Goodman Creek Watershed
Project Implementation Plan

Mercer County Soil Conservation District
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State: North Dakota
Watershed: Goodman Creek Watershed
Hydrological Unit Codes: 101302010905
101302010906
101302010907
High Priority Watershed: Yes

TMDL Development and/or Implementation (check any that apply)

Project Types	**Waterbody Types**	**NPS Category**
[ ] Staffing and support	[ ] Groundwater	[x] Agriculture
[x] Watershed	[ ] Lakes/Reservoirs	[ ] Urban Runoff
[ ] Groundwater	[ ] Rivers	[ ] Silviculture
[ ] I&E	[x] Streams	[ ] Construction
	[ ] Wetlands	
	[ ] Other	

Project Location: LATTITUDE: 47^{O} 28’ LONGITUDE: 102^{O} 15’
to
LATTITUDE: 47^{O} 18’ LONGITUDE: 101^{O} 56’

Major Goal: The Goodman Creek Watershed Project is designed to provide technical, financial and educational assistance to landowners within the watershed. The areas targeted for assistance are designated from the assessment phase of the project. The major goal of the project is to achieve and maintain “fully supporting” status for recreational uses of the Goodman Creek watershed by decreasing the annual Escherichia coli bacteria (E. coli.) entering the creek and restoring riparian habitat.

Project Description: The project sponsors intend to 1) prioritize technical and financial assistance to lands that have the most impact on water quality, 2) track water quality trends over the life of the project to rectify any concerns as they surface, 3) develop working partnerships with other agencies to aid in the effort of refurbishing our natural resources and 4) conduct outreach and education focused on the next generation of producers that will improve the long-term sustainability of their operations.

Goodman Creek Funding Allocations

319 funding needed for 3 years:	$274,590
Producer Cost and Match:	$132,620
Other local/state/federal funds:	$149,940
Total Project Cost:	**$557,150**

2.0 Statement of Need

2.1
The Goodman Creek Watershed is listed on the *2016 List of Section 303(d) TMDL Waters for the Missouri River Basin in North Dakota* (page 189 of the 2016 Integrated Report, Table VI-3) as not supporting recreational uses due to E. coli. Data was collected at each sample site in the Goodman Creek Watershed during the recreation season of May 1 to September 30. Data was compared to the North Dakota water quality criteria for the pathogen indicator, E. coli bacteria, to the data collected at each site. The beneficial use impaired is recreation due to surface runoff through areas with accumulated manure and direct deposit of manure on or near the creek.

2.2
The Goodman Creek Watershed is within the Knife River Basin. The Goodman Creek is an intermittent stream and tributary of Spring Creek, which has an approved E. coli Bacteria TMDL developed to address the impaired recreational uses in that waterbody. The Hydrological unit codes for the Goodman Creek Watershed have been updated to 12 Digit Hydrological Unit Codes (HUC): 01302010905, 101302010906 and 101302010907. Water samples taken in 2008 through 2017 showed high concentrations of E. coli with concentrations often well over 409 cfu/100 ml. A few water samples were labeled too numerous to count, over 8,000 cfs. These samples show an increasing trend. Additional information follows in section 2.5.

2.3 Maps
See Maps, Appendix D

2.4
The Goodman Creek Watershed is in the northwestern corner of Mercer County. The watershed's topography is characterized by rolling hills with elevation ranges from 1,900 feet in the southwest to 2,200 feet in the northeast. Soils vary greatly in different areas of the county and range from soft shale plains to extreme sand. The watershed has a semi-arid climate with an average annual precipitation of 17 inches. Goodman Creek enters Spring Creek, a major tributary of the Knife River, one mile west of the city of Golden Valley. The water ultimately ends up in the Missouri River. The watershed is approximately 63,251 acres or 99 square miles in size. The average size operations are running both livestock and small grain operations.

The primary natural resource management concern is impaired water quality due to high concentrations of E. coli from riparian grazing resulting in direct deposit of manure in the creek, and spring runoff from accumulations of manure in winter feeding areas and summer grazing within a two-mile corridor on the creek, see Appendix D Maps.

Other concerns include range practices for summer grazing, cropland erosion and water erosion on rangelands, and confined areas for feeding livestock that are close and directly on the creek.

2.5
Station 380139 is located on Goodman Creek two miles west of Golden Valley, ND and monitors the entire Goodman Creek watershed including 12-digit HUCs 101302010905, 101302010906 and 1013020010907, see Figure 2. Station 380139 is included in the Spring Creek Watershed Project and has a total of 146 E. coli bacteria samples collected and analyzed from 2012-2017. Analysis of E. coli bacteria data was examined by pooled month for the period of 2012 to 2017. The analysis of E. coli bacteria data shows that over the entire period, May and September are classified as Fully Supporting but Threatened with a geometric mean below 126 CFU (criteria 1) but a percent of samples exceeding 409 CFU greater than 10 percent (criteria 2). The months of June, July and August classified as Not Supporting the recreational beneficial uses due to high geometric means

of E. coli bacteria. A yearly analysis indicates that all six years of sampling (2012-2017) would be considered Not Supporting. Data for this site is provided in Table 1 and Figure 1.

