

Mirage Flats Project

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The Mirage Flats Project

Tucked away in the northwestern corner of Nebraska is a river called Niobrara, a tributary of the Missouri River that parallels the Platte River. Prairie and hill meet in this corner of the state where “...fields give way to the great cattle ranches of the Sand Hill area, life is more leisurely and manners are more relaxed. Something of the Old West still survives.” It is a place where the wind blows so hard, that “...farmers just look out the window to see which way the barn is leaning,” to tell the direction of the wind. It is a place that has sometimes been forgotten about and overlooked in a state that is often forgotten and overlooked; a place that you view from the window of your car as you drive by on the interstate. But Nebraska contains many surprises. One is the many people you would not expect to have come from the state (like Gerald Ford, Malcolm X, Johnny Carson, Fred Astaire, and Buffalo Bill Cody). Another is that much of the Midwest’s water is in Nebraska’s rivers and underground aquifers. And since farming is the major industry on the vast expanses of the Nebraskan plains, utilization of the existing water is fundamental to the health of Nebraska’s economy. The Bureau of Reclamation provided the means by which many farmers in Nebraska are able to use the water to its fullest extent. The Mirage Flats Project is such a project; one that changed and in some respects, salvaged, the farming industry in northwestern Nebraska.¹

Project Location

The Mirage Flats Project, named for the region’s deceptive landscape (from the corner of your eye, it appears as though the surrounding flats rise up as tall buttes to meet the sky) is located in the Niobrara River Basin in Dawes and Sheridan Counties. The closest towns to the

1. First quote from *Nebraska: A Guide to the Cornhusker State* (1939), second quote by Charles Kuralt, *Dateline America*. Both quotes are from *The New York Public Library book of Twentieth Century American Quotations*, edited by Stephen Donadio (New York: Warner Books, 1992), 445-6; Hickey, Donald R. *Nebraska Moments* (Lincoln: University of Nebraska Press, 1992), ix-xii.

Project are Hay Springs, 12 miles to the north, population 693, and Hemingford, 10 miles to the south, population 953. At the site of the Project, the Sand Hills are to the southeast and rolling prairie surrounds the other three sides. In its shallow canyon, the Niobrara cuts a path from Lusk, Wyoming, and flows in an easterly direction through Nebraska and into the Missouri River. Project features include one dam and reservoir and a distribution system for irrigation. Project lands are located on the north bank, just south of Hay Springs. The elevation of the Project is around 3,500 feet above sea level and average annual temperatures range from 100 degrees Fahrenheit to negative 24 degrees Fahrenheit.²

Historic Setting

As far as its national significance goes, Nebraska's history seems to revolve around the Kansas-Nebraska Act of 1854 and the first conflicts of the Civil War. But in truth, the state has participated in and produced much more. It has a long history that is intertwined with many of the legends of the era of the "wild" West and has since that time, produced some fairly notable national figures. It is a farming state which produces as many of the staple cereal crops as the rest of the Midwest, in addition to supporting a thriving ranching industry.

Prehistoric Setting

Before Nebraska became part of the United States, it was included in the vast territory of the Sioux Indians, also called the Oceti Sakowin. At the heart of these prairie lands that composed their territory were the Black Hills of South Dakota which were said to be their birthplace. There are three tribes within the Sioux family; the Dakota, Nakota, and Lakota. Each tribe lived predominately in their respective territory; the Dakota resided in the states of

2. Eichberger, W. G., "Mirage Flats Project, Part I - Early History and Settlement," *The Reclamation Era*, January, 1950, 2; Department of the Interior, Bureau of Reclamation, *Project Data* (Denver: United States Government Printing Office, 1981), 655; www.uscensus.gov, accessed 1 August 2000; www.nws.noaa.gov, accessed 1 August 2000.

Minnesota and Wisconsin, the Nakota lived to the south of the Dakota on the east bank of the Missouri River, and the Lakota ranged over the largest portion located mainly to the west of the Missouri River and include current states such as North and South Dakota, Montana, Wyoming, and Nebraska. The Lakota hunted buffalo and gathered the fruits and vegetables of the Great Plains. Their lifestyle was purely nomadic and increased in mobility after contact with the Spanish in the mid 1600's introduced the horse into Lakota life. Their lifestyle changed once again after contact with the French in the 1700's, and the introduction of firearms; the Lakota and the French formed an easy alliance and the two groups often intermarried. Both the introduction of horses and firearms benefitted the Lakota greatly, but in the early 1800's, Americans introduced alcohol which contributed greatly to the demise of their society. The Lakota, and many of the smaller tribes they often competed with, under pressure from the United States, signed treaties in 1851, 1868, and 1880, that ceded bits of their traditional lands away until it was gone. The Lakota, and the rest of the Sioux, went to reservations in Montana, Nebraska, and Oklahoma.³

