**Traill Regional Water Supply Project – Phase 1, 2, & 3**
**December 8, 2011**
**Traill Rural Water District (TRWD)**

**By: Geoff Slick**

Traill Rural Water District (TRWD) and the Cities of Mayville and Hillsboro have been working as a partnership in the recent water system improvements. The three different entities have been equally pulling their weight to provide their valued customers with clean aesthetically pleasing potable water. With the 2011 construction season winding down, there have been many local water supply system improvements completed, with the remaining work to be completed in 2012 and 2013. The following breakdown summarizes the work that has been completed to date in addition to the construction work yet to be completed:

## Phase 1

**Structures:** Construction of the Well Field/Meter A and Transfer Station began with ground breaking in early June 2009 and each were deemed substantially complete (operational) in late February 2010. The well field consists of four wells along with a 240 square foot metering facility. The metering facility will enable TRWD to track the quantity of water that each well has produced. The new wells have a combined capacity of roughly 1000 gallons per minute (gpm). The wells will serve the new Transfer Station in addition to the Cities of Mayville and Hillsboro. The raw water is pumped from the Well Field to the Transfer Station through a newly constructed 14-inch diameter transmission pipeline. Subsequently, the Transfer Station will pump the water to Mayville and eventually Hillsboro through 10-inch and 12-inch diameter pipelines, respectively. As of February 23, 2010, when the Well Field and Transfer Station were operational, Mayville has been receiving groundwater from TRWD. By delivering ground water to Mayville's water treatment plant (WTP), unpredictable conditions more commonly associated with a surface water source have been alleviated.

The phase 1 structures contract was finalized early May 2010. The operation start-up and transition to well water has been smooth with only minimal problems that were worked out.

**Transmission Pipeline:** With the unusually wet spring of 2009, pipeline construction did not commence until mid June 2009. The focus of TRWD's and the underground contractor's in 2009 was the completion of the 10-inch and 14-inch diameter transmission pipelines from the new well field to the City of Mayville's WTP. After nearly two months of construction, the installation of the transmission pipeline and associated appurtenances was completed. However, with Mayville anticipating receiving the ground water prior to the annual spring runoff event, additional work was required to ensure the transmission pipeline would carry water to Mayville WTP without any problems. To accomplish this, the transmission pipeline had to be filled, flushed, and hydrostatically tested before it could be put into operation. Following hydrostatically testing the pipeline, several leaks were found, and subsequently fixed, ultimately enabling the delivery of water to the Mayville WTP by February 23, 2010.

With nearly 30-miles of transmission pipeline already installed, the underground contractors focus in mid-November was finalizing their phase 1 contract by starting to install the remaining 17 miles of 12-inch pipe from the water transfer station to the future Hillsboro water treatment site. Winter freeze up postponed completion of the 12-inch transmission line. The abnormally dry spring allowed the contractors to resume the installation of the 12" transmission line in late May 2010. The remaining 10 miles of 12-inch transmission pipe was installed with few delays. Substantial

time was required for filling, chlorinating, flushing, and hydrostatic testing of the 12-inch transmission line. The transmission line was put into service October 1, 2010 serving potable water to the surrounding areas of Hillsboro. The 12-inch transmission line from TRWD's Water Transfer Station to Hillsboro is currently used as a potable water distribution line, but will be converted into a raw water feed source, once the new Hillsboro WTP is completed.

**Phase 2**

**Structures:** Construction of the Mayville Booster Station and 200,000 gallon (Jerome M. Olson) reservoir alternative began with ground breaking in early June 2009. The objective of the Booster Station and Jerome M. Olson reservoir is to improve the TRWD distribution system by providing additional water storage and a constant pressure increase. Also, the Jerome M. Olson reservoir was installed with a fill stand that allows users to quickly receive larger amounts of potable water quickly. Due to the addition of new users and the deteriorating condition of the existing facilities, the addition of these components was deemed necessary and, since going online March 23, 2010, has provided relief to the system.

Final completion of the Booster Station and 200,000 gallon (Jerome M. Olson) reservoir was achieved April 30, 2010.