Stations 380140 and 380141 are located upstream of station 380139 and monitor the upper portions of the Goodman Creek watershed. Stations 380140 and 380141 and were monitored for one year (2015) during the National Water Quality Initiative in Goodman Creek watershed. The analysis of E. coli bacteria data at station 380140 shows that, during 2015, July and August classified as Fully Supporting recreational uses with both the geometric mean (criteria 1) and percent of samples exceeding 409 CFU (criteria 2) were below criteria limits. The months of May and June classified as Not Supporting the recreational beneficial uses due to high geometric means of E. coli bacteria. Finally, the month of September classified as Fully Supporting but Threatened with a geometric mean below 200 CFU but a percent of samples exceeding 400 CFU greater than 10 percent. Station 380141 shows that the months of May and June classified as Not Supporting the recreational beneficial uses due to high geometric means of E. coli bacteria. While the month of July classified as Fully Supporting but Threatened with a geometric mean below 200 CFU but a percent of samples exceeding 400 CFU greater than 10 percent. There were no samples collected during the months of August and September due to the lack of flowing water. A yearly analysis indicates that 2015 would be considered Not Supporting for both 380140 and 380141. Data for these sites are provided in Tables 2-3.

Table 1. E. coli Bacteria 30-day Geometric Mean, Percent Exceedance of 409 CFU and Support Status for Sampling Site 380109

380139	May		June		July		August		September	
	5/8/2012	70	6/4/2012	570	7/10/2012	90	8/8/2012	30	9/12/2012	80
	5/16/2012	70	6/6/2012	8000	7/16/2012	160	8/14/2012	50	9/17/2012	10
	5/23/2012	10	6/26/2012	210	7/23/2012	60	8/15/2012	160	9/18/2012	20
	5/30/2012	150	6/26/2012	300	7/24/2012	130	8/21/2012	50	9/24/2012	10
	5/13/2013	20	6/27/2012	130	7/25/2012	330	8/27/2012	40	9/25/2012	5
	5/14/2013	110	6/4/2013	240	7/31/2012	30	8/29/2012	140	9/26/2012	5
	5/21/2013	4200	6/10/2013	180	7/10/2013	210	8/5/2013	270	9/3/2013	5
	5/12/2014	20	6/12/2013	80	7/15/2013	2500	8/14/2013	130	9/18/2013	80
	5/21/2014	5	6/18/2013	120	7/16/2013	3200	8/19/2013	90	9/23/2013	230
	5/27/2014	1600	6/24/2013	60	7/17/2013	5300	8/21/2013	140	9/24/2013	170
	5/28/2014	480	6/25/2013	300	7/30/2013	270	8/26/2013	180	9/25/2013	110
	5/5/2015	400	6/3/2014	160	7/31/2013	410	8/27/2013	50	9/30/2013	70
	5/12/2015	40	6/9/2014	420	7/1/2014	210	8/6/2014	280	9/3/2014	60
	5/19/2015	110	6/16/2014	160	7/8/2014	500	8/12/2014	310	9/9/2014	100
	5/26/2015	320	6/18/2014	330	7/9/2014	680	8/19/2014	50	9/16/2014	80
	5/3/2016	70	6/23/2014	1300	7/15/2014	450	8/25/2014	370	9/30/2014	400
	5/11/2016	70	6/3/2015	1800	7/22/2014	220	8/26/2014	160	9/15/2015	120
	5/17/2016	70	6/10/2015	270	7/29/2014	210	8/4/2015	220	9/16/2015	800
	5/25/2016	80	6/17/2015	500	7/8/2015	1600	8/5/2015	160	9/21/2015	210
	5/31/2016	160	6/30/2015	2400	7/15/2015	150	8/18/2015	250	9/6/2016	110
	5/1/2017	90	6/2/2016	80	7/21/2015	270	8/26/2015	90	9/14/2016	140
	5/8/2017	20	6/7/2016	300	7/27/2015	170	8/31/2015	80	9/20/2016	130
	5/15/2017	100	6/14/2016	130	7/5/2016	10	8/17/2016	3600	9/21/2016	50
	5/22/2017	800	6/27/2016	230	7/11/2016	70	8/22/2016	800	9/5/2017	50

	5/30/2017	350	6/5/2017	670	7/13/2016	200	8/24/2016	100	9/11/2017	540
			6/12/2017	2000	7/20/2016	70	8/29/2016	250	9/18/2017	420
			6/13/2017	4900	7/26/2016	310	8/31/2016	300	9/20/2017	370
			6/19/2017	7600	7/6/2017	7400	8/2/2017	130	9/25/2017	230
			6/26/2017	12000	7/10/2017	1400	8/7/2017	500		
					7/17/2017	610	8/14/2017	270		
					7/24/2017	250	8/21/2017	300		
					7/31/2017	120	8/28/2017	70		
Geo Mean Implementation	108		471		295		160		80	
% over	16%		38%		34%		9%		14%	
Status	FST		NS		NS		NS		FST	

