Typical operation and maintenance on the project entailed cleaning and clearing the canals and drains of weeds and woody plants. At La Feria District, the district discontinued use of pesticides to eradicate weeds and woody plants and used shredders and draglines instead. In 1978 the district had cleared 158 miles of drains, fifty miles of pipelines, and forty-eight miles of canals at an annual cost of \$20,913. The Mercedes District also used mechanical equipment to clear the canal banks of weeds. Specifically,

---

<sup>41</sup> “Project History,” Volume IV, 1962, 16; “Project History,” Volume VIII, 1966, 3b, 3e, 2.

<sup>42</sup> “Project History,” Volume XI, Book 2, 1969-76, 24.

<sup>43</sup> “Project History,” Volume XII, Book 2, 1977-80, 74-91.

it used shredder-type mowers on canal embankments, bulldozers to clear brush, and draglines and a Case 880 excavator to remove aquatic weeds in the drainage ditches.<sup>44</sup>

The most serious short-term problem to confront the project was Hurricane Beulah, which stormed through the gulf coast areas of south Texas and Mexico on September 20, 1967. The damage from the hurricane was so bad that it prompted President Lyndon B. Johnson to declare portions of southern Texas a disaster area. The storm alone contributed 31.34 inches of water to the lower Rio Grande valley. Flooding drove people from their homes and inundated about 20,000 acres of farm land. Since the land was flat, the flood waters posed a particular problem. The existing drainage system could not accommodate all the water, which accumulated in the adjacent agricultural lands. At the Mercedes and La Feria divisions, pumps attempted to drain the flood waters but ended up being woefully inadequate for the job. When all was said and done, the districts lost a combined \$269,000, including the fall and much of the winter crop.<sup>45</sup>

As a result, the districts received a deferment of 1968 payments and interest from the Department of the Interior. The storm also prompted federal agents and private interests to propose an expansive, multi-million dollar drainage project. They unveiled the “\$172 million three-step plan” at a public hearing on February 26, 1969 in Edinburg, Texas, though the plan was never implemented.<sup>46</sup>

### **Project Benefits**

The two storage dams and reservoirs jointly constructed by the United States and Mexico—Falcon Dam and Anzalduas Dam—provide water conservation, power, flood control, recreation and irrigation benefits to the lower Rio Grande valley. Falcon Dam

---

<sup>44</sup> “Project History,” Volume XII, Book 1, 1977-80, 9-12.

<sup>45</sup> “Project History,” Volume IX, 1967, 1-2.

<sup>46</sup> “Project History,” Volume IX, 1967, 2, 8-9; “Project History,” Volume X, 1968, 1.

provided flood protection to southern Texas previously threatened by the erratic flow of the Rio Grande. The dam has also become a significant source of water to irrigation users. In fact, the vast majority of the water in Falcon Reservoir—about 92 percent of it—is put to use on farms in the valley. Reclamation’s rehabilitation project in the lower Rio Grande valley contributes to the agricultural production by ensuring a reliable and more efficient water supply to the farms already in production.<sup>47</sup> The following tables represent the total acreage irrigated and crop value over a ten-year period.<sup>48</sup>

La Feria Division			Mercedes Division			Harlingen Division		
1969	30,208	\$5,541,449	1969	63,822	\$10,956,681	1969	33,500	\$4,995,572
1970	30,458	3,487,613	1970	62,274	8,993,911	1970	38,000	4,548,306
1971	29,918	3,715,258	1971	62,658	11,199,011	1971	38,000	5,895,993
1972	28,880	3,176,629	1972	62,863	11,196,830	1972	38,520	6,697,481
1973	28,926	3,956,423	1973	66,133	15,791,062	1973	38,520	7,119,995
1974	29,132	6,357,519	1974	67,197	19,820,459	1974	38,550	8,994,301
1975	29,404	4,828,707	1975	66,389	23,313,053	1975	36,162	7,511,506
1976	29,352	6,344,634	1976	65,439	23,340,189	1976	36,298	9,901,410

Farmers grew a wide range of crops on thousands of acres of land. Laborers harvested escarole (a lettuce-like plant) on the Robert Yoshino Farm near Brownsville, Texas; or grapefruit in a grove near La Feria, Texas; or green onions near Mercedes, Texas; or carrots on the Bob Pawlik Farm near Donna, Texas. The water irrigated the crops by ditch, by rubber hose, or by sprinkler.

