

Two Rivers Watershed District

October 18, 2021 - Newsletter

## **New Policy Approved for Drain Tile Installations**

Drain tile is becoming more and more prevalent in the Two Rivers Watershed. The Two Rivers Watershed District wants to promote and acknowledge the benefits of drain tile, but as drain tile installation becomes more common the District must also adapt its policies to the new challenges and issues that come with the potential negative effects of the drain tile systems.

Tile systems can lower the water table in a field creating more porous soil which leads to the ability for that field to store more water under certain conditions, however there are times that drain tile can be detrimental to downstream lands. One of the biggest challenges the Watershed District has faced regarding this matter is tile pumps being left running during times of flooding. Discharges from both gravity and pumped tile systems during times of flooding can actually increase damages downstream from the system. If not managed properly, tile systems will continuously discharge floodwater that could be stored until the flood waters subside, thereby contributing more water to the flood. Tile systems that are discharging prior to the crest of the flood put more stress on ditch systems and watercourses that are already overwhelmed and flooding. This excess stress can lead to longer periods of inundation, greater depth of inundation, and erosion problems such as ditch bank sloughing, culvert failure, and road washouts.

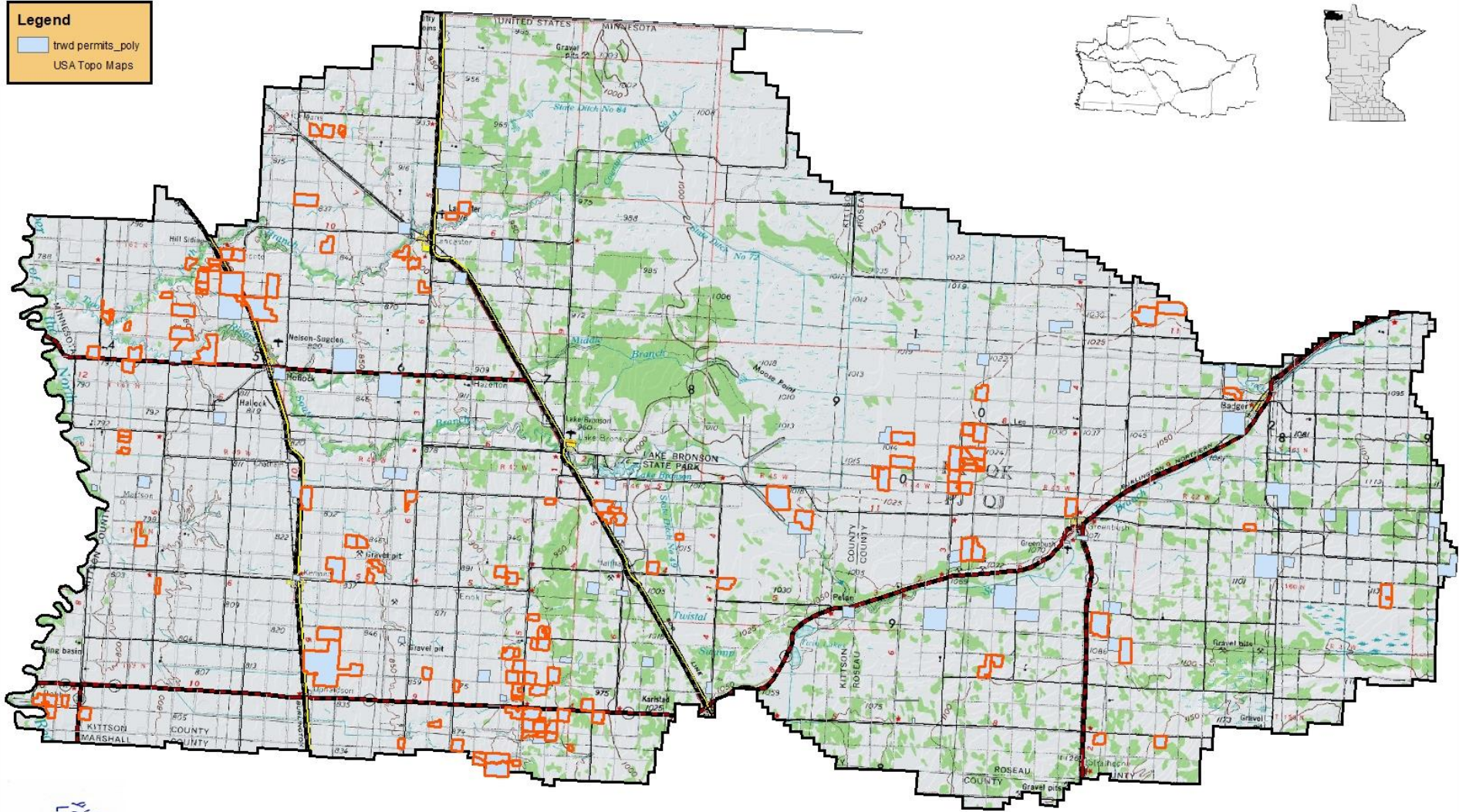
To address these issues and help to mitigate the potential negative effects of tile, the TRWD has now adopted a new policy pertaining to drain tile systems. The new tile drainage policy was adopted at the September 2021 board meeting and requires tile permit holders to enter into an agreement with the Watershed District to prevent any discharges from tile when flooding conditions are occurring. If a tile permit holder is found to have violated this condition of their permit on more than two occasions this agreement will allow the Watershed to revoke their permit, remove their pump, or plug the tile outlet (if the tile is a gravity system) for one calendar year. After the calendar year is up the tile pump may be reinstalled or gravity outlet unplugged at the owner's expense.

