

# **Fruit Growers Dam Project**

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## Table of Contents

The Fruit Growers Dam Project .....	2
Project Location .....	2
Historic Setting .....	2
Prehistoric Setting .....	2
Historic Setting .....	3
Project Authorization .....	6
Construction History .....	7
Post Construction History .....	8
Settlement of the Project .....	10
Uses of Project Water .....	10
Conclusion .....	10
Bibliography .....	11
Archive and Manuscript Collections .....	11
Government Documents .....	11
Articles .....	11
Other Sources .....	11
Index .....	12

## **The Fruit Growers Dam Project**

Since the late 1890's, the fruit growers and farmers in the region located just northeast of the town of Delta, Colorado, had grown high quality fruits and crops on lands irrigated by water stored in the small dam constructed by the water users in 1898. As the needs of the users grew, the dam was enlarged to meet those needs. The water users of the area cared for their fields and orchards comfortable in the knowledge that their system would provide them with a reliable source of water. In 1937, after almost 40 years of reliable operation, their system failed. The dam, which was poorly designed and constructed from inferior materials, washed away, leaving the users without a source of water for their fields. Faced with the loss of their livelihood, the water users turned to the Bureau of Reclamation for help.

### **Project Location**

The Fruit Growers Dam Project is located in Delta County in west central Colorado. It is about 11 miles Northeast of the Town of Delta on a small tributary of the Gunnison River known as Alfalfa Run. It lies midway between the small towns of Austin and Cedaredge, and the town of Ekert is about 1.5 miles west of the reservoir. The project supplies water to about 2,700 acres of well developed land immediately downstream from the dam. The primary sources of water are Alfalfa Run, Surface Creek, and Dry Creek. Waters from Surface and Dry Creeks are diverted to the reservoir via the Alfalfa and Dry Creek Diversion Ditches.

### **Historic Setting**

#### **Prehistoric Setting**

The earliest evidence of human presence in west-central Colorado dates back to the Archaic Period, 5500 B.C. to 1 A.D. Several sites associated with this period have been identified in the region. The evidence is in the form of charcoal from prehistoric fire pits. Charcoal samples have been dated back to around 4700 B.C. Artifacts dating to the Paleo-Indian Period, pre-5,500 B.C., have been located in the region, but the nature of the finds suggest that the materials were brought into the area by later inhabitants. A number of sites associated with

what archaeologists call the "Formative" stage (1 A.D. to 1,300 A.D.) have been located in west-central Colorado. Several of these sites consist of ruins of "Pueblo" like dwellings. The high number of these site suggest an almost constant human presence beginning around 1 A.D.<sup>1</sup>

Evidence suggests that early Ute Indians entered west-central Colorado around 1,000 A.D. The earliest known mention of the Ute come from historic Spanish documents dating to the 1600's. The first actual European observations of the Ute came in 1776, when the Dominguez-Escalante Expedition encountered the Ute in western Colorado. The Ute appear to have been the primary inhabitants of west central Colorado from around 1,000 A.D. until their removal to reservations in Utah in 1881.<sup>2</sup>

### **Historic Setting**

Throughout the history of west central Colorado, the area around the present day town of Delta, and the junction of the Uncompahgre and Gunnison Rivers, has been a crossroad of exploration. The first Europeans to arrive in west-central Colorado were Spanish explorers. In 1761, Don Juan Maria Rivera explored the region for the Royal Governor of New Mexico. Rivera's route took him up the Dolores River and across the Uncompahgre Plateau to the Uncompahgre River. He then continued north to where the Uncompahgre River meets the Gunnison River, near the present day town of Delta, where he carved his initials in a tree. Rivera then continued west, out of the region. The next expedition into the area was the Dominguez-Escalante Expedition. Padre Francisco Silvestre Velez de Escalante and Padre Antanasio Dominguez left Sante Fe in July 1776, following the same route as Rivera fifteen years earlier. When the expedition reached the junction of the Uncompahgre and Gunnison Rivers, they found the tree where Rivera had carved his initials fifteen years before.<sup>3</sup>

By the late 1820's, after Mexico had gained its independence from Spain, fur trappers were beginning to make their way into the region. One of them, Antoine Robidoux, built a

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1. Alan D. Reed, *West Central Colorado Prehistoric Context*, (Denver: Colorado Historical Society, 1984), pp.14, 25, 30-1, 56.

