

James Diversion Dam:
A Feature of the Oahe Unit,
James Division
Pick-Sloan Missouri Basin Program

Adam R. Eastman
Historic Reclamation Projects
Bureau of Reclamation
2008
Reformatted, edited and published
Andrew H. Gahan
2013

Table of Contents

Table of Contents	i
James Diversion Dam	1
Project Location	1
Historic Setting	1
Project Authorization	6
Construction History	7
Investigations	7
Construction	8
Post Construction	10
Settlement of Project Lands	12
Project Benefits and Uses of Project Water	12
Conclusion	13
Bibliography	14
Archival Sources	14
Government Publications	14
Newspapers	14
Books	15
Other Sources	15

James Diversion Dam

Planned as a small cog in a big wheel, the James Diversion Dam was part of the larger proposed Oahe Project that municipal leaders in Huron, South Dakota hoped would provide big benefits to their community. While awaiting authorization of the bigger project, the Bureau of Reclamation designed the small dam and its reservoir on the James to supply Huron with municipal and industrial water along a river known for its wild fluctuations. In the end, the project succeeded in providing reliable drinking water, along with recreational opportunities, however, opposition and politics derailed the big wheel—the Oahe Project—leaving the James Diversion Dam to stand alone.

Project Location

The James Diversion Dam is located on the James River, a tributary of the Missouri River in east-central South Dakota approximately seventeen miles north of the city of Huron. The entire James River drains an area of more than 21,000 square miles, the portion above Huron drains 1,600 square miles. Flows in the river vary widely from year to year. Average discharge of the river at Huron is 170,000 acre feet. However, the maximum flow recorded during the flood year of 1969 was 731,000 while the minimum flow recorded was only 400 acre-feet during the drought year of 1959.¹

Historic Setting

During the Pleistocene Era, two to three million years ago, at least four major glaciers advanced from the Arctic to reshape the northern Plains. The glaciers, each

¹ United States Department of the Interior, Water and Power Resource Service, *Project Data* (Washington, D.C.: United States Government Printing Office, 1981), 911, 914.

separated by thousands of years, forced the Missouri River into its present channel and carved out the prairie lowlands east of the river. Nine or ten thousand years ago, the runoff from the receding glacier formed a broad shallow lake that geologists call Lake Dakota. They estimate the lake existed for a few thousand years during which time glacial sediment blanketed the lake bottom creating a smooth, level area. As the lake drained it created the channel of the James River which originates in North Dakota and flows southward 710 miles to its confluence with the Missouri River near Yankton, South Dakota. Because of the level topography, the meandering James River drops only about a half-foot per mile through the lake plain area. It is also subject to frequent flooding during the periods of high spring runoff and rains.²

Archeological evidence suggests that following the last Ice Age the ancestors of Native Americans—Paleo-Indian hunters—moved into the area hunting now extinct animals like mammoths and ice-age bison. Between 8,000 BCE and 1,000 BCE they adapted to the extinction of large mammals by hunting a larger range of animals and gathering plant foods. Beginning around 1,000 BCE, in what archeologists term the Woodland Period, their hunting and gathering efficiency allowed them to live in larger groups. Around 200 BCE they began making pottery and building burial mounds.

The Plains Village People, the predecessors of the Mandan, Arikara, and Hidatsa, began planting corn and sunflowers and building villages. By 1500 their villages had spread all along the Missouri River. With the arrival of Europeans, the lives of Plains Indians was greatly altered through the domestication of the horse following the 1680

² United States Department of the Interior , Bureau of Reclamation, *Initial Stage, Oahe Unit, Final Environmental Statement* (Bureau of Reclamation, 1973), II 1-5; Peter Carrels, *Uphill Against Water: The Great Dakota Water War* (Lincoln: University of Nebraska Press, 1999), 39-40.

Pueblo Revolt in New Mexico, along with the introduction of European goods and technology.

