



# Garrison Diversion Operations and Maintenance: Snake Creek Pumping Plant

By Kimberly Cook

The Garrison Diversion Conservancy District (Garrison Diversion) was created in 1959 by the North Dakota Legislature to establish, construct, develop, maintain, and operate the Garrison Diversion Unit and all its parts. Working cooperatively with other agencies, Garrison Diversion's Operations and Maintenance (O&M) staff completes a wide variety of projects each year.

## O&M Staff

Garrison Diversion maintains an impressive staff with high levels of expertise. Full-time employees include a professional engineer, master electrician, certified diesel mechanic, painting and coating specialists, vegetative management specialists, GIS specialist, and multiple heavy equipment operators. In addition, the majority of full-time O&M employees have their CDL (commercial



An aerial view of the Snake Creek Pumping Plant.



driver's license). A safety coordinator promotes safety procedures and implements a comprehensive safety program to ensure a safe work environment for all employees. The O&M staff is spread between offices in McClusky, New Rockford, Oakes, and Carrington, with the majority of the O&M staff stationed in McClusky.

Garrison Diversion also maintains a large fleet of equipment, including dozers, loaders, backhoes, excavators, dump trucks, tractors, and many specialized pieces enabling the completion of many diverse jobs. O&M staff performs equipment maintenance to keep the equipment in excellent working condition.

Expertise in canal maintenance, earth moving, and other construction areas enables Garrison Diversion to assist federal and state government agencies. Cooperative agreements with the State Water Commission, Bureau of Reclamation (Reclamation), North Dakota Game and Fish, and U.S. Fish and Wildlife Service benefit everybody involved.

## Snake Creek Pumping Plant

The Snake Creek Pumping Plant (SCPP) is the primary facility for lifting Missouri River water from Lake Sakakawea to Lake Audubon to keep Lake Audubon at desired elevations for wildlife purposes. Owned and operated by Reclamation, the SCPP is an important feature of the Garrison Diversion Unit (GDU) Principal Supply Works. Garrison Diversion helps complete annual maintenance at the SCPP through an O&M Cooperative Agreement with Reclamation.

There are three large discharge pipes that move water from Lake Sakakawea into Lake Audubon and run from the SCPP underneath Hwy 83 into Lake Audubon. As part of the annual work items completed at the SCPP by Garrison Diversion O&M staff, each discharge pipe is opened every two years and examined to determine its condition. As part of the 2016 O&M Work Plan, Garrison Diversion O&M staff took on the large job of coating the #1 discharge pipe at the SCPP.

After assessing the project needs, the O&M staff began the lengthy process to prepare the discharge pipe for a new coating. The coating process is important to prevent the structure from corrosion and failure, ultimately extending the life of the structure.

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*Photo at left is looking inside of discharge pipe during the process of preparing the pipe for a new coating.*

The discharge pipe is approximately 450 feet long and 12 feet in diameter. It can be accessed in two ways, through a hatch cover on the Lake Audubon side or through a small manhole in the SSCP, only about two feet in diameter. While the coating process isn't very difficult for the experienced crew, the prep work, along with job setup and cleanup, makes it a long process. The limited access points increase the difficulty level of the project, as all equipment and necessary materials must enter and exit through the small access points.

First, the tunnels need to be dewatered, and then stop logs are put down on the Lake Audubon side to begin this process. The stop logs prevent water from coming into the tunnel. Once dewatered, the pipe gets pressure washed and sediment that has collected inside the pipe is removed. At this point, O&M workers inspect the original coatings to determine areas of peeling and chipping and remove the old coating at any loose points. Next, the pipe is sandblasted in order for the subsequent coating to stick.

The pipe is then coated in order to prevent corrosion, and the project area is cleaned. O&M workers rely on regional salesmen for advice on materials to use for coatings and guidance on sandblasting equipment and products in order to end up with the best result.

The process for the coating project ran from March through May and took anywhere from three to five employees at all times, depending on the jobs being completed.

In addition to the coating project completed at the SSCP in 2016, O&M staff also provides ordinary maintenance of the SSCP buildings, equipment, grounds, janitorial work, road maintenance, and vegetation control through the Cooperative Agreement.

Routine O&M work and special projects completed by Garrison Diversion employees are important to maintaining the GDU features. The purpose of these features varies from supplying water for irrigators to sustaining recreation areas and wildlife management locations. Though the functions of the GDU features vary, the importance of maintaining them remains the same.



*Photo at right shows an access hole into one of the discharge pipes inside the plant.*