Historic Setting

The first Anglo to set foot in Nebraska arrived in 1789 to trade with the Ponca Indians (a small tribe related to the Omaha Indians on the east bank of the Missouri who attempted to coexist peacefully with the Sioux) near where the Niobrara River pours into the Missouri River. James Mackey, a French explorer and fur trader, in 1795-1796, followed the Niobrara River downstream from the Sand Hills to its confluence with the Missouri; marking his route on a map published in Paris in 1802. The Spanish fur trader Manuel Lisa, the same man who convinced John Colter to leave the Lewis and Clark Expedition and travel south to Wyoming, passed

3. Hoxie, Frederick E., Editor, *Encyclopedia of North American Indians* (Boston: Houghton Mifflin Company, 1996), 590-3.

through Nebraska in 1805. The site where legend has it that Lisa exclaimed “Belle vue!” (which means “beautiful view” in French), overlooking the Missouri River, became the Missouri Fur Company headquarters in 1822. The company was established by Lisa in 1807, but was reorganized and moved after his death in 1820, to a more favorable location by the Missouri River near the current city of Omaha. Lucien Fontenelle acquired the Company in 1825, expanding its industry from furs to farming, and made it one of the major trading posts for fur trappers and traders in the West.⁴

As more and more mountain men came West in the 1830's, they pushed back the boundaries of the unknown by exploring the Great Plains, Rocky Mountains, and Great Basin which stand between the Mississippi River and west coast. By the 1840's, many Americans were interested in what these west coast territories had to offer. In 1841, the first of many groups of pioneers traveled west on the old Indian and mountain men trails, forming what became known as the Oregon Trail along the Platte River. Travel was rough over uneven terrain and dangerous because the Indian tribes of the Plains resented the disruptive presence of the Anglos, though their active displays of hostility did not stem the increasing numbers of pioneers. The Mormons blazed their trail in 1847, the California Gold Rush of 1849 caused a massive surge of migration to the West, and in 1858, with the discovery of gold in Colorado, more people traveled through the Great Plains to the mountains to mine precious metals. To support the sudden growth in the mining industry, many more settlers came to the mountains and the Great Plains to support the mining industry.⁵

With the rise in population of Nebraska and other Great Plains states, it was clear that the issue of the Indians would have to be dealt with. Nebraska Territory was organized in 1854,

4. Hickey, 1-2. Burdick, Clyde E. “Niobrara - the ‘Forgotten River,’” *Reclamation Era*, July 1948, 125.

5. Hickey, 8-9.

with the Kansas-Nebraska Act, sparking off an intense debate over the spread of slavery which contributed to the start of the Civil War. The bloody conflict that ensued diverted attention from the issue of the Indians until the late 1860's, and the Sioux Wars. Old trading posts were converted to military forts to defend Plains settlers from the Indians. Established around 1874, Fort Sheridan (near present day Chadron) and Fort Robinson (near present day Crawford) in Sheridan and Dawes Counties are two of these. Fort Robinson became the largest military installation in the northern plains. Named after Lieutenant Levi Robinson, who was killed by Indians from the Red Cloud Agency while on detail near Fort Laramie, the Fort provided protection for both pioneers and settlers from the hostile Indians until the late 1880's. The solution of the Federal government was to remove the Indians to reservations, freeing up valuable land which could be homesteaded by Americans. The Sioux, Poncas, Pawnee, and Cheyenne were removed from their ancestral lands by the 1880's, after gold was discovered in the sacred Black Hills of South Dakota, and by 1890, the last resistance of the Indians was crushed. Once the Indians were removed, migrants laid claim to the wide, fertile lands of Nebraska.⁶

After completion of the transcontinental railroad, the Fremont, Elkhorn & Missouri Valley Railroad built a set of tracks through the Niobrara River Basin in the 1880's, giving settlers access to the rich ranch lands it contained. The ranching industry developed first; cattle were driven through the rich grasslands from Texas, and later Herford bulls were imported from Europe to improve the local stock quality. Until 1883, the cattle grazed on the free range of the western Niobrara River Basin. Soon after the era of the free range ended, settlers acquiring land through the Homestead Act of 1862 purchased farms and established the first towns in western