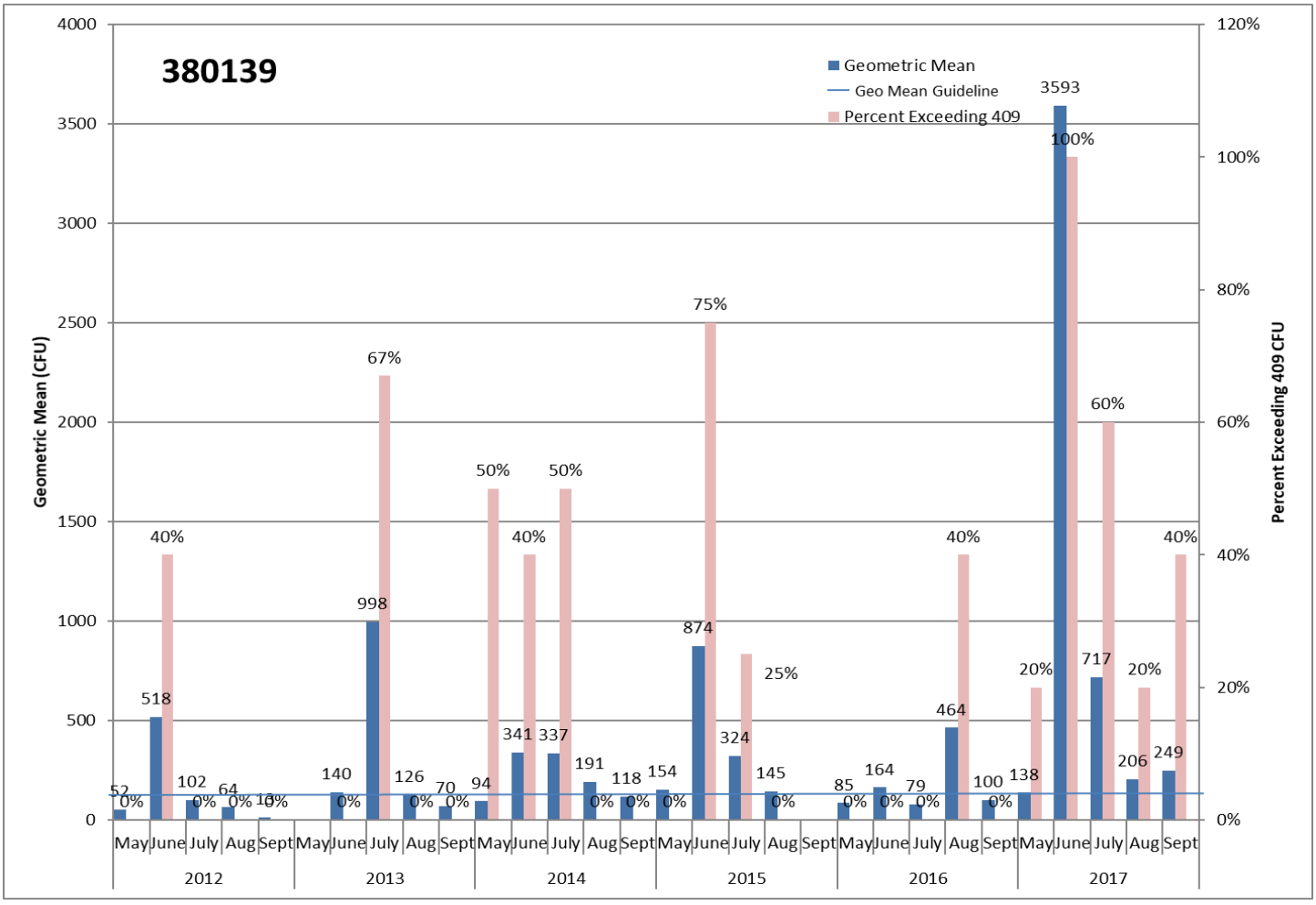


Figure 1. Water Quality Monitoring Station 380139 E. coli Bacteria 30-Day Geometric Mean and Percent Exceedance of 409 CFU During the Recreational Period May 1 through September 30, 2012-2017.

Table 2. E. coli Bacteria 30-day Geometric Mean, Percent Exceedance of 409 CFU and Support Status for Sampling Site 380140.

380140	May		June		July		August		September	
	5/5/2015	30	6/2/2015	8000	7/8/2015	5	8/5/2015	20	9/15/2015	150
	5/12/2015	40	6/3/2015	2700	7/15/2015	30	8/5/2015	100	9/16/2015	700
	5/19/2015	720	6/10/2015	240	7/21/2015	5	8/18/2015	30	9/21/2015	2000
	5/26/2015	330	6/17/2015	160	7/27/2015	90	8/26/2015	40	9/28/2015	5
			6/24/2015	170			8/31/2015	40	9/30/2015	20
			6/30/2015	30						
Geo Mean	130		402		16		39		116	
#	4		6		4		5		5	
% over	25%		33%		0%		0%		40%	
Status	NS		NS		FS		FS		FST	

Table 3. E. coli Bacteria 30-day Geometric Mean, Percent Exceedance of 409 CFU and Support Status for Sampling Site 380141.