**Distribution Pipeline:** Due to the addition of new users and the deteriorating condition of portions of the distribution system, the installation of 50-miles of distribution piping was planned as part of phase 2. Of the 50-miles, approximately 25-miles were installed, filled, flushed, and hydrostatically tested in 2009. The remaining 25-miles, was primarily in the Golden Lake, Hillsboro, and Grandin area. The Golden Lake area distribution piping was installed and completed by mid-May 2010 and the Hillsboro/Grandin area was installed and completed by mid-October 2010. The added piping will increase capacity and pressure to existing users.

As of mid-October 2010 all the phase 2 distribution piping was installed, filled, chlorinated, flushed, hydrostatically tested, and put into service.

**Phase 3 (TRWD)**

**Structures:** Construction of the Well Field/Meter Station B began with ground breaking August 2010 and was deemed substantially complete August 2011. The well field consists of four wells along with a 240 square foot metering facility, similar to the Well Field/Meter station constructed as part of Phase 1. The new wells have a combined capacity of roughly 700 gpm. The additional capacity that will be provided by the four wells and Meter Station is necessary to supply Hillsboro's future WTP with a dependable ground water source. Similar to the service to the Mayville WTP, the new Well Field will deliver water to the Transfer Station through the new 14-inch diameter transmission pipeline (Phase 1). Once the ground water has reached the Transfer Station, it will convey the water to Mayville and Hillsboro's WTP through the 10-inch and12-inch diameter transmission pipeline (that is currently serving Hillsboro with potable water) that was installed as part of Phase 1 construction, respectively.

Currently, the Metering Station B is fully operational and was put into service August 1, 2011.

**Phase 3 (Hillsboro WTP)**

In early November 2011 the construction of a new R/O membrane WTP along with the installation of a 6-inch PVC residuals water concentrate (concentrate) disposal pipeline for the City of Hillsboro was bid. The bids came in very favorable and below the engineers estimate. The low bids allowed the City of Hillsboro to award the base bid along with the alternatives. Of these alternatives awarded will be a new truck fill stand.

The new City of Hillsboro WTP will treat raw water received from the TRWD's wells along with their existing wells. The newly constructed R/O membrane WTP plant will have a capacity of 800 gpm and will produce aesthetically softened water. Once treated the potable water will then be distributed to the City of Hillsboro's users as well as the TRWD's users that currently reside in the Hillsboro/Grandin area. As part of the alternatives a truck fill stand will be located in place of the existing City of Hillsboro WTP, west of the City of Hillsboro.

Construction of the new WTP, the installation of the concentrate disposal pipeline, along with the alternatives are scheduled to begin in early summer 2012 and are projected to be completed by mid to late 2013.

**Phase 3 (Mayville WTP)**

Since February 23, 2010 the Mayville WTP switched their raw water source from the unreliable Goose River to the TRWD's groundwater well supply. The first change of water source provided many benefits that were immediately apparent in the WTP and to the users.

In the spring 2011 the City of Mayville held a bid opening for the renovations of their existing WTP. The lowest bidder was chosen and construction began in early June 2011 with the goal of replacing the current water softening process with new reverse osmosis membranes to soften the treated water from 25 grains to a 8 -10 grain range. On October 19th, 2011 the City of Mayville's current softening process was discontinued in order to make preparations and to allow the installation of the new equipment associated with the new treatment process. The new reverse osmosis equipment is anticipated to arrive in early December and will be operational by the end of February.

The newly renovated WTP is slated to have a capacity of 600 gpm and will be distributed to the residences of the City of Mayville along with the TRWD's users that reside in the Mayville, Galesburg, and Golden Lake areas.

In 2011, a separate bid opening for the construction of a new lagoon cell and the installation of a concentrate disposal pipeline was held. The bids came in much higher than projected and were rejected. A rebid is scheduled for early 2012. The new lagoon cell and concentrate pipeline is needed for proper disposal of reverse osmosis concentrate water.

The Lagoon/concentrate pipeline is projected to be completed by fall 2012.

Overall, the project is going as planned, with minimal setbacks. Much effort has been put forth to satisfy the customers though out the construction period. If you have any questions or would like additional information concerning the overall project, do not hesitate to contact Jerome Olson, TRWD Manager at 701-488-2536.