Drain tile systems can provide agricultural and flood reduction benefits if the tile systems are installed and run responsibly, however if not managed properly they can have serious negative impacts. The Red River Retention Authority convened a "Basin Technical & Scientific Advisory Committee" which has written several papers on both surface and subsurface drainage and the effects on flooding in the Red River Basin. While these papers provide guidance on the topic of drainage, they also conclude that more research is needed. The Two Rivers Watershed District will continue to adapt its permitting policies as new information and new advancements in subsurface drainage are developed and become available.



**Legend**

- trwd permits\_poly
- USA Topo Maps



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**Two Rivers Watershed District**  
**Permits Issued for Tile Drainage**



## TRWD Permits

The *Rules of the Two Rivers Watershed District* were originally enacted by the watershed district Board of Managers in 1981. They were subsequently amended in 1997, 2015, and again in 2017. Minnesota's 'Watershed Law', statute 103D enables watershed district to adopt rules in order to conserve natural resources by land use planning, flood control, and other conservation projects by using sound scientific principles for the protection of the public health and welfare and the provident use of the natural resources within the District.

**What projects require a permit from the Two Rivers Watershed District?** Projects that require a permit include;

- any sanitary sewer system which discharges to surface water, storm sewer, or other major utility project which affects surface water within the district;
- any street, road, or highway construction project which by means of its construction has any effect on the quality or quantity of water runoff;
- any construction or alteration of any drain tile or drainage ditch that drains an area in excess of 20 acres;
- any works which include draining, filling, excavating, or dredging of any type 3, 4, 5, or 8 wetland as defined by the U.S. Fish & Wildlife Service Circular 39;
- any construction or alteration of any bridge, dike, culvert, or drain across any drainageway, lake, wetland, or other water body;
- any artificial or mechanical transfer of water from a water source including but not limited to gravel pits, ponds, rivers, wetlands, and other reservoirs consistent with the general purposes of the District;
- any artificial drainageway cut across a sub watershed to thereby deliver water into another sub watershed;
- any drainage of water by any artificial means into any legal drainage system from any land not assessed to that drainage system; construction, alteration, or removal of any dike or reservoir;
- any other acts that, in the opinion of the Watershed District, may tend to alter the quantity of runoff, affect the public health, or have any impact, whether adverse or not, upon the surface water or ground water resources of the district.

