2020 REVIEW: Operations and Maintenance Activities

By Kimberly Cook

The Garrison Diversion Conservancy District (Garrison Diversion) employs a talented Operations and Maintenance (O&M) division, with multiple areas of expertise. Garrison Diversion O&M staff is responsible for keeping the facilities in the Garrison Diversion Unit (GDU) in tip-top shape. The McClusky Canal, New Rockford Canal and Snake Creek Pumping Plant (SCPP) are part of the GDU's principal supply works.

Garrison Diversion works closely with the Bureau of Reclamation (Reclamation), and O&M work was completed under an Operations, Maintenance and Replacement contract with Reclamation.

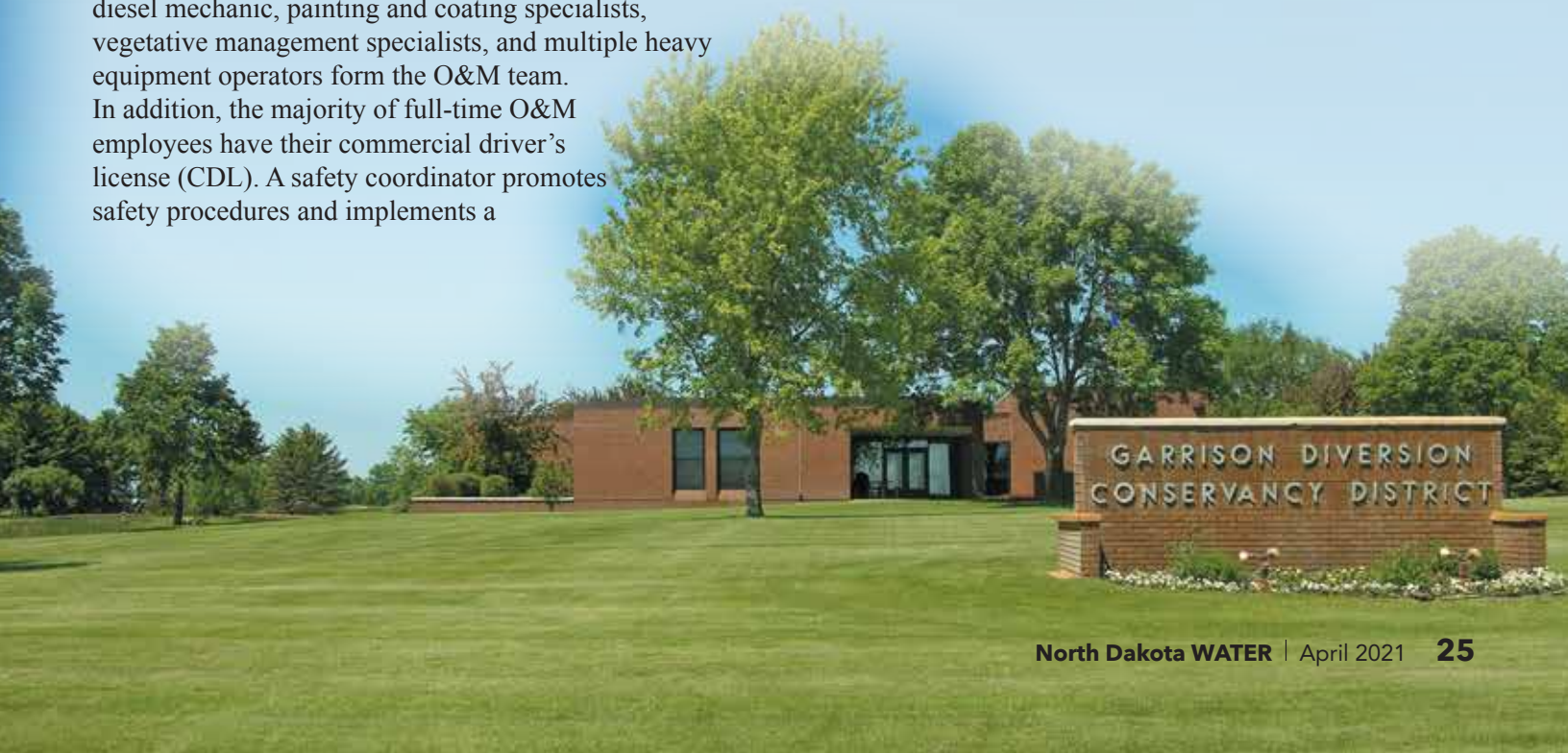
Garrison Diversion maintains multiple office locations – Carrington, McClusky, New Rockford, and the SCPP. Garrison Diversion was also tied to the Oakes Test Area in the southeast corner of the state, providing O&M assistance to the facility until the recent title transfer to the Dickey-Sargent Irrigation District, allowing for local control of the irrigation test site.

A professional engineer, master electricians, certified diesel mechanic, painting and coating specialists, vegetative management specialists, and multiple heavy equipment operators form the O&M team. In addition, the majority of full-time O&M employees have their commercial driver's license (CDL). A safety coordinator promotes safety procedures and implements a comprehensive safety program to ensure a safe work environment for all employees. All of Garrison Diversion's O&M crew has high levels of expertise for their jobs and maintains a high standard of work.

"Everybody on our team has their niche, from mechanics, to carpentry and electrical, and pipe installation," says Darren Murray, O&M superintendent. "The combined knowledge and skill help us be able to get a lot of different stuff done."

A large fleet of equipment is maintained with dozers, loaders, backhoes, trucks and excavators, and many specialized pieces that allow for work in a variety of situations.