The expansion of Euro-American settlement forced a general migration and displacement of various Native American groups from east to west. In the 1760s the Chippewa pushed the Sioux Indians out of Minnesota towards the Missouri River. On their way to the Missouri, the Sioux drove the Omaha Indians from the Big Sioux and James River valleys. This migration was a slow one, and not all of the Sioux tribes settled in the area. Only the Santee and Yanktonnais tribes halted in northeastern South Dakota, the others pushed on.³

Throughout the 1700s, the Santees and Yanktonnais lived undisturbed in their new land, gathering at intertribal trading fairs to exchange furs and hides, tools, weapons, and food. In the first half of the 1800s however, others introduced themselves into the bartering system. During this same period, Euro-Americans began to explore the area. In 1743 brothers François and Louis Verendrye left Winnipeg, Canada to search for a route to the Pacific Ocean. They reached the Missouri River near present day Pierre before abandoning their search. In 1804 Lewis and Clark began their epic search for a “Northwest Passage” and conducted first systematic exploration of the Missouri River basin.

White settlement of South Dakota began in 1818 when Joseph LaFramboise opened a fur trading post near present day Fort Pierre. The U.S. Army established a

³ South Dakota State Historical Society, “Chronology of South Dakota History,” Online http://www.sdhistory.org/soc/soc_hist.htm; South Dakota Office of Tourism and Glacial Lakes and Prairies Tourism Association, “History,” <http://www.sdglaciallakes.com/AboutUs/History/Index.cfm>, Accessed June 13, 2008.

presence at various forts in the territory in the mid 1850s. An 1851 treaty with the Santee Sioux opened thirty million acres of the Dakota Territory to settlement east of the Big Sioux River. Farmers and merchants soon replaced trappers and military men as the dominant Euro-American groups in 1857 with the establishment of Sioux Falls. In 1858 the Yankton Sioux relinquished another 14-million-acre of land bounded by the Big Sioux and Missouri rivers and an imaginary line from present-day Pierre to Watertown. This area included a large part of the James River basin, including the future site of Huron.⁴

In the 1870s homesteading, the arrival of the railroads to the territory, and the subsequent discovery of gold in the Black Hills led to a great rush of white settlers. The area encompassing the Oahe Unit was open to homesteading in 1873. Gold seekers trespassing on the Great Sioux Reservation sparked the Sioux war in 1876, climaxing with the Sioux defeat of Custer at the Battle of the Little Big Horn in June. The following year the Sioux war ended with the U.S. Army rounding up the remaining hostile groups. With the passage of the Act of February 28, 1877, Congress abrogated the Ft. Laramie Treaty and broke up the Great Sioux Reservation that removed over 7 million acres of land.

Thanks to the treaty, the mines in the west, and bumper crops in the east a ten year economic boom ensued. Assisting this prosperity was the expansion of two railroad companies into the South Dakota Territory beginning in 1879. The Chicago and North Western was the first, building from Minnesota into South Dakota. The railroad reached the James River in the late spring of 1880. Huron was established by the railroad as a

⁴ Ibid.

division point, and the railroad officials platted the city May 10, 1880. As the railroad pushed west, reaching the Missouri River at Pierre later that year, many railroad workers chose to stay and take homestead claims in the area around Huron. In anticipation of the railroad's arrival Governor Ordway created Beadle County in 1879, named to honor Brig. General William Henry Harrison Beadle, pioneer, scholar, educator, lawyer, legislator and soldier. On July 4, 1880, the governor appointed Eli C. Walton, Charles Miner, and S. S. Neilson as commissioners to organize the county. The commissioners chose Huron as the county seat.⁵