2. *Ibid.*, 43.

3. Susan M. Collins et al, "Survey of Cultural Resources in the Lower Gunnison Basin Unit, Colorado River Water Quality Improvement Program: Delta and Montrose Counties, Colorado," Prepared for the U.S. Department of Interior, Water and Power Resources Service. Laboratory of Public Archaeology. (Fort Collins: Colorado State University, 1981), pp. 40-1.

trading post and fort near the river junction. The fort, the first of its kind in Colorado, served as a supply and trading post for the trappers in the area, with occasional trade being conducted with the Ute. The post was abandoned in 1844.<sup>4</sup> In 1853, Captain John Gunnison, while exploring a possible rail route between St. Louis and San Francisco, passed near the ruins of Fort Robidoux as he headed west. Gunnison reported that the area was unfit for cultivation. In July 1858, a party, led by Colonel William W. Loring, left Camp Floyd, Utah, and headed east over Gunnison's route. Loring disagreed with Gunnison's assessment of the region. On August 29, while traveling south on the Uncompahgre River, Loring noted that the soil seemed rich, easily irrigated, and that rains were frequent.<sup>5</sup>

The gold rush in Colorado brought hundreds of fortune seekers to the territory, but few prospectors ventured into the west-central region. By 1861, when the Territory of Colorado was created, the areas around the junction of the Gunnison and Uncompahgre Rivers was still considered Indian country. In 1863, the Treaty of Conejos made the entire western part of Colorado the exclusive domain of the Ute. However, continued population growth in Colorado brought settlers into direct conflict with the Ute. In 1878, Nathan Meeker was sent to western Colorado to begin the process of removing the Indians from their lands. On September 22, 1879, the Indians revolted, killing Meeker and several others. Troops sent to assist Meeker were also attacked, and 14 were killed. The response to the attacks was swift, with a treaty being forced upon the Ute that would remove them from their lands in Colorado to a reservation in Utah. By September 1, 1881, the last of the Ute had left western Colorado.<sup>6</sup>

Following the removal of the Ute, settlers rushed into the region to claim the best lands. The first lands claimed were those along the river banks. These were the most fertile and easy to irrigate. As the population of the region grew, towns were formed. On October 1, 1881, barely one month after the removal of the Ute, George A. Crawford, purchased some land near the junctions of the Uncompahgre and Gunnison Rivers, and incorporated the Uncompahgre Town

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4. *Ibid.*, 41-2.

5. *Ibid.*, 42-3.

6. *Ibid.*, 46-8.

Company on October 13. The town was surveyed and platted in December 1881, and a post office established on January 5, 1882. On April 6, 1882, the Town of Uncompahgre was dedicated. Because Uncompahgre was too difficult for many to pronounce, the name was changed to Delta in August 1882. The town grew rapidly, and in a short time featured several stores, a blacksmith shop, a hotel, and many homes.<sup>7</sup>

By 1883, the population had reached a point that made it necessary to redraw the county borders. Up to this point, Delta had been part of Gunnison County. On February 11, 1883, the County of Delta was formed with Delta as the county seat.<sup>8</sup>

Most early settlement in the area focused around agriculture. Although vegetables and grains were grown, Delta County became famous for its fruit orchards, and was second only to Mesa County in west slope fruit production. Ranching was also a major industry in the valley. First introduced in the region in 1882, the cattle industry grew to become one of the most important activities in the area.<sup>9</sup>

Population growth placed a premium on the best lands. Lands away from the easily irrigated river valleys needed a source of water. The first irrigation ditch to be filed was the Garnet Mesa Ditch, near Delta. Notice for the Garnet Mesa Ditch was filed on November 30, 1881. In March 1882, the Delta Ditch Company was formed to supply water to the Town of Delta. The need for water in the region started a ditch boom, with numerous ditches being built around Delta and throughout the region. An incident that underscored the importance of water to the area occurred on July 2, 1890. Mark Powers, caught Charles Bear, president of a local ditch company, digging a canal on Powers' property. When Bear, believing that he should have right-of-way, refused to leave, Powers shot and killed him. Powers was convicted of manslaughter and sentenced to life in prison.<sup>10</sup>

In 1898, the Fruit Growers Ditch and Reservoir Company began construction of the Fruit Growers Dam. The dam was located on Alfalfa Run, about four miles upstream from where it

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7. *Ibid.*, 48-9.

