



This radial gate maintains flow on the Oakes Test Area Lateral 0-2.0. Water then flows via gravity to pumping plants, which deliver water to irrigators' fields.



GDU Principal Supply Works Provide Benefits to Many, Part II

By Kimberly Cook

This is the second part of a two-part series on the Garrison Diversion Unit (GDU) Principal Supply Works. The GDU Principal Supply Works provide many benefits including recreation facilities, water for irrigation, and dedicated wildlife areas.

The GDU Principal Supply Works have seen several changes throughout their long history. Congress enacted legislation creating the GDU in 1965 to construct municipal and industrial water supply features, fish and wildlife conservation, recreation and flood control, and the irrigation of 250,000 acres. Through the Garrison Diversion Unit Reformulation Act of 1986 and the Dakota Water Resources Act of 2000 (DWRA), the original project scope was revised, decreasing irrigation acres and increasing funding for municipal, rural, and industrial

water, and recreation and wildlife facilities.

Today, the Garrison Diversion Conservancy District (Garrison Diversion) works in cooperation with the Bureau of Reclamation (Reclamation) to keep the GDU features in working order by performing operations and maintenance (O&M) at the McClusky Canal, New Rockford Canal, and Oakes Test Area. Garrison Diversion also assists with O&M at the Snake Creek Pumping Plant and other constructed GDU facilities operated by Reclamation and the U.S. Fish and Wildlife Service, such as Jamestown Dam and Arrowwood and Audubon National Wildlife Refuges.

The story in the May issue of *North Dakota Water* featured the Snake Creek Pumping Plant, Lake Audubon, the McClusky Canal, and Lonetree Wildlife Management Area. This story features the remaining GDU facilities.



Above, the 41.5-mile long New Rockford Canal was built to connect the Lonetree Reservoir, which was de-authorized in 2000 and designated as a wildlife conservation area. At right, the Jamestown Reservoir has prevented more than \$100 million in flood damages.

New Rockford Canal

The New Rockford Canal runs for 41.5 miles through Wells and Eddy counties in central North Dakota, beginning on the east side of the Lonetree Wildlife Management Area. It was built to connect to the Lonetree Reservoir. The reservoir was de-authorized in 2000 by the DWRA and, instead, designated as a wildlife conservation area and is now operated by the North Dakota Game and Fish Department.

Though the New Rockford Canal isn't currently being used, studies prove it to be more economical to maintain, rather than abandon, the facility. Garrison Diversion is optimistic there will be beneficial future use for the canal.

Jamestown Dam and Reservoir

The Jamestown Dam and Reservoir is located along the James River just north of Jamestown, and is owned and operated by Reclamation. The facilities were authorized in the Missouri-Souris Flood Control Act of 1944. Construction began on the dam in 1952 and was completed two years later, providing flood protection for the city of Jamestown and areas downstream on the James River. As

of 1998, Jamestown Reservoir had prevented \$75.1 million in flood damages, and estimates show that it prevented more than \$35 million in damages during the 2009 flood alone.

The Jamestown Reservoir serves as the water supply for the Oakes Test Area and as a potential water supply for the City of Jamestown. Recreation opportunities are abundant, with swimming beaches, paved recreation trails, campgrounds, picnic areas, and boating and fishing. The reservoir also provides fish and wildlife conservation.

Oakes Test Area

The Oakes Test Area is an irrigation test site south of Oakes in southeastern North Dakota. The test area was developed in 1980 by Reclamation to demonstrate that a well-managed irrigation system can produce high-value irrigated crops with minimal environmental impacts. The layout of the Oakes Test Area makes it possible to take precise measurements of the impact irrigation has on rivers, lakes, groundwater, and the environment under different conditions.

The Oakes Test Area is authorized to irrigate up to

5,000 acres, though limited water supplies have prevented it from reaching its full irrigation potential. The acreage irrigated annually has varied from 500-4,300 acres.

A variety of crops such as corn, beans, potatoes, and onions have been irrigated at the test site using advanced irrigation techniques.

Several features are used in the operation of the Oakes Test Area. A 1.25-mile earthen canal conveys water from the James River to the Oakes Pumping Plant, where it is lifted 27 feet into the Oakes Canal. Water flows via gravity through the canal to three lateral pumping plants, which then deliver water to irrigators' fields. Water flows to 52 farm turnouts through 10.7 miles of pipe. A control valve at each farm turnout regulates water flows from the pipeline. A drainage system maintains a water table depth of four feet below the surface to provide favorable soil conditions for irrigated crop production.

There are 25 landowners whose land receives irrigation water through the Oakes Test Area. One of these landowners is Gary Visto, who irrigates about 600 acres of corn and soybeans out of the Oakes Test Area. His father started irrigating out of the Oakes Test Area in 1988, and Visto has added additional acres. "The option to irrigate is great, not having to rely on Mother Nature all the time. Irrigating adds some extra work with the additional

maintenance and monitoring of equipment and fields, but it's definitely an easier water method than the alternative in dryer years," he says. "We're fortunate to be able to utilize the Oakes Test Area."

The combination of field trials at the nearby NDSU Irrigation Research Site and actual irrigation operations at the Oakes Test Area have provided a wealth of important data to develop the best management practices for irrigated agriculture in North Dakota, the United States, and the world.

The DWRA also plays a role in the future operation of the Oakes Test Area. Under this federal legislation, the Oakes Test Area and operations of the facility must be transferred or go through the federal surplus property process two years after a Record of Decision is made regarding the Red River Valley Water Supply Project. Reclamation, Garrison Diversion, and the Dickey-Sargent Irrigation District are currently in discussions regarding the title transfer.

Though the original scope of the GDU project has changed, the project is still alive and well, and important to North Dakota's future. The GDU facilities provide North Dakotans abundant benefits and opportunities such as recreation, wildlife management, irrigation, and reliable water supplies.



A 1.25-mile earthen canal conveys water from the James River to the Oakes Pumping Plant (pictured), where it is lifted 27 feet into the Oakes Canal.