In 1889 the Great Northern Railroad built a line from St. Paul, Minnesota, to Huron. That year saw the culmination of the Great Dakota Boom, and the admission of South Dakota into the Union on November 2, 1889. But a severe multi-year drought which began the year before, and the collapse of the nation's economy in the early 1890s turned the boom into a bust. The drought generated interest in the possibility of irrigating South Dakota's semiarid lands. Initially, South Dakotans resisted previous talk of irrigation. Businessmen and land speculators thought promotion of irrigation ran counter to their claims that "rain followed the plow" and would drive away prospective settlers and lower land prices. Politicians at the state's constitutional convention in 1889 spurned plans presented by a representative of John Wesley Powell, head of the U. S. Geological Survey, to support funding to conduct investigations for federal irrigation projects.⁶

Attitudes changed following passage of the Reclamation Act in 1902. Boosters supported reclamation in South Dakota. Reclamation Service engineers recognized that

⁵ Beadle County, "History," <http://www.beadlecounty.org/>, Accessed June 13, 2008.

⁶ On Powell see, Carrels, 4.

they could not get a canal out of the Missouri River plain due to steep banks relative to shallow gradient of river. Areas to the east of the river received sufficient rainfall three out of four years. Thus, early investigations in the state focused on the western third of the state, particularly on the Black Hills which provided reservoir sites. Reclamation located the state's first project, the Belle Fourche Project, on the dry plains north of the Black Hills. The project's high construction costs and the failure to classify soils unsuitable for irrigation plagued the project. As a result, further irrigation projects in the state were limited until the great drought of the 1930s reinvigorated support for new irrigation schemes. Irrigation boosters in the Huron area began to push for a solution to the erratic flows and poor water quality of the James River.⁷

Project Authorization

The James Diversion Dam is part of the Pick-Sloan Missouri Basin Program which Congress authorized in the Flood Control Act of 1944 (59 Stat. 887). Under the Oahe plan, the small dam would create a pool to allow the proposed James Pumping Plant to lift water—primarily spring flood waters—to the Byron Reservoir, an enlargement of Lake Byron. Byron Reservoir would then regulate the water supply and serve as the location of a pumping plant to supply project lands on the east side of the James River.

In advance of the main construction on the Oahe Unit of the Pick-Sloan Missouri Basin Program, Reclamation and the City of Huron determined that early construction of the James Diversion Dam would provide the city with much needed additional municipal

⁷ United States Department of the Interior, United States Geological Survey, *Second Annual Report of the Reclamation Service 1902-1903* (Washington D.C.: Government Printing Office, 1904), 65; Christopher J. McCune, "The Belle Fourche Project," 18-25; Carrels, 6-7; *Project Data*, 911.

water supply. Congress appropriated funds for investigation and planning of the James Diversion Dam in the Public Works Appropriation Act of 1961 (74 Stat. 743). Congress subsequently authorized the expenditure of construction funds appropriated in the Appropriations Act of 1963 (P.L. 87-800, 78 Stat. 1220).⁸

Construction History

Investigations

Congress appropriated funds for investigation and planning of the James Diversion Dam in the Public Works Appropriation Act of 1961. The primary question addressed by the investigations was the effect of the proposed James Diversion Dam on the surrounding ground water table. Reclamation drilled twelve shallow wells to determine existing ground water levels to serve as a baseline for monitoring the dam's impact. The investigation team completed its report in March 1962.⁹

With the investigation and planning complete, the preparations for construction moved forward. Assistant Secretary of Interior Kenneth Holum, a South Dakota native, joined Huron Mayor Gene W. Denison at a contract signing on September 13, 1962. On February 5, 1963, the City of Huron petitioned the South Dakota State Water Resources Commission to transfer their existing storage rights behind the Spink County Dam on the James River—which would be inundated by the pool created behind the new James Diversion Dam. On March 23 Reclamation petitioned the commission for permission to

⁸ *Project Data*, 913.