**What projects do not require a permit from the TWRD?** Replacing a culvert of the same size and placing the new culvert at the same elevation of the old culvert, cleaning of a ditch to the same grade and elevations it is legally set at, and any construction or alteration of any drain tile or drainage ditch that drains an area less than 20 acres.

**How do you get a permit?** Permit applications can be found on our website [tworiverswd.com](http://tworiverswd.com) or picked up at our office located in the Kittson County Courthouse, Hallock, suite 112. Once an application is received it is reviewed by the districts permit review group and one of three things can happen to the application. It can be recommended for approval to the Board of Managers, it can be recommended for denial to the Board of Managers, or it can be tabled to be reviewed by the full board (usually for larger more complicated permit applications). If your application gets sent to the full board be aware that our board only meets once a month so, please plan to submit applications well ahead of the projected start date for your project.

**What if you don't get a permit?** If a permit is not obtained for any work that requires a permit under the TRWD rules an after the fact permit **may** be issued if the work that was done is acceptable and would have been approved through the normal permit procedures. However, if the work is not acceptable the person(s) that did the work could be charged with a misdemeanor.

An after the fact permit though comes at the cost of the landowner in the form of a \$500 dollar fine plus charges for any time or resources the TRWD deems necessary. If an after the fact permit is not applied for, or the work done is not is deemed unacceptable and the site is not restored back to its original state, the district has the authority to seek criminal prosecution, injunction, or action to compel performance, restoration, abatement, or other appropriate action. Contractors are liable as well as owners of the land where the infraction occurs.

More information regarding the District's Rules can be found 'Permits' tab at [www.tworiverswd.com](http://www.tworiverswd.com)

## **Two Rivers Watershed District Welcomes New District Technician**

Hello, I'm Tyler Coffield, the new district technician for the Two Rivers Watershed. I am originally from International Falls, MN. I graduated from the University of Minnesota Crookston in 2019 with a bachelor's degree in Natural Resource Management. I previously worked for the Minnesota DNR in Karlstad. I have previously worked in forestry in International Falls, and I also worked on a ranch in Texas. I am excited for the job opportunity here with the Two Rivers Watershed, and I look forward to meeting and working with everyone in the area.

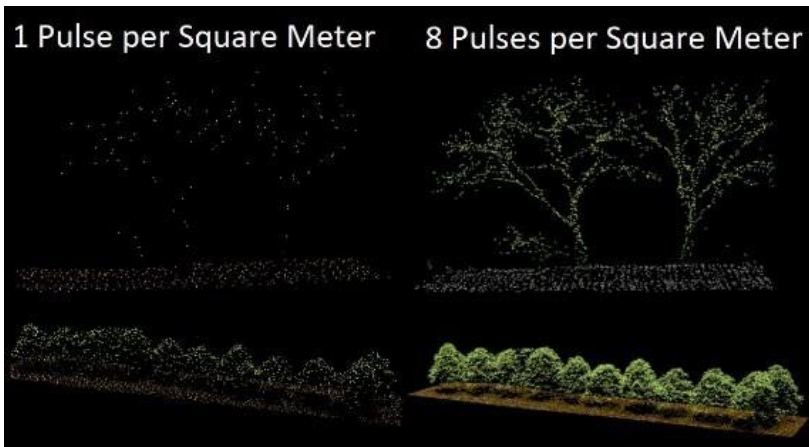


## Red River Watershed Management Board to Begin New LIDAR Data Collection

**What is LIDAR?** LiDAR = Light Detection and Ranging is an integration of airborne laser and Global Position System technology. Laser pulses are directed at the earth's surface (early spring or late fall) from equipment on an aircraft flying a predetermined grid over an area of interest. The laser reflections are recorded, and the range is calculated from the instrument's orientation in space and the time required for the laser's light reflection to travel back to the aircraft.

