In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711. The MDA is an equal opportunity employer and provider. File Name: Griebie Farm 5.7.18

The area outlined in blue delineates the monitored field. All surface runoff and tile flow in this area moves in the same direction and flows through the water monitoring stations. The triangle indicates the location of the surface and tile water monitoring stations.

EQUIPMENT INSTALLATION AND SAMPLE COLLECTION

Water samples are collected automatically whenever surface runoff or tile flow from snowmelt or rainfall occurs. An Agri Drain structure, berm, and flume were installed in the fall of 2016 to direct water runoff from the field to a centralized point where water samples and total volume of water runoff data could be gathered. Weather station equipment was also installed to measure precipitation, air temperature, relative humidity, soil temperature, and volumetric water content of the soil.

Collected water samples are analyzed for sediment, total phosphorus, inorganic phosphorus, chloride, total kjeldahl nitrogen, ammonia nitrogen and nitrate-nitrogen. Water flow through the flume is recorded to calculate the total volume of water runoff. By combining the total volume of water runoff with the concentration of nutrients and sediment, it is possible to calculate the total amount of nutrients and sediment leaving the landscape.

FOR MORE INFORMATION, PLEASE CONTACT

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The Discovery Farms Minnesota project at the Griebie farm is designed to provide information that will lead to a better understanding of how farm nutrient management practices can impact sediment and nutrient movement to surface waters. It is anticipated that monitoring will continue for five to seven years. The monitoring will help to identify strengths and challenges of similar farming systems and landscapes.
OVERVIEW OF OPERATION

Joe and Adam Griebie’s operation is located in McLeod north of Brownton, MN. Joe graduated from Augustana University with a degree in math and teaching in 1972. After graduation, Joe started to farm in 1973 as well as doing substitute teaching. Adam, Joe’s son, graduated from U of MN-Duluth with a degree in Environmental Science. In 2011, Adam joined Joe in the farming operation. Joe has semi-retired allowing him to spend time with his grandkids and his passion – fishing!

The farming enterprise consists of 956 tillable acres; 54 acres are in the Conservation Reserve Program (CRP) with 200 acres in woods and wetland. All acres have been tiled where needed.

CROP PRODUCTION PRACTICES

About 500 acres of corn, 356 acres of soybeans, and, if contracts are profitable, 100 acres of dark red kidneys are grown in rotation. Corn fields are ripped in the fall with soybean and dark red kidney acres fall chiselled. Spring tillage is done using one pass of a field cultivator, if needed, a second pass is completed on corn acres. Joe and Adam work with an independent crop consultant on their crop production plans. All acres are soil sampled in 5 acre grids every year with crop nutrients applied based on the grid sampling. Typical corn N applications are 145 lbs/acre of nitrogen as anhydrous ammonia and 5 gallons/acre of 10-34-0 with zinc as starter planted in 20 inch rows. Phosphorus and potassium applications are made in the fall of the year on acres going to corn followed by the nitrogen applications via anhydrous applicator.

LOCATION AND CLIMATE

The Griebie farm is located in the glacial till lowlands of the Western Corn Belt Plains region of Minnesota. The region is characterized by rolling topography and numerous rivers, streams and ponds. Rainfall and snow-melt that leave the farm first flow into Buffalo Creek, then to the South Fork of the Crow River and the Minnesota River. To control surface water, a number of earthen dams have been installed on the farm. A large percentage of this region is farmed due to the productive agricultural soils. Average annual rainfall is 29.8 inches, most of which occurs during the growing season (April to September – 16.7 inches). The average annual snowfall is 48 inches.

FARM AND SITE SELECTION

The initial site visit occurred in 2016 with a tour of fields to evaluate potential sites for surface water and tile flow monitoring. The farm was selected for the Discovery Farms program because the management practices used for crop production were representative of practices used in the region and there was a high probability of generating a robust and reliable data set.

The site chosen has Webster clay loam and Clarion loam soils which are poorly to moderately well drained soils with good water infiltration, especially when there is residue on the soil surface. Tile drainage is utilized for adequate agricultural production for these soil series. The most recent soil sample results (0-6 inches) from the monitored field are summarized in the table below. The values for phosphorus (P) and potassium (K) are classified as medium to high.

<table>
<thead>
<tr>
<th>Soil Sample Analysis of the Monitored Field</th>
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</thead>
<tbody>
<tr>
<td>Property</td>
</tr>
<tr>
<td>pH</td>
</tr>
<tr>
<td>Organic Matter Content, %</td>
</tr>
<tr>
<td>Soil test phosphorus (Bray test), ppm</td>
</tr>
<tr>
<td>Soil test potassium, ppm</td>
</tr>
<tr>
<td>Nitrate-nitrogen 0-2' (lbs/acre)</td>
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</tbody>
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