## Conclusion

In the annual project histories, now located in the National Archives and Records Administration in Denver, Colorado, Reclamation personnel kept track of the history, taking numerous photographs of the project before, during, and after construction. These

<sup>47</sup> *Water for Texas*, 258-59; *Inventories of Irrigation in Texas*, 17.

<sup>48</sup> The table is derived from “Project History,” “Project History,” Volume XI, Book 1, 1969-76, 4-5; “Project History,” Volume XI, Book 2, 1969-76, 4.

photographs illustrate the often dramatic changes to the landscape. The before photograph of Canal No. 1 on the Harlingen Division looking south from Farm Road 508 shows the canal filled with stagnant water and overtaken by overgrowth over fifty feet tall; in the after photograph, the vegetation had been cleared and leveled, and the canal lined with concrete.<sup>49</sup> In photograph after photograph, similar changes are evident. The physical changes to the land could not have been more striking. They represented locally what had become of much of the lower Rio Grande valley: a model of efficiency and symbol of man's control over nature. Miles of canals and laterals had been cleared, leveled, and lined for the sole purpose of diverting water from the Rio Grande to farm lands. Indeed, it was a sizable and significant undertaking which has contributed markedly to agricultural production in the lower Rio Grande valley.

---

<sup>49</sup> "Project History," Volume III, 1961, photos between pages 13 and 14.

## Bibliography

### Manuscript Collections

United States Department of the Interior, Bureau of Reclamation. "Annual Project History, Lower Rio Grande Rehabilitation Project," Volumes 1-12, 1959-80. Record Group 115. Records of the Bureau of Reclamation. Accession 8NN-115-88-053, Boxes 5, 33, 61, 88, 98, 99, 129. National Archives and Records Administration, Denver, Colorado.

### Government Documents

United States Department of the Interior, Bureau of Reclamation. *Federal Reclamation Laws without Annotations*. Volume 2, 1947-1958. Washington, D.C.: United States Government Printing Office, 1959.

United States Department of the Interior, United States Reclamation Service. *A Discussion of Past and Present Plans for Irrigation of the Rio Grande Valley*. By B. M. Hall. November, 1904.

United States Department of the Interior, Water and Power Resources Service. *Project Data*. Denver, Colorado: United States Government Printing Office, 1981.

United States Fish and Wildlife Service. "Lower Rio Grande Valley National Wildlife Refuge." <http://www.fws.gov/southwest/refuges/texas/lrgv.html>.

### Secondary Sources

Autobee, Robert. "The Rio Grande Project." Denver, Colorado: Bureau of Reclamation History Program, 1993.

Glaeser, Martin G. "The Mexican Water Treaty: Part One." *Journal of Land & Public Utility Economics* 22:1 (February, 1946): 1-9.

—. "The Mexican Water Treaty: Part II." *Journal of Land & Public Utility Economics* 22:4 (November, 1946): 352-62.

Horgan, Paul. *Great River: The Rio Grande in North American History*. New York: Holt, Rinehart and Winston, 1968.

Norwine, Jim, John R. Giardino, and Sushma Krishnamurthy. *Water for Texas*. College Station: Texas A&M University Press, 2005.

Smith, Clint G. "Las Cruces Celebrates—Taming a Wild River." *Reclamation Era*, 35 (September, 1949): 203-4, 206.

Texas Water Development Board. *Inventories of Irrigation in Texas, 1958, 1964, 1969, and 1974: based on inventories made cooperatively by the Soil Conservation Service, U.S. Department of Agriculture, the Texas State Soil and Water Conservation Board, and the Texas Water Development Board.* Report 196. October 1975.