**Why is this data important to collect?** LiDAR provides detailed information on the elevation of the ground surface for predicting flood inundation from rivers. Detailed LiDAR measurements not only offer higher-resolution elevation data for floodplain modeling, but they also provide a source of high-resolution surface roughness information. This is useful as the RRWMB and its partners look at investing in future flood mitigation and habitat restoration projects.

**How will new LiDAR data compare to data collected in 2008-2009?** New technology provides for more accurate measurements. Data from 2008 and 2009 were collected prior to United State Geological Survey (USGS) data specification standards. These first-generation data had nominal point spacing 1/1.4 meters<sup>2</sup> and 15cm (6 inches) RMSEz accuracy. Data acquired in 2009 will meet or exceed USGS QL1 Base Specifications with nominal pulse density of 8/meter<sup>2</sup> and vertical accuracy of 10cm (3.9 inches).



The schematic above illustrates quality differences.

**When will the new data be collected?** The RRWMB has contracted with the Sanborn Mapping Company to collect QL1 (Quality Level 1) LiDAR data. Acquisition has begun as of October 2021 and will continue this fall depending upon leaf-off conditions and weather-related factors. Work is expected to be completed by late 2021 if conditions are favorable.

**How much will it cost?** LiDAR acquisition, processing, 3-years data hosting/maintenance, and derived products will cost approximately \$2.3 million.

**Who is paying for the LiDAR data collection and LiDAR derived products?** The RRWMB is funding this LiDAR collect as a service to its member districts. Other watersheds and county areas not currently part of the RRWMB will be paying for their geographic area.

**What products will be derived from LiDAR data?**

The RRWMB has contracted with the International Water Institute for project management, data quality assurance, and derived products which includes a mosaicked bare-earth Digital Elevation Model (DEM), hydro-conditioned DEM (H3DEM+), and 1-foot contours. The IWI will deliver these data on portable hard drives to the RRWMB and add on area partners once data are ready/final for each RRWMB member district and add on areas. In addition to raw LiDAR data, Sanborn will be providing intensity images, low intensity ancillary images, building footprints, point cloud classification, and farmstead ring dikes/levee footprints. Data specification and products are identical to state and federal projects.

**Where can LiDAR data products be obtained?** The IWI will update the current IWI Map Portal at the following website: <https://gisapps.iwinst.org/map-portal/>. Raw LiDAR data, DEM's, intensity images, building footprints, and point cloud data (tiled format) will be housed on Sanborn's data portal system. Sanborn is providing this data hosting service to RRWMB member districts and add-on partners as part of the contract for a period of 3 years. To access these data when they are available, please contact the RRWMB.

**PROJECT BENEFITS:** QL1 LiDAR data will enhance resiliency, capacity, performance, and efficiency at every level of decision-making. Benefits from LiDAR data include:

- More accurate flood plain maps to mitigate flood damages and to work towards flood and drought resiliency.
- Enhanced emergency preparedness.
- Targeted wetland and wildlife habitat restoration.
- Enhanced planning and project development related to transportation infrastructure, land use management, and human development.

- Enhanced understanding of river channel migration and slope stability.
- Detailed surface hydrologic and hydraulic modeling.
- Efficient/equitable natural resources management.
- Increased agricultural productivity.
- Innovative tools for conflict resolution.
- Problem identification.
- Major cost reduction in all civic projects.



**PROJECT AREA:** The project area includes 20,034 miles<sup>2</sup> covering RRWMB member watershed districts (Bois de Sioux, Joe River, Middle-Snake-Tamarac, Red Lake, Roseau River, Two Rivers, and Wild Rice Watershed Districts) and the Sand Hill and Buffalo Red River Watershed Districts. Counties included are Big Stone, Clearwater, Grant, Otter Tail, Stevens, and Traverse.