8. *Ibid.*, 52.

9. *Ibid.*, 51-2.

10. *Ibid.*, 53-6.

meets the Gunnison River. The principal source of water for the reservoir was diverted from Surface Creek via a feeder canal. As the population of the area increased, the need for more water for irrigation led to enlargement of the dam. In 1925, a feeder canal from Dry Creek was constructed to bring more water for storage. The dam was enlarged several times, the final time being in 1936. The final enlargement brought the height of the dam to about 40 feet. Construction and enlargement of the dam occurred without consideration of proper construction techniques or design. The embankments were very steep, and the dam embankment was mostly shale, an extremely porous material that becomes very unstable when saturated. The dam had no spillway, and the builders thought overflow would go around the north end of the dam where the ground was slightly lower than the crest. On June 12, 1937, when the water level reached a point about two feet higher than in previous years, a slide occurred on the downstream slope of the dam. The following day, a second slide occurred, and water began to leak from a break below the crest. Efforts to repair the break failed, and a trench was cut in the north abutment in an attempt to drain the reservoir. Efforts to control water flow through the trench failed, and the dam washed away. The entire volume of the reservoir was released in about nine hours; the damage downstream would have been significantly higher if the dam had failed all at once. As it was, the town of Austin was flooded, crops were damaged, and sections of Colorado Highway 92 and the Denver and Rio Grande Railroad were washed away. Property damage was estimated to be \$300,000, but no lives were lost.<sup>11</sup>

### **Project Authorization**

The loss of irrigation water severely threatened the highly developed lands downstream from the dam. Immediately following the failure of the dam, the water users began looking into reconstruction of the facility. The Bureau of Reclamation began investigations into the project in late June 1937, and plans and specifications were drawn up during the winter of 1937-38.

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11. Denver, Colorado, National Archives and Records Administration: Rocky Mountain Region, Records of the Bureau of Reclamation, Record Group No. 115, "Project Histories: Fruit Growers Dam Project," 1937-89. 5-7 (Annual Project Histories hereafter cited as "Project History" year and page number); "Small Earthfill Dam Fails," *Engineering News Record*, July 24, 1937, p. 932; Stephen H. Poe, "Reconstruction of Fruit Growers Dam," *The Reclamation Era*, July 1939, p. 168.

Funds for reconstruction were made available by the Emergency Relief Appropriation Act of 1937, with \$200,000 being allocated for the project. On January 5, 1938, Secretary of the Interior, Harold Ickes recommended construction, and President Roosevelt approved the project on January 11.<sup>12</sup>

### **Construction History**

The Fruit Growers Dam is a homogeneous earthfill dam 55-feet high with a crest 1,520-feet long. The total volume of material in the dam is 136,000 cubic yards. The structure provides storage for 4,540 acre feet (a/f) of water, with a surface area of over 470 acres. The outlet works consist of a single, concrete conduit through the base of the dam that is controlled by two, 24-inch slide gates. Estimates of the capacity of the outlets works range from 135 second/feet (s/f) to over 175 s/f. The original Reclamation dam had a single, uncontrolled concrete lined spillway with a capacity of 1,000 s/f on the left abutment.<sup>13</sup> Water stored in the reservoir is delivered to project lands via privately owned canals and laterals.<sup>14</sup>

The original plan called for immediate construction of the dam following approval and funding so that water would be available for the 1938 growing season. With this in mind, it was decided to construct the dam using Government forces rather than take the time to publish specifications and solicit bids from private construction firms. But construction was delayed until May 1938 due to delays in obtaining the necessary rights-of-way. Although no stored water was available during the 1938 growing season, weather conditions allowed almost all water users to have a sufficient supply of water for the season.<sup>15</sup>

All work on the dam was performed by Government forces, and labor was secured according to the provisions of the Works Progress Administration Relief Act. On May 2, 1938, forces of the Civilian Conservation Corps began clearing the foundation area of vegetation.

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12. U.S. Department of Interior, Bureau of Reclamation, *Project Data, 1981*, (Denver: U.S. Government Printing Office, 1981), 481-2; "Small Earthfill Dam Fails," p. 932; Stephen H. Poe, "Reconstruction of Fruit Growers Dam," p. 168.