Thomas, David Hurst, editor. *Columbian Consequences: Archaeological and Historical Perspectives on the Spanish Borderlands West*, Volume 1. Washington, D.C.: Smithsonian Institution Press, 1989.

### **Other Sources**

"Brownsville: 'On the Border by the Sea.'" <http://www.ci.brownsville.tx.us/history.asp>.

"The Indians of Texas." <http://www.lsjunction.com/places/indians.htm>.

The Lower Rio Grande Biological Profile.  
[http://www.fermatainc.com/nat\\_riogrande.html](http://www.fermatainc.com/nat_riogrande.html).

"Rio Grande." The Handbook of Texas Online.  
[http://www.tshaonline.org/handbook/online/articles/RR/rnr5\\_print.html](http://www.tshaonline.org/handbook/online/articles/RR/rnr5_print.html).

"San Francisco de la Espada Mission." The Handbook of Texas Online.  
<http://www.tshaonline.org/handbook/online/articles/SS/uqs12.html>.

Schonfeld La Mar, Barbel Hannelore. "Water and Land in the Mesilla Valley, New Mexico: Reclamation and its Effects on Property Ownership and Agricultural Land Use." University of Oregon, Eugene, PhD diss., 1984.

"Rio Grande Valley." The Handbook of Texas Online.  
<http://www.tshaonline.org/handbook/online/articles/RR/ryr1.html>

## Index

<p>Cameron County Water Control and Improvement District No. 19              authorization of ..... 11              O&amp;M costs ..... 17</p> <p>Cameron County Water Control and Improvement District No. 5 ..... 16              authorization of ..... 11              O&amp;M costs ..... 17              revisions to original plan..... 16</p> <p>de Vaca, Alvar Núñez Cabeza ..... 3</p> <p>Donna Division              authorization of ..... 10              O&amp;M costs ..... 17</p> <p>Escandón, General José de..... 5</p> <p>Falcon Dam..... 1, 6, 8, 18</p> <p>Federal Project No. 5 ..... 7</p> <p>Harlingen Division              repairs and improvements made to . 17</p> <p>Hidalgo and Cameron Counties Water Control and Improvement District No. 9..... <i>See Mercedes Division</i></p> <p>Hidalgo and Wallace Counties Water Control and Improvement District No. 1..... 16</p> <p>Hurricane Beulah              damage from ..... 18</p> <p>La Feria Division ..... 2              authorization of ..... 10              Dixie Iron Works of Alice, Texas... 14              Fairbanks Morse Company ..... 14              H. &amp; H. Concrete Construction Company of Corpus Christi, Texas ..... 15              H. and H. Concrete Construction Company ..... 14</p>	<p>K. F. Hunt Contractor, Inc., Taft, Texas ..... 15</p> <p>Valley Concrete Pressure Pipe Company ..... 15</p> <p>W. T. Liston Company..... 15</p> <p>La Feria Water Control and Improvement District Cameron County No. 3              repayment contract..... 16</p> <p>Lower Rio Grande Valley ..... 3, 8              early irrigation in..... 4</p> <p>Mercedes Division              Brown Supply Company, Inc. of Lubbock, Texas..... 13              Bushman Construction Company of St. Joseph, Missouri ..... 12              E. &amp; M. Bohuskey Construction Company ..... 13              H &amp; H Engineering, Inc. and Elus Corp. of Kansas City, Missouri... 12              H. and H. Concrete Construction Company ..... 14              K. F. Hunt Contractor, Inc., Corpus Christi, Texas ..... 14              repayment contract..... 17              W. T. Liston Company of Harlingen, Texas ..... 13              Worthington Corporation, Buffalo, New York..... 12</p> <p>Rio Grande ..... 1, 3, 7              diminished water supply ..... 6</p> <p>Small Reclamation Rehabilitation Act10, 16</p> <p>Tamaulipas, Mexican state of ..... 1, 5</p> <p>U.S.-Mexico Treaty of 1944 ..... 8</p>
---	---