⁹ United States Department of the Interior, Bureau of Reclamation, "Annual Project History: Oahe Unit, James Division, South Dakota," Volume II, 1964, 1-2, Accession 8NN-115-88-053, Box 123, Rocky Mountain Region, National Archives and Records Administration. Hereafter cited as "Project History" with appropriate volume and NARA location.

store an additional 2,495 acre feet behind the dam. On May 11 the State Water Commission approved the applications.¹⁰

Construction

On January 17, 1963 Assistant Commissioner for Project Development and Irrigation William I. Palmer sent a teletype authorizing construction to commence. The Oahe Construction Office in Huron issued the design specification a week later on January 25 and advertised the project for bidding. As officials at the Huron Office opened the bids on March 12, the apparent low bidder was Sweetman Construction of Sioux Falls, South Dakota. However, their bid of \$355,015 exceeded both the engineers estimate and the funds available. As a result, Reclamation rejected the bids and went back to the drawing boards, literally.¹¹

After consultation between staff at the Huron Office, the regional office in Billings and the Design Center in Denver, Reclamation simplified the design of the dam by reducing the width of the overflow weir, lowering the height of the dam, eliminating one of the two spillway gates and the electrical motor on the remaining gate. Designers chose to lower the dam height to only protect against the probable 10 year flood, rather than the probable 100 year flood. To accommodate the rarer flood event they added an auxiliary spillway and designed the dam to withstand being overtopped by the low velocity flood flows of the James River. The redesigned project was advertised on May

¹⁰ "Project History," Volume I, 1963, 2, Accession 8NN-115-92-130, Box 10.

¹¹ "Project History," Volume I, 1963, iv, 3.

28, 1963. Reclamation opened the bids on June 17, and subsequently awarded a contract to Sorinson Construction of Fargo, North Dakota, in the amount of \$281,512.¹²

The Huron Office issued the Notice to Proceed to Sorinson on July 23. Sorinson began construction on August 8, working first on an access road to the dam site. Three weeks later, the company's crews began construction of the coffer dams. Through September crews began work on the excavation of the dam foundation and the auxiliary spillway channel. Initially, they used scrapers for both projects, but wet soil conditions necessitated that the company employ a dragline to excavate the final four feet of foundation materials. Sorinson completed the coffer dams and diversion channel on September 16. Over the next three days they finished the dewatering the foundation. By the end of the construction season, crews had completed the excavation and begun placing embankment materials over a two week period before shutting down for the winter on November 21, 1963.¹³

After shutting down for the winter for five and one-half months, Sorinson's crews returned to the site and began preparations to complete the project. They began on May 11, 1964, by pumping out the snowmelt and rainfall that had accumulated between the two coffer dams. Work moved forward, and on June 2 crews began excavating the cutoff trench. The company completed excavation of the cutoff trench section under the weir within a week and began placing concrete on June 9. They batched the concrete on site, then transit trucks mixed and transported the concrete which crews placed into the forms by crane or bucket. Concrete work on the overflow weir at the center of the dam

¹² "Project History," Volume I, 1963, 4; Regional Director to Commissioner, March 29, 1963 in appendix, no page.

¹³ "Project History," Volume I, 1963, iv, 5-6.

continued through the summer and Sorinson completed the concrete work on October 12, having placed 1,450 cubic yards. With the concrete work nearing completion, the company resumed placement of the embankment sections on October 2. By October 19 they completed the right embankment and began riprapping this section as work began on the left embankment. Sorinson's crews completed the embankment on November 4 moving 45,000 cubic yards. The same day Reclamation inspectors accepted the dam as complete.¹⁴

As constructed the James Diversion Dam consists of a fifty foot wide concrete gravity ogee weir with flanking earth dikes. The dam has a height of twenty feet above the stream bed and a total length of 280 feet. It creates a reservoir with a maximum capacity of 4,875 acre feet covering a surface area of 960 acres. If stream flows are sufficient that the water rises two feet above the crest of the overflow weir, flood waters are diverted into an auxiliary spillway located across flood plain to the right of the dam.¹⁵

Post Construction

Recreation development became an important feature of the James Division Unit. During project planning the National Park Service selected 106.7 acres for recreational development at four sites. The Fish and Wildlife Service selected an additional 85.5 acres for wildlife management. As the project neared completion, Reclamation signed a Memorandum of Understanding on August 26, 1964, with the South Dakota Department of Fish and Parks transferring management of the recreation areas following construction. Reclamation developed recreation areas on a total of 10 acres, building two boat ramps

¹⁴ "Project History," Volume II, 4, 7, 10.