Expertise in canal maintenance, earth moving and other construction areas enables the O&M staff to assist federal and state government agencies such as the State Water Commission (SWC), Reclamation, N.D. Game and Fish, and U.S. Fish and Wildlife Service. These partnerships are beneficial to everybody involved.



MAJOR SLIDE REPAIR

From April 2020 to January 2021, O&M workers spent a significant amount of time on a major reconstruction project at the McClusky Canal, repairing the canal's side slopes between Mile Marker (MM) 20 and 22. The failing side slopes have reduced the water flow in the canal downstream of MM 22, approximately seven miles south of Turtle Lake. While the McClusky Canal was designed for 2,000 cubic feet per second (cfs) flows, under 100 cfs is flowing through at the slide area, reducing the amount of available water to irrigators downstream and presenting challenges in maintaining the Chain of Lakes at the desired elevations. The work is being completed in cooperation with Reclamation.

O&M workers are flattening the currently failing 2-to-1 side slope to a more stable 4-to-1 slope. Overall, a total of 2.4 million cubic yards is estimated to be moved over the course of five to six years. In 2020, crews removed approximately 690,000 cubic yards of spoil material from the area to stabilize the slope. To date, close to 70% of the spoil has been removed.

"Our crew was able to remove more than double the amount of spoil in 2020 than in 2019," says Ryan Anderson, Garrison Diversion engineer. "The mild, dry weather was definitely a factor, and we were able to work much longer into the winter than usual."

Once the spoil is removed and slope laid back, silt fence is installed and the area seeded to help with erosion control and establish vegetation. On average, five to seven workers are working the slide area. Four tractors pull two pans each, a skid steer operator removes large rock, and, on occasion, a dozer operator is on-site. This time-consuming project is important to enhancing the overall function of the McClusky Canal.

Expertise in earth-moving is valuable as O&M workers complete the multi-year major slide repair.

Kyle Blanchfield Joins Garrison Diversion Board

When John Peyerl, former Ramsey County Director, passed away in December, an opening was available for a new individual on the Garrison Diversion Conservancy District (Garrison Diversion) board. Kyle Blanchfield was appointed by the Ramsey County Commission to fulfill the remaining two years of the four-year term left unfinished with the passing of John Peyerl.

Kyle is the owner of Woodland Resort on Devils Lake and is active in multiple community organizations. He lives in Devils Lake with his wife, Karin.

"North Dakota's future is tied to water resources and the ability to effectively manage it. Garrison Diversion has always been the dream to accomplish this goal and can be the entity to accomplish this needed mission," says Kyle. "Garrison Diversion has accomplished so much in its history, but the citizens of North Dakota are counting on it to do so much more."

SNAKE CREEK PUMPING PLANT

The SCPP is an original feature of the Garrison Diversion Unit Project and is the primary facility for lifting Missouri River water from Lake Sakakawea to Lake Audubon to keep Lake Audubon at desired elevations for fish and wildlife purposes.

The plant contains three pumping units capable of delivering water at a rate of 2,050 cfs. The pumping lift varies from two feet to 76 feet, requiring two separate bowls for the pumps. One bowl is used for lifts less than 35 feet and the other for lifts up to 76 feet, with each unit powered by an 8,000-horsepower electric motor.

A 10-ton and 50-ton capacity overhead crane is located on the third floor of the plant, but the crane has not been used since the construction phase of the SCPP, which took place from 1968 to 1975.

In 2021, the SCPP will see some operational changes when the Northwest Area Water Supply (NAWS) project installs its system's pumping unit into the SCPP. In order for this installation to occur, the SCPP's current Pump Unit #1 will need to be removed. Both of these actions will require use of the overhead crane; however, load testing needed to be completed to determine the capabilities of the crane, as the tests had not been conducted in more than 45 years.

This especially large task took a significant amount of coordination between Reclamation, Garrison Diversion O&M and Konecranes, the company performing the crane inspection and load testing. Garrison Diversion's safety coordinator was also on hand to ensure a safe working environment.

To test the 10-ton capacity crane, 2,400 gallons of water were filled into a large tote and the 50-ton capacity crane test had 12,000 gallons of water in the two totes. The water totes were suspended for 15 minutes while the inspection crew tested function and deflection of the brakes. The whole process took about a week, and included the set-up, a pre-inspection of the crane and three days of load testing.

The crane passed inspection and load testing and was determined to be in great condition for its age.

"Load testing had never been done in the history of the plant, and this was a process where we learned a lot," says Dustin Offerdahl, SCPP supervisor. "We were pleased to learn the crane is in immaculate condition and is capable of performing the work as needed."

10-ton load testing. 2,400 gallons of water were filled into a large tote for a 10-ton test.

REGULAR MAINTENANCE

Of course, general facilities maintenance can't get overlooked, and time is filled spraying for noxious weeds, blading maintenance roads and mowing rights-of-way, as well as removing cattails and cleaning the canals and canal drains.

Regular maintenance of irrigation systems which are part of the McClusky Canal Irrigation Project is completed by Garrison Diversion O&M. The tasks include installing the pumps in the spring and dewatering the systems in the fall, in addition to troubleshooting any operating issues that may arise each year.

Garrison Diversion is dedicated to maintaining the federal investment of the GDU facilities, and we are proud of our excellent staff putting their best foot forward each day. Whether for irrigation, recreation, natural resources, or otherwise, water flowing through the GDU system benefits citizens across the state.