380141	May		June		July		August	September
	5/5/2015	290	6/2/2015	8000	7/8/2015	4500		
	5/12/2015	50	6/3/2015	3700	7/15/2015	5		
	5/19/2015	370	6/10/2015	80	7/21/2015	5		
	5/26/2015	600	6/17/2015	1700				
			6/24/2015	5600				
			6/30/2015	8000				
Geo Mean	238		2377		48			
#	4		6		3			
% over	25%		83%		33%			
Status	NS		NS		FST			

The tables above show the levels of E. coli bacteria throughout the watershed. The site exceeded the state standard criteria where more than 10% of the samples were above 409 CFU/100ml for E. coli bacteria in one or more months of the year. It is clearly visible that concentrations in June, July and August can be extremely high, reaching in to the thousands. May levels are also visibly high. The reason for these levels may be directly related to the riparian grazing above these sites. Riparian grazing upstream from the water sampling sites is a priority for this project. Please refer to Figure 2 for sampling sites locations and Appendix D Maps for a map of priority areas in the watershed.

To lower the E. coli concentrations, BMPs are needed to relocate winter feeding areas further away from Goodman Creek and its tributaries or to install manure management systems. By providing alternative wintering areas on crop land, producers will be able to better utilize manure as it would be directly placed on croplands. In addition, with the implementation of BMPs, such as prescribed grazing and alternative water sources, grazing pressure and livestock presence can be significantly reduced along the creek. Through these types of practices and management changes, the riparian vegetative community will be improved; direct manure deposition in the creek will be reduced; streambank stability will be protected/improved; and the riparian function and filtration capabilities will be improved.