¹⁵ *Project Data*, 914.

and a picnic area. Anglers enjoy catching crappie, catfish, and walleye from either the reservoir's eighty-five miles of shoreline, all of which are accessible, or from boats—or through the ice in winter—on the 960 acre reservoir. Though not as popular as fishing, game bird hunting is also permitted on Reclamation lands.¹⁶

Following construction, the City of Huron assumed operation and maintenance of the dam as stipulated by the twenty-year contract signed by Holum and Dennison in 1962. Additionally, Huron began repayment of the costs allocated to municipal and industrial (M&I) water supply on an escalating project schedule. The contract expired on December 31, 1984, Huron renewed the contract with Reclamation on August 10, 1984. Because they had completely repaid the project costs allocated to M&I, Reclamation agreed in the contract to allow Huron the continued use of the water supply in exchange for the city's continued operation and maintenance of the dam.¹⁷

As the new twenty year contract neared its expiration, Huron City leaders expressed reservations about extending the contract. The city had switched its water supply to Missouri River water provided by the Mid-Dakota Rural Water Project. Because the Missouri River water was higher quality and less expensive than continuing to treat James River water, the city felt it no longer needed to utilize the James Diversion Dam. At its meeting on December 7, 2004, the Huron City Commission voted not to renew the contract set to expire on December 31. As a result, Reclamation assumed control of the operation and maintenance of the James Diversion Dam.¹⁸

¹⁶ "Project History," Volume II, iii, 16; United States Department of the Interior, Bureau of Reclamation, "James Diversion Dam Facilities," <http://www.usbr.gov/gp/recreation/jamrrec.htm>, accessed June 13, 2008.

¹⁷ Contract 14-06-W129, September 23, 1962; Contract 4-07-60-WM-168 August 10, 1984.

¹⁸ Roger Larson, "City elects not to renew dam agreement," *Huron Plainsman*, December 8, 2004.

Settlement of Project Lands

Because James Diversion Dam was constructed to provide a supplemental water supply for the city of Huron, no lands were withdrawn for settlement in conjunction with this feature. Reclamation made no plans for irrigation prior to the development of the Oahe Unit, but because the project lands of the proposed Oahe Unit were already in private ownership, no lands were withdrawn for settlement.

Project Benefits and Uses of Project Water

For forty years the James Diversion Dam and Reservoir has provided an adequate and consistent supply of water for residents and industry of Huron, South Dakota. Demographic change has seen the population of Huron decline in the past two decades. Between 1970 and 2006 Huron has seen a reduction in residents of 23 percent. In 1970 the project provided drinking water to almost 14,400 people. At the end of Huron's contract with Reclamation, the U.S. Census Bureau estimated the city's population at approximately 10,900. Today, the principal benefit and use of the project is in providing recreational facilities, which also has witnessed a steady decline in use. Statistics available between 1971 and 1992 showed that the number of usage days went from a high of 5,500 twelve-hour use days to 2,000. A newspaper, however, has recently reported that the reservoir's recreation areas at the dam remain popular as a spring walleye fishery and for ice fishing.¹⁹

¹⁹ For Population in 1970-1990 see 1990 see United States Census Bureau, *Census of Population and Housing, Population and Housing Unit Counts United States* (Washington D.C.: United States Government Printing Office, 1993),565; for 2000 and estimated 2006 population see United States Census Bureau, "Population Finder: Huron, South Dakota,"