13. The original spillway was filled in and replaced by a similar structure on the right abutment in the 1980's. See post construction history for details.

14. "Project Data," 481; Stephen H. Poe, "Reconstruction of Fruit Growers Dam," p. 169; U.S. Department of Interior, Bureau of Reclamation, "SEED Report of Fruit Growers Dam, Upper Colorado Region, Fruit Growers Dam Project, Colorado," November 1981, p. 37.

15. Stephen H. Poe, "Reconstruction of Fruit Growers Dam," p. 168.



Excavations for the diversion channel and foundation began on May 9. First concrete was placed on June 3, with the final pour on September 30. Placement of earth fill in the embankment began on July 7.<sup>16</sup> Materials used in the embankment were mostly taken from the reservoir site, with some materials brought from pits about 1.5 miles away. Sand and gravel for the concrete was hauled from a screening plant located on the bank of the Gunnison River, about six miles away. Earth placing operations were conducted using three shifts per day working just over 6.5 hours per shift. Earth placement in the embankment was completed on October 15, and first storage took place on October 31, 1938. The total cost of construction, which took less than six months, was \$149,500.<sup>17</sup>

### **Post Construction History**

The operation and maintenance of the dam was taken over by the Orchard City Irrigation District on March 1, 1940. Following completion of the dam, Reclamation began investigations into rehabilitation of the Dry Creek Diversion Ditch. This system had fallen into a state of disrepair and was no longer usable. The repair and betterment of the Dry Creek Ditch was completed in 1940 using surplus funds from the Fruit Growers Dam Project. The Dry Creek work consisted of the repair and enlargement of the ditch, and construction of a diversion dam. The dam is a concrete, overflow weir 13-feet high and 36-feet long. There is a concrete sluiceway controlled by a single 6-foot by 9-foot radial gate, and the canal headworks consists of a single eight-foot square radial gate. The diversion capacity of the weir is 100 s/f. The capacity of the Dry Creek Ditch is also 100 s/f.<sup>18</sup>

In the early 1960's the water users began to look into ways to supplement the waters of the dam. In 1962, the water users applied for and received a Small Reclamation Projects loan for construction of a pumping facility on the Gunnison River. This facility provided water to the existing system via a pipeline and canal system. The pumping plant provides an additional 2,600 a/f of water to the district. Prior to completion of the pumping system, only the lower 1,400

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16. *Ibid.*, 170.

17. *Ibid.*, 168-70.

18. "Project History," 1937-60:7; United States Department of Interior, Bureau of Reclamation, *Summary Statistics*, (Washington D.C.: U.S. Government Printing Office, 1991), p. 482.

acres of district lands were irrigated with water from the Fruit Growers Dam, leaving over 600 acres of land in the upper part of the district without a full supply of water. With completion of the Gunnison River Pumping Plant, water could be diverted from the dam to the upper areas of the district, while the lower areas would be supplied with water via the pumping system. In this way, the entire 2,000 plus acres of land in the district could have a reliable source of water. Construction of the pumping plant began in 1964, and water was supplied via pump beginning in 1966.<sup>19</sup>

Not long after completion of the dam, seepage at the toe, and swelling in sections of the spillway chute were noted. Repairs were attempted, but the problems persisted. The movement in the spillway resisted all efforts at repair and attempts to brace the affected areas were unsuccessful. In August 1979, a Safety Evaluation of Existing Dams (SEED) survey determined that due to problems with movement in the spillway, the dam did not meet current safety standards. The SEED report also raised concerns about the ability of the dam to withstand seismic activity. The report concluded that the condition of the dam was poor and a catastrophic failure of the dam was possible if a major flood occurred.<sup>20</sup> A 1983 report on that the dam could not be safely operated unless modifications were made, and estimated the cost of damage from failure of the dam to be \$13,000,000. The report recommended abandonment of the existing spillway, filling in the old spillway, and construction of a new spillway through more stable ground on the right abutment of the dam. The report also recommended that, due to questions about the stability of the dam, a stabilization berm should be constructed to strengthen the embankment. After much consideration, these recommendations were adopted.<sup>21</sup>

In 1985, the contract for modifications was awarded to the Tectonic Construction Company, who bid \$1,100,000 for the project. Work began in November 1985, and was near completion by April 1986 when work was halted for the irrigation season. By April, the new spillway had been completed, and the first spill over the new structure was recorded on June 10,

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19. "Project History," 1961-6:1; "Project Data," p. 483.