6. Hickey, 37; www.nebraskahistory.org, accessed 26 July 2000.

Nebraska. Among these homesteaders was Jules Sandoz, the father of Nebraskan author Mari Sandoz who wrote *Old Jules* and other historical novels set in Nebraska. By the 1890's, Nebraska's agricultural and ranching industry was thriving, especially in the Niobrara River Basin. However, between 1893 and 1895, consecutive years of drought sparked off a war between ranchers and farmers, called the Niobraran Feud, over who got access to what little water there was. Many settlers left the area to escape the hardship, though a few hardened settlers remained and established irrigation projects as a solution to their water troubles.⁷

Settlers banded together in the Hay Springs area, now affectionately called Mirage Flats, and formed an irrigation company, although they had little in the way of funds to build an irrigation system. Many of the necessary materials were donated including labor; each farmer donated his time according to how much land he was planning to irrigate. The system constructed in the late 1890's, included a diversion dam, two flumes (each about 1,200 feet long), and twenty miles of canal. Although their intentions were good, the irrigation system was poorly constructed and eventually, the wooden canal structures were lost to fire and storm and abandoned because of the cost of repairs. which forced its abandonment by 1903. Many farmers left their homesteads after losing everything they had. Ranchers fared little better in maintaining productivity, although their irrigated pastures were stocked with hardier grass hays. Despite this failure and other irrigation project failures throughout the state, by 1900, close to 69,000 people had moved to Nebraska to farm and ranch.⁸

Failure continued to surround irrigation efforts in Mirage Flats throughout the 1920's. The area was owned by a couple of cattle ranchers who subdivided their ranches into small farming units and leased them to a Danish colony from central Nebraska. Because of the

7. Burdick, 125-6; Eichberger, 2.

8. Burdick, 125-6; Eichberger, 3.

previous, unsuccessful attempt, the Danes were hesitant to build another irrigation system. By 1937, the Mirage Flats Public Power and Irrigation District was organized to develop a project, but it was too late in the Depression for the area to apply for Public Works Administration assistance. In response to this disappointing development, Mr. Carl S. Horn (of Hay Springs) traveled to Washington, D.C., to request that the Bureau of Reclamation investigate the feasibility of a Reclamation-sponsored project in Mirage Flats; on his side was the growing importance of Mirage Flats. During World War I, Fort Robinson in the Niobrara River Basin was of great importance because it housed a supply depot for the military and later became a training site for military dogs. Farmers of Mirage Flats were raising crops and livestock for more than just its citizens, creating a greater need for adequate irrigation projects.⁹

Project Authorization

The drought during the Great Depression caused significant crop failures and the Bureau of Reclamation began investigating the Niobrara River Basin in 1837, to determine the feasibility of constructing an irrigation project; the report on the investigation was issued in 1939 recommending a project at Mirage Flats. In 1940, under the Water Conservation and Utilization Act of May 10, 1939, President Franklin Roosevelt approved the Mirage Flats Project. The Project was designed to serve about 12,000-13,000 acres around Hay Springs; the same region that was originally irrigated by a group of farmers in 1890. The Works Progress Administration (WPA) was contracted to provide the labor and the Farm Security Administration was to settle the Project lands. The total cost of the Project was estimated at \$2,560,000, of which only \$985,000 would be reimbursable; the rest donated by the WPA as a part of President Franklin Roosevelt's "relief" program. However, the Project was deemed worthwhile since it contributed

9. Hickey, 102; Burdick, 126; Eichberger, 3.

to the general economic development of the community¹⁰

Construction History

The main features of the Mirage Flats Project include Box Butte Dam and Reservoir, Dunlap Diversion Dam and Mirage Flats Canal. Construction began on Box Butte Dam on January 20, 1941, by the Works Progress Administration, but stopped on January 30, 1942, when the War Production Board reassigned the WPA to help the American and Allied effort in World War II. On July 10, 1944, President Franklin Roosevelt re-approved the Project under the War Food Program of July 16, 1943, and construction recommenced on Box Butte Dam.¹¹ An additional \$1,600,000 was allotted to the Project on July 29, 1944, to speed up construction of the project by paying the contractor M. G. Long of Billings, Montana, to build Dunlap Diversion Dam. The Project was completed and first storage in the reservoir occurred in 1949.¹²

Box Butte Dam, built between 1941 and 1946, is a rock-faced, zoned earthfill structure containing 1,422,000 cubic yards of earthen material. It is 87 feet high with a hydraulic height of 52 feet, a top width of 24 feet, a base width of 410 feet, and a crest length of 5,508 feet. The outlet works include a concrete conduit through the base of the dam controlled by one 39 square-inch high-pressure slide gate with a capacity of 420 cubic feet per second. Box Butte Reservoir has a total capacity of 31,060 acre-feet, with an active capacity of 28,785 acre-feet and a surface area of 1,600 acres.¹³

Dunlap Diversion Dam is a concrete weir embankment wing built between 1941 and

10. Burdick, 126; Denver, National Archives and Records Administration, Rocky Mountain Region, Bureau of Reclamation, *Mirage Project, Nebraska* (1940) (Denver, United States Government Printing Office, 1940); *Project Data*, 657.