## **TRWD Legal Ditch Inspections**

What is a legal ditch? A legal ditch is a ditch that has been petitioned for by residents and authorized through procedures governed under Minnesota Statute 103E. Once a petition has been received, an engineer is appointed to do surveys, design the depth, grade and cross section of the ditch, and make a determination that there is an adequate outlet to handle the flowage from the ditch. Each legal ditch is given a benefitted area which is determined by a panel of three appointed viewers. Land that is determined to be in the benefitted area is assessed taxes that are deposited into a ditch fund that used for maintenance of the ditch. Typical maintenance is removal of beaver dams, spraying of nuisance vegetation, and removal of sediment. All ditches are governed by a ditch authority (either the County Board or a Watershed District) which oversees the ditch funds and the maintenance activities.

Within the boundary of the Two Rivers Watershed District there are four different legal ditch authorities; Kittson County, Roseau County, Two Rivers Watershed District, and the Joint Ditch Authority which consists of county commissioners from Kittson and Roseau County. The TRWD is in charge of around 73 miles of legal ditches, and the counties are in charge of many hundreds of miles (see map).

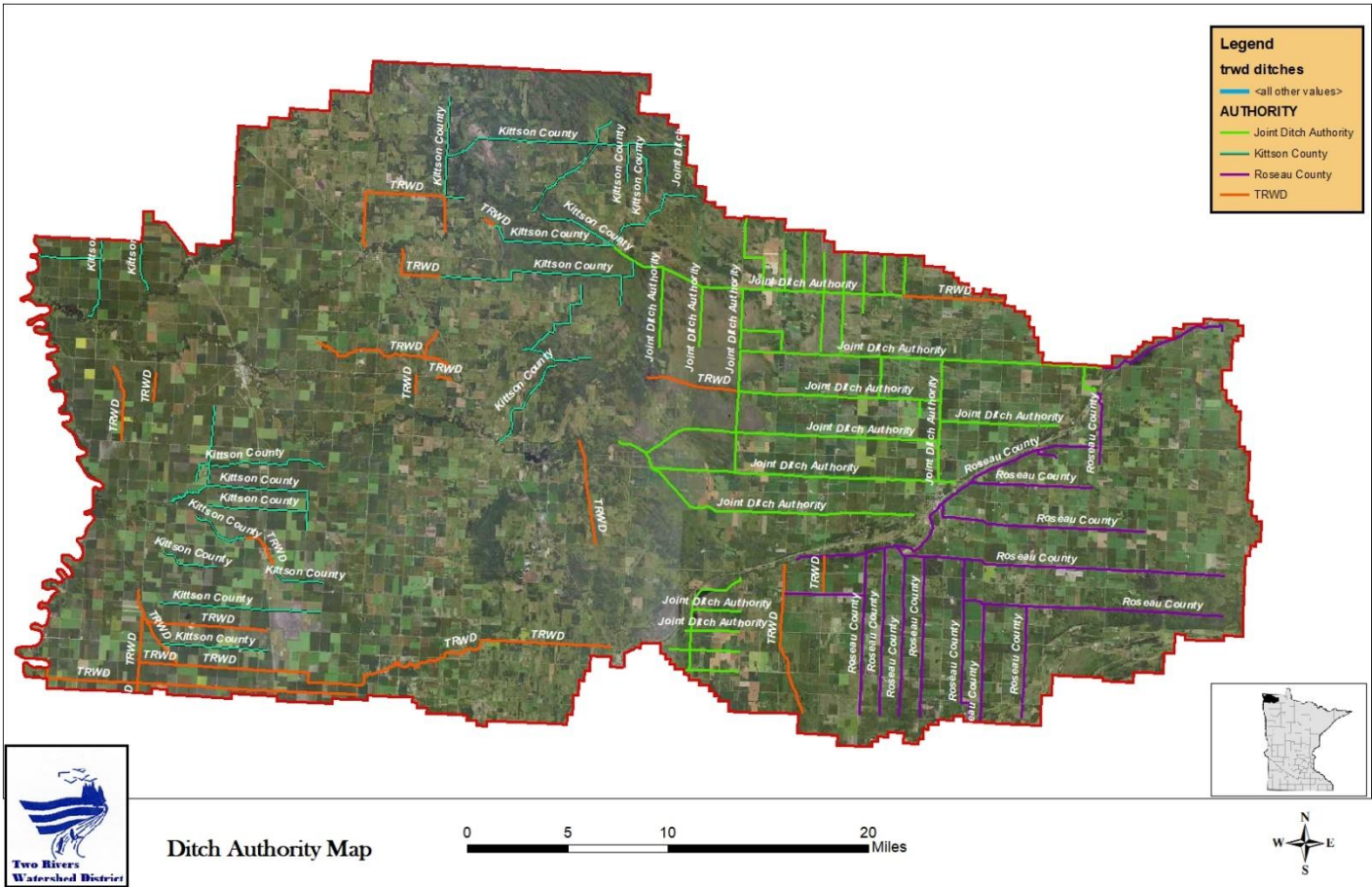
Each year, the TRWD conducts ditch inspections of all the legal ditches the district is responsible for. Ditches are visually inspected by driving the entire length of each ditch either in the pickup or on a four-wheeler. This is done to inspect the ditches for problems such as beaver dams, vegetation (cattails and brush mainly), bank erosion, and sediment issues. Using GPS and aerial maps it is recorded where problems are located in each ditch. Each ditch is also surveyed once every five years to compare the current ditch grade and the legal ditch grade. All the ditches under the authority of the TRWD are on a scheduled rotation to ensure they are surveyed to determine if any sediment removal is necessary.