20. "Project History," 1937-60:11; "SEED Report," pp. 4-5.

21. "Project History," 1983:41.

1986. The contractor completed all work on the modifications by December 1986.<sup>22</sup>

### **Settlement of the Project**

All lands within the project area are under private ownership, and were already settled prior to construction of the dam by Government forces. The construction of the Fruit Growers Dam by Reclamation did not cause an increase in the settlement in the area, but it assured a secure future for those already there.<sup>23</sup>

### **Uses of Project Water**

The waters held by the Fruit Growers Dam are used for the supplemental irrigation of about 2,690 acres on 126 farms immediately downstream from the dam. Principal crops in the area are fruits, grains, corn, and alfalfa. In 1991, the value of crops grown on lands served by project water was \$599.54 per acre. In addition to irrigation, the reservoir provides recreation for a significant number of visitors each year. Boating, fishing, and swimming are popular pastimes at the reservoir, and over 4,000 people visit the site each year.<sup>24</sup>

### **Conclusion**

The Fruit Growers Dam Project saved a small, but highly developed area of fields and orchards from water shortages. The reconstruction and later rehabilitation of the water user's dam assured that some of the most fertile lands in the region would continue to produce quality fruits and vegetables for many decades. Although small when compared to other Reclamation projects, to the water users in the area, there can be no project more important than Fruit Growers Dam.

### **About the Author**

William Joe Simonds was born and raised in Colorado and has a solid understanding of the importance of water in the American West and its effect on the development of that region. He attended Colorado State University where he received a BA in History in 1992 and a Masters in Public History in 1995. He lives with his wife and two children in Fort Collins, Colorado.

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22. "Project History," 1985:16; 1986:52.

23. United States Department of Interior, Bureau of Reclamation, "General Information Circular, Fruit Growers Dam Project, Colorado," March 1947, p. 2.

24. U.S. Department of Interior, *Summary Statistics*, p. 217; *Project Data*, pp. 481-3.

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## Index

Alfalfa Ditch .....	2
Alfalfa Run .....	2, 5
Antanasio Dominquez .....	3
Antoine Robidoux .....	3
Austin, town of .....	2, 6
Bear, Charles .....	5
Bureau of Reclamation .....	2, 6-8, 10
Cedaredge, town of .....	2
Civilian Conservation Corps .....	7
Colorado .....	4
Contractors	
Tectonic Construction Company .....	9
Contracts	
Dam and Spillway Modification .....	9
Crawford, George A. ....	4
Delta County .....	2, 5
Delta Ditch Company .....	5
Delta, town of .....	2, 3, 5
Denver and Rio Grande Railroad .....	6
Dominquez-Escalante Expedition .....	3
Don Juan Maria Rivera .....	3
Dry Creek .....	2, 6
Dry Creek Diversion Ditch .....	2, 8
Ekert, town of .....	2
Francisco Silvestre Velez de Escalante .....	3
Fruit Growers Dam Project .....	2
Dry Creek Diversion Dam .....	8
Fruit Growers Dam .....	5, 7, 8
Fruit Growers Ditch and Reservoir Company .....	3
Garnet Mesa Ditch .....	5
Gunnison County .....	5
Gunnison River .....	2-4, 6, 8
Gunnison River Pumping Plant .....	9
Gunnison, Captain John .....	4
Legislation	
Emergency Relief Appropriation Act .....	7
WPA Relief Act .....	7
Loring, Colonel William W. ....	4
Meeker, Nathan .....	4
Mesa County .....	5
Orchard City Irrigation District .....	8
Powers, Mark .....	5
Recreation .....	10
Roosevelt, Theodore .....	7
Secretary of the Interior	
Ickes, Harold .....	7
SEED Report .....	9
Surface Creek .....	2, 6
Tectonic Construction Company .....	9
Uncompahgre Plateau .....	3
Uncompahgre River .....	3, 4

Uncompahgre Town Company .....	4
Uncompahgre, town of .....	5
Ute Indians .....	3, 4
Works Progress Administration Relief Act .....	7