11. *Mirage Project, Nebraska* (1940), x; Denver, National Archives and Records Administration, Rocky Mountain Region, Bureau of Reclamation, Record Group 115, *Mirage Flats Project, Nebraska* (1943-4) (Denver: United States Government Printing Office, viii).

12. *Mirage Project, Nebraska* (1943-4), viii.

13. *Project Data*, 658.

1945. It contains 1,300 cubic yards of concrete and 5,100 cubic yards of earthen material at a height of 12.6 feet and crest length of 80 feet. The diversion capacity of the Dam is 220 cubic feet per second.¹⁴ Mirage Flats Canal is located off Dunlap Diversion Dam. It has a length of 13.2 miles and a carrying capacity of 220 cubic feet per second. Water flows from the headwaters of the Niobrara River into Box Butte Reservoir and is released and diverted a couple miles downstream into the Mirage Flats Canal and eventually into the lateral canals.¹⁵

Post Construction History

The Mirage Flats Extension Unit was authorized as a unit of the Pick-Sloan Missouri River Basin Program, but was never constructed, due to a lack of funding. In 1999, it was determined that a flood of only 33% of the probable maximum flood would overtop the crest of Box Butte Dam, and that modification is required. The Kansas River Project has assumed responsibility for the operation and maintenance and further construction work for the Project as of 1967.¹⁶

Settlement of Project Lands

The Farm Security Administration (FSA) began purchasing land in Mirage Flats in the fall of 1940 (average purchase price was \$25 per acre). The FSA began to subdivide and level the sections to prepare the plots for irrigation service. With a brief halt in construction from 1942 to 1944, work on the land preparation was completed by 1948. Farm boundaries were laid out to maximize irrigation, however the boundaries are not the original straight section lines except where the section boundaries were roads. This caused an interesting aerial patchwork of

14. *Project Data*, 658.

15. *Project Data*, 658.

16. Denver, National Archives and Records Administration, Rocky Mountain Region, Bureau of Reclamation, Record Group 115, *Mirage Flats Project, Nebraska* (1976-7) (Denver: United States Government Publishing Office, 1977), 1; Department of the Interior, Bureau of Reclamation, *Comprehensive Facility Review: Report of Findings on Box Butte Dam, Mirage Flats Project, Nebraska* (Denver: Technical Services Center, 1999), 2.

plots, not the traditional rectangular plots, but eliminated much wasted area. Candidates who wished to purchase plots were taken on as tenants and if they proved satisfactory, they were eligible to purchase the plot provided they stayed on the land to farm and operate it. Farmers who sold their lands to the Project were given top priority at these “first come, first served” land sales, as were qualified veterans from World War II.¹⁷

Uses of Project Water

The primary purpose of the Mirage Flats Project is irrigation in the area south of Hay Springs. There are 11,662 irrigable acres total, of which 10,596 are currently irrigated. As of 1992, the total gross crop value was \$2,460,703, for an average of \$232.25 per acre. There are over 50 farms that are served by the Project with a population of 175. Crops produced include beans (3,254 acres), barley (12 acres), corn (5,563 acres), oats (76 acres), wheat (128 acres), alfalfa (1,049 acres), grass hays (108 acres), irrigated pasture (111 acres), and compost production (195 acres).¹⁸

Recreation is available at Box Butte Reservoir; activities include fishing, picnicking, boating, and camping. The Nebraska Game and Parks Commission administers recreational activities at the Reservoir. In addition, the storage unit also provides a measure of flood control in particularly wet years.¹⁹

Conclusion

Although the Mirage Flats Project on the Niobrara River is a comparatively small Reclamation project, it saved the local farming communities from extinction during some of the nation’s worst drought periods. Based on the initiative and hope of the local settlers,

17. Eichberger, 4.

18. Department of the Interior, Bureau of Reclamation, *1992 Summary Statistics* (Denver: Water, Land and Cultural Resources, 1992), 34, 50, 61, 64, 277.

19. *Summary Statistics*, 108, 114.

Reclamation constructed Mirage Flats despite earlier failures. But it was the determination of the farmers themselves that made the Project successful in the end. “It is a modern realization of the dreams of your western Nebraska pioneers,” Oscar Chapman, Secretary of the Interior, told Mirage Flats residents at the Project’s dedication on December 28, 1950.²⁰

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20. “Mirage Flats Takes Over,” *The Reclamation Era*, April 1951, 68.

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