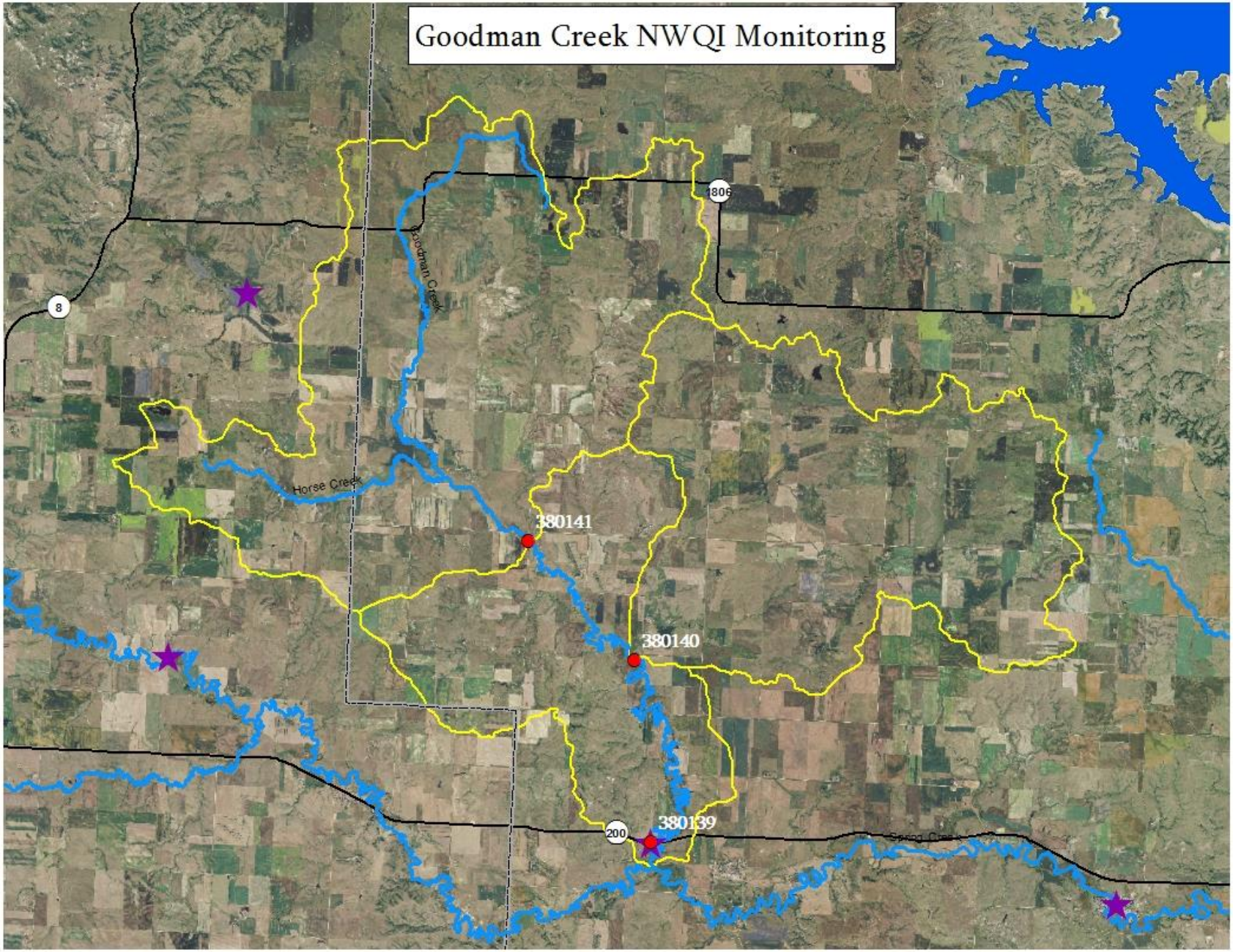


Figure 2. Goodman Creek and the Water Quality Sampling Sites.

3.0 Project Description

Goal 1:

The primary goal of this watershed project is to restore and maintain the recreational uses of the Goodman Creek within the project area.

Objective 1:

Reduce monthly geometric mean concentrations for E. coli to levels below 126 cfu/100ml with less than 10% of the samples exceeding 409cfu/100 ml and achieve an IBI score of Good, or greater than 38, at all established monitoring sites.

Task 1:
Fill one FTE to provide watershed conservation in Mercer County, providing one on one conservation planning assistance to producers in the project area.

Product:
Watershed conservationist to administer contracts in the Goodman Creek Watershed and provide technical assistance.

Cost: $ 81,000 (319 Funds)

Task 2:
Minimize livestock impacts to the riparian corridor by improving grazing management on 3,264 acres in the 2-mile priority corridor and installing BMPs to improve riparian vegetation and stream bank stability focusing on producers on or directly adjacent to the creek.

Product:
3,264 acres of prescribed grazing systems, implementation of 3 winter-feeding areas, pasture/hayland plantings to convert crop land to useful grazing, and installation of BMPs to improve vegetative cover (i.e. vegetative buffers, vegetative plantings, riparian buffers, etc.). See Supplemental BMP Table in Appendix B for details on specific BMPs related to grazing management.

Land management along and adjacent to the creek will be the priority focus for the Goodman Creek Watershed. As such, financial and technical assistance will be targeted toward producers in the priority area throughout this phase of the project. The goal is to review all the acres in the priority area with the producers to determine resource management needs and, if needed, identify feasible solutions to any resource concerns.

The Goodman Creek Watershed Project is partnering with the Mercer County Water Resource Board to provide additional cost share for BMP installation. Producers have been reluctant to add plantings to their operations when it involves taking land out of crop production, this partnership may offer additional options to local producers. Possible BMPs could include pasture/hayland plantings to convert cropland to useful seasonal grazing, riparian buffers, vegetative buffers, etc. The MCWRB is an active partner and will be evaluating potential partnership and cost-share projects on an individual basis.

Cost: $126,180 (319 Funds) Specific BMP likely to be installed are listed in Appendix B.

Task 3:
Improve manure management in livestock feeding areas through the implementation and the development of manure management systems for winter feeding areas (see description below) within one mile of the creek.

Product:
Three Feeding Areas with Manure Management plans. See Supplemental BMP Table in Appendix B.

Cost: $54,000 (319 Funds)

Task 4:
Conduct follow-up contacts to assist with conservation plan updates and monitor O&M of 319 cost shared practices.

Product: Up to date database of applied BMP's.

Cost: Included in Task 1

The BMP Tracker database will be used to generate reports of all producer planned and installed practices. A summary of these practices is attached in Appendix E.

The Goodman Creek Watershed consists of mostly stock cow operations with most of the winter feeding being done on open range or cropland after harvest. These operations have a more direct need of being moved away from the creek and drainage ways to minimize impacts related to excess feeding in the riparian corridor and runoff through concentrated feeding areas with accumulated manure. This can be accomplished by establishing alternative water sources other than streams, using portable windbreaks, planting cover crops, fencing cropland acres, and implementing winter feeding management plans that rotate livestock through multiple fields/areas to disburse livestock and prevent excess manure accumulations.

Objective 2:
Provide outreach and information to both new and existing producers, district supervisors, water resource boards and county commissioners relating to water quality, conservation and the Goodman Creek watershed project.

Task 5:
Continue to inform the producers and land managers of the Goodman Creek Watershed Project and the benefits of implementing BMPs though meetings and tours. Present at other agency meetings in the area.

Product:
Successful meetings and tours that inform producers and landowners about the Goodman Creek Watershed Project. Show producers examples of implemented practices. Discuss which BMPs are available and the benefits of implementing them. Specific outreach will be conducted to reach out to the next generation of producers in Mercer County. These producers will be or are taking over family operations and we will strive to provide them with information on conservation practices that will improve the long-term sustainability of their operations. Inform producers and landowners of the Goodman Creek Watershed through newsletters from Mercer County.