Conclusion

The James Diversion Dam provides a unique look into the changing history of the Bureau of Reclamation. First, it shows the effects small projects can have on local communities. While not a glamorous engineering achievement or a construction marvel, the dam provided a needed and reliable municipal water supply. The project paid for itself and served an important role until superseded by a later project—which was the plan all along. Second, the fact that the James Diversion Dam was superseded by the Mid-Dakota Rural Water System and not the planned Oahe Unit, exemplifies the shift in emphasis away from irrigation towards municipal water supplies and an example of one of Reclamation’s new management roles for water in the West.

http://factfinder.census.gov/servlet/SAFFPopulation?_event=&geo_id=16000US4631060&_geoContext=01000US%7C04000US46%7C16000US4631060&_street=&_county=Huron&_cityTown=Huron&_state=04000US46&_zip=&_lang=en&_sse=on&ActiveGeoDiv=&_useEV=&pctxt=fph&pgsl=160&_submenuId=population_0&ds_name=DEC_2000_SAFF&_ci_nbr=null&q_r_name=null®=null%3Anull&_keyword=&_industry= Accessed June 13, 2008; For usage statistics see United States Department of the Interior, Bureau of Reclamation, *Water & Land Resources Accomplishment, 1971, Statistical Appendix* (U.S. Government Printing Office, 1971), 262 and United States Department of the Interior, Bureau of Reclamation, *1992 Summary Statistics, Land, Water and Related Data* (US Government Printing Office, 1995), 115. For the general downward trend consult Statistical Appendix to Bureau of Reclamation Annual Reports, over the intervening years. On popularity of reservoir see, Larson, “City elects not to renew dam agreement.”

Bibliography

Archival Sources

United States Department of the Interior, Bureau of Reclamation, "Annual Project History: Oahe Unit, James Division, South Dakota," Volume I, 1963. Accession 8NN-115-92-130, Box 10. National Archives and Records Administration, Rocky Mountain Region, Denver, Colorado.

_____. "Annual Project History: Oahe Unit, James Division, South Dakota," Volume II, 1964. Accession 8NN-115-88-053, Box 123. National Archives and Records Administration, Rocky Mountain Region, Denver, Colorado.

Government Publications

United States Department of Commerce, Economics and Statistics Administration, Bureau of the Census. *Census of Population and Housing, Population and Housing Unit Counts United States*. Washington D.C.: United States Government Printing Office, 1993.

United States Department of the Interior, Bureau of Reclamation, *1992 Summary Statistics, Land, Water and Related Data*. US Government Printing Office, 1995.

_____. *Initial Stage, Oahe Unit, Final Environmental Statement*. Bureau of Reclamation, 1973.

_____. *Water & Land Resources Accomplishment, 1971, Statistical Appendix*. U.S. Government Printing Office, 1971.

United States Department of the Interior, United States Geological Survey. *Second Annual Report of the Reclamation Service 1902-1903*. Washington, D.C.: Government Printing Office, 1904.

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

Newspapers

Huron [South Dakota] Plainsman

Books

Carrels, Peter. *Uphill Against Water: The Great Dakota Water War*. Lincoln: University of Nebraska Press, 1999.

Other Sources

Beadle County. "History." <<http://www.beadlecounty.org>> (Accessed June 13, 2008).

South Dakota Office of Tourism and Glacial Lakes and Prairies Tourism Association. "History." <<http://www.sdglaciallakes.com/AboutUs/History/Index.cfm>> (Accessed June 13, 2008).

South Dakota State Historical Society. "Chronology of South Dakota History." <http://www.sdhhistory.org/soc/soc_hist.htm> Accessed June 13, 2008).

U.S. Bureau of Census. "Population Finder." <<http://factfinder.census.gov>> (Accessed June 13, 2008).

United States Department of the Interior, Bureau of Reclamation. "James Diversion Dam Facilities." <<http://www.usbr.gov/gp/recreation/jamrrec.htm>> (Accessed June 13, 2008).