Inspections are done to help determine if the ditch needs any maintenance for the year. Ditch maintenance is paid for by the ditch tax fund. The ditch tax fund is levied every year and changes yearly



according to the amount of maintenance the ditch requires. Some years a ditch may be taxed higher and other years the same ditch may not be taxed at all.

After each ditch has been inspected a ditch inspection report is written, recommendations for what each ditch needs are made, and maps are made of where all the problems are located. Contractors are then hired to clean sediment, fix erosion, remove beaver dams, spray vegetation, and any other maintenance the ditch may need.



## **Two Rivers Watershed District – Board of Managers**

### *Gerald Olsonawski appointed to fill term of Paul Olsonawski*

The Two Rivers Watershed District welcomes Gerald Olsonawski who was recently appointed by the Kittson County Commission to fill the vacant position which was held by Paul Olsonawski. His term will run through October of 2022. He is a lifelong resident of Kittson County, farming mainly in Hill and Hampden Townships in Kittson County. His Manager's area will cover the townships of St. Joseph, McKinley, Peatland, Cannon, Poppleton, Granville, and portions of Clow, Richardville, Hill and Hampden.

Paul Olsonawski had served for 10 years on the Board of Managers, and at the time of his passing he was serving as the President of the Two Rivers Watershed District. Paul was a valuable asset to the Board and will be dearly missed.

### *Sikorski, Anderson re-appointed to 3 year terms*

Rick Sikorski was recently re-appointed to the Board of Managers by the Roseau County Commission. Sikorski, who is currently the President of the Board, was first appointed in 2018 and has served one 3 year term. He serves the area of the District in Roseau County that is drained by State Ditches 72 and 95 encompassing the townships of Juneberry, Soler, Moose, Ross, Stafford, Stokes, Skagen, Barto, Polonia, and Dewey.

Roger Anderson was recently re-appointed to the Board of Managers by the Kittson County Commission. Anderson currently serves as the Vice President of the Board and is a former President. He was originally appointed in November of 2000 and has served continuously for the past 21 years. He serves the southwest portion of the District encompassing the Kittson County Townships of Teien, Svea, Davis and parts of South Red River, Skane, and Tegner and also part of the Marshall County Townships of Eagle Point, Donnelly and Sinnott.