The Goodman Creek Watershed will team up with the Mercer County Soil Conservation Districts, NDSU Ext Mercer County Office and NRCS to provide 6 informational meetings to producers and land owners. In addition, 2 tours will be hosted, and 12 newsletters/publications completed. We plan to have future meetings with FSA to include the new Farm Bill information and include our local ag lenders for additional resources.

Cost: $2,220 (319 Funds)

Task 6:
Work with SCD Board Supervisors, Water Resource Board members and County Commissioners to increase awareness of watershed management objectives and resources through meetings, classes and tours.

Product:
Successful education and outreach on watershed management practices and objectives. Participants will be able to actively engage in informed decision making as it relates to watershed projects and issues within watersheds. Education and outreach will provide for sustainable management of the proposed project along with future projects. Activities will include monthly updates at meetings and participation in the Soil and Water Conservation Leadership Academy.

Cost: $450 (319 Funds)

Objective 3:
Secure additional cost share opportunities for Goodman Creek producers to improve water quality and riparian areas.

Task 7:
Work with other agencies to seek out additional cost share dollars for producers. Look for other grant opportunities to provide additional cost share.

Product: Additional funding to offset producer's cost. Producers are reluctant to install BMPs that can take land out of production. Additional funding will provide more of an initiative to install BMPs, such as filter strips and riparian buffers. Potential contacts include ND Game and Fish, NRCS, Pheasants Forever and other conservation groups in the area.

Cost: Included in Task 1

Objective 4:
Document current water quality and beneficial use conditions as well as identify the types and sources of pollutants that may be or are impairing the beneficial uses of other creeks and waterbodies in the county.

Task 8:
Coordinate with NDDH to complete a 2-year Watershed Assessment to collect water quality, macroinvertebrate and land use data to identify all resource concerns in the Nine Townships watershed. Also conduct landowner/producer surveys to gauge potential interest in participating in future watershed management projects.

Product: Sufficient data for developing a watershed-based plan to address identified beneficial use impairments.

Cost: $0 (Financial support for the assessment(s) will be provided through other grants available through the NDDH)

3.3
See Milestone Table, Appendix A

3.4 Permits

All necessary permits will be acquired. These may include COE Section 404 permits and 401 certifications through the NDDH, if project activities have the potential to impact the creek and/or wetlands. The project will work with the NDDH to determine if National Pollution Elimination System permits are needed for proposed livestock manure management systems. Cultural Resource concerns and issues will be addressed by following the procedures of the NDDH in consulting with the North Dakota State Historical Preservation Officer.

3.5 Appropriateness of the lead sponsors

The Mercer County Soil Conservation District will act as the lead sponsor on the project. The sponsor will work with the North Dakota Health Department (NDDH) and Natural Resource Conservation Service (NRCS) to determine the need for any environmental permits, such as livestock waste management systems. Project staff will consult with the NDDH to determine applicability of current ND livestock manure management regulations.

The Mercer County Soil Conservation District will be responsible for auditing Operation & Maintenance agreements on BMP's. After completion of projects, yearly status reviews will be conducted on all 319 contracts. The life span of each BMP will be listed with each individual contract to ensure longevity of the practice. The producer will be required to sign the "EPA 319 Funding Agreements Provision" form, which explains in detail the consequences of destroying a BMP before its life span is up. The SCDs are locally elected volunteer conservation organizations that serve all people of their counties.

4.0 Coordination Plan

1) The Mercer County SCD will be the lead agency liable for project administration. Conservation planning, technical assistance, educational campaign, clerical assistance, access to equipment and supplies, and annual financial support will be provided by the Mercer County SCD. The Mercer County SCD will prioritize scheduling, coordinate activities and ideas and request letters of support. District personnel will serve as a liaison between watershed residents and USDA program participation.

2) USDA Natural Resources Conservation Service (NRCS). The NRCS will provide technical assistance by coordinating project activities, facilitating local involvement, providing technical support and participating in educational outreach programs during the project. Staff will incorporate existing USDA programs (financial and technical ex. EQIP) and target resources to enhance efforts within the watershed. Existing office space and office equipment use will be made available to the project. An annual review will be conducted with the Field Office, DC and the SCD to reconfirm and acknowledge NRCS's commitment to the project.

3) North Dakota Department of Health. The NDDH will oversee Section 319 funding and develop the quality assurance project plan (QAPP). Training will be provided by the NDDH for proper water quality sample collection, preservation and transportation to ensure that reliable data is obtained. NDDH will also complete and cover the expense of analysis of water samples.

4) The Mercer County Local Work Group. This work group meets to discuss and set priorities for the SCD. The work group will be engaged to help review and prioritize work within the watershed. The group consists of FSA County Board member, FSA CD, NRCS, SCD Supervisors, County Commissioners, and the general public is always welcome to attend.

5) USDA Farm Service Agency (FSA). The FSA will provide cost-share assistance through the Conservation Reserve Program and will serve as participants on the Local Work Group.

6) North Dakota Extension (NDSU). NDSU Extension will assist in project information and education activities. Local agents will be invited to participate and promote education and outreach events as well as provide materials and/or presentations on relevant topics.

7) The NDSU Manure Management Specialist stationed at the Carrington Research Extension Center will also be used as a resource. This program provides technical assistance to 319 projects and producers to evaluate manure management options for winter feeding areas (confined and unconfined). Coordination and presentation at education and outreach events will also take place.

8) Water Resource Board. The Mercer County Water Resource Board has committed to providing technical and financial assistance of $30,000 for the term of the project. They have state and local funding available to supplement cost-share practices within the project.

9) ND State Forest Service (NDFS). The NDFS has been solicited for financial and technical assistance with riparian areas. Opportunities exist to leverage state funded cost-share resources for conservation practices relating to windbreak installation and renovation.

10) Dakota Prairies RC&D. The RC&D will assist in project information and education activities.

11) The NPS BMP Team. The team is available to provide engineering support for structural BMPs such as manure management systems, stream bank restoration, waterways, etc. The BMP Team is funded with 319 funds to provide free engineering support to producers installing BMP in watershed project areas.

12) Additional coordination will be done with state and local conservation partners to provide technical support, education and outreach materials as well as possible additional cost-share funding. These organizations may include ND Game and Fish, Pheasants Forever, and the ND Natural Resources Trust.

4.1

Local support for watershed projects has grown in recent years. Producers in the proposed project area are seeing long term beneficial results from practices installed as a part of other projects. There is growing interest in participation to increase sustainable conservation practices on their operations. Currently 70% of NRCS and 319 contracts are for water and grazing BMPs. The other 30% have contracts for tree plantings, cover crops and grass seedings. They have shown great interest in using 319 dollars. A huge amount of support from local producers and sponsors is behind this project.

4.3

See Appendix C Letters of Support.

5.0 Evaluation and Monitoring Plan

The Quality Assurance Project Plan will be developed by the ND Department of Health after the draft proposal has been approved and revised, accordingly, to complete the final project implementation plan. The Quality Assurance Project Plan will be included in the final PIP and submitted to the EPA

6.0 Budget

See Part I, Part II and Supplemental BMP Budget Table, Appendix B

7.0 Public Involvement

Public will be kept informed of news, tours and meetings through newsletters and personnel contacts. Mercer County SCD personnel have done and plan to continue door to door stops throughout the watershed. To get producers involved, phone calls will be made to personally invite producers to meetings and tours. A monthly update is given to Mercer County Water Resource Board, which is printed in the local papers.

Appendix A
Milestone Table

Task/Responsible Organization	Group	Output	Qty	SFY 20 Quarter*				SFY 21 Quarter*				SFY 22 Quarter*			
				1	2	3	4	1	2	3	4	1	2	3	4
OBJECTIVE 1: Improve Water Quality															
Task 1 - Employ one watershed conservationist	1,2,3,4	Conservation Planning	1 employee	x	x	x	x	x	x	x	x	x	x	x	x
Task 2 - Implement BMP's	1,2,3,4,5	Landowner Asst. & BMPs	10 contracts			x	x	x	x	x	x	x	x	x	x
Task 3 - Manure Management Systems	1,2,3,4,5	Winter Feeding Areas	3 systems			x	x	x	x	x	x	x	x	x	x
Task 4 - Follow- up, monitoring	1,2,3,4,5	Contacts & Assistance	10 contracts			x	x	x	x	x	x	x	x	x	x
OBJECTIVE 2: Outreach & Information															
Task 5- Informational Meetings, Pub. and Tours	1,2,3,4,5	Informational Meetings	6 meetings	x		x		x		x		x		x	
	1	Newsletter Publications	12 newsletters	x	x	x	x	x	x	x	x	x	x	x	x
	1,2,3,4,5	Demonstration Tours	2 tours					x				x			
Task 6 - Watershed Management Awareness	1,2,6	Leadership Academy	3 boards		x						X				X
OBJECTIVE 3: Additional Funding															
Task 7 - Secure additional cost share dollars	1,2,3,4	Additional Cost Share	4 sources	x	x	x	x	x	x	x	x	x	x	x	x
OBJECTIVE 4: Document Water Quality															
Task 8 - 2-year Watershed Assessment	1,4	Assessment Data	4 sources					x	x	x	x	x	x	x	x

Group 1: Mercer County Soil Conservation District - Provides administration, supplies and financial support for the project

Group 2: Mercer County Water Resource Board - Provides technical and financial assistance for the project

Group 3: Natural Resources Conservation Service - Provides technical assistance in the planning, design and installation of BMP's

Group 4: North Dakota Department of Health - Oversees Section 319 funding, monitoring and overall evaluation of the project

Group 5: Goodman Creek Watershed Landowners - Make management decisions and provide both cash and in-kind match for BMP's

Group 6: Mercer County Board of Commissioners - Attend the Soil and Water Conservation Leadership Academy

* **Quarter 1** - July/September **Quarter 2** - October/December **Quarter 3** - January/March **Quarter 4** - April/June

Appendix B

Goodman Creek Watershed Project Budget Table

Part I: Funding Sources	**SFY20**	**SFY21**	**SFY22**	**In-Kind**	**Totals**
Total EPA Section 319 Funds	$84,015	$95,520	$95,055		$274,590
Subtotal	**$84,015**	**$95,520**	**$95,055**	**$0**	**$274,590**
Other Federal & State Funds	**SFY20**	**SFY20**	**SFY20**		**Total**
Natural Resources Conservation Service (TA[1],EQIP[2], CSP[3])	$25,000	$25,000	$25,000		$75,000
Dakota Prairies Resource Conservation & Development (TA)	$1,000	$1,000	$1,000		$3,000
ND Department of Health (TA)	$3,000	$3,000	$3,000		$9,000
Subtotal	**$29,000**	**$29,000**	**$29,000**		**$87,000**
State & Local Match	**SFY20**	**SFY21**	**SFY22**		**Total**
Mercer County Soil Conservation District (TA & FA)	$4,840	$5,000	$5,000	$1,600	$16,440
Mercer County Water Resource District (TA & FA)	$10,000	$10,000	$10,000		$30,000
ND Forest Service (TA & FA[4])	$5,000	$5,000	$5,000		$15,000
NDSU Extension Service (TA)	$500	$500	$500		$1,500
Landowners (FA)	$34,800	$42,760	$42,560	$12,500	$132,620
Subtotal	**$55,140**	**$63,260**	**$63,060**	**$14,100**	**$195,560**
Total Project Budget	**$168,155**	**$187,780**	**$187,115**	**$14,100**	**$557,150**

[1] TA - Technical Assistance
[2] EQIP - Environmental Quality Incentive Programs
[3] CSP - Conservation Stewardship Programs
[4] FA - Other Financial Assistance
SFY = State Fiscal Year

Part II: Section 319 Non-Federal Budget **Funding**

	SFY20	SFY21	SFY22	Total	Cash	In-Kind	319 Match	Total
Personnel/Support								
Salary	$45,000	$45,000	$45,000	$135,000	$54,000		$81,000	$135,000
Administration	$3,000	$3,000	$3,000	$9,000	$2,000	$1,600	$5,400	$9,000
Travel/Training	$1,000	$1,200	$1,000	$3,200	$1,280		$1,920	$3,200
Equipment/Supplies	$2,000	$1,000	$1,000	$4,000	$1,600		$2,400	$4,000
Telephone/Postage	$700	$500	$500	$1,700	$680		$1,020	$1,700
Subtotal	**$51,700**	**$50,700**	**$50,500**	**$152,900**	**$59,560**	**$1,600**	**$91,740**	**$152,900**
Objective 1: Improve Land Management (BMPs)								
Cropland Mgmt Systems	$1,500	$2,000	$1,500	$5,000	$2,000		$3,000	$5,000
Rangeland Mgmt Systems	$48,500	$65,000	$65,000	$178,500	$71,400		$107,100	$178,500
Pasture & Hayland Mgmt Systems	$5,000	$7,900	$7,900	$20,800	$8,320		$12,480	$20,800
Partial Manure Mgmt System	$30,000	$30,000	$30,000	$90,000	$36,000		$54,000	$90,000
Riparian Buffers	$2,000	$2,000	$2,000	$6,000	$2,400		$3,600	$6,000
Prescribed Grazing (InKind)	$2,500	$5,000	$5,000	$12,500		$12,500		$12,500
Subtotal	**$89,500**	**$111,900**	**$111,400**	**$312,800**	**$120,120**	**$12,500**	**$180,180**	**$312,800**
BMP detail is provided in the following Supplemental BMP Budget Table.								
Objective 2: Education & Outreach								
Tours/Seminars	$800	$1,000	$1,000	$2,800	$1,120		$1,680	$2,800
Board outreach and education	$225	$300	$225	$750	$300		$450	$750
Newsletters/Publications	$300	$300	$300	$900	$360		$540	$900
Subtotal	**$1,325**	**$1,600**	**$1,525**	**$4,450**	**$1,780**		**$2,670**	**$4,450**
Objective 4: Water Quality Data Compilation								
Water Quality Assessment	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Total 319 Non-Federal Budget	**$142,525**	**$164,200**	**$163,425**	**$470,150**	**$181,460**	**$14,100**	**$274,590**	**$470,150**

Supplemental BMP Budget Table

BMP Practice	Cost/Unit	Estimated Units	319 Cost	Producer Match[1]	Total Cost
340 - Cover Crop	$20/ac.	250 ac	$3,000	$2,000	$5,000
380 - Windbreak/Shelterbelt Establishment	$30/100ft	10000 ft	$1,800	$1,200	$3,000
060 - Weed Barrier	$65/100ft	10000 ft	$3,900	$2,600	$6,500
391 - Riparian Forest Buffer	$350/ac	10 ac	$2,100	$1,400	$3,500
516 - Pipelines	$3.15/ft	20000 ft	$37,800	$25,200	$63,000
614 - Tank/Trough	$1500/unit	10 units	$9,000	$6,000	$15,000
642 - Well	$9000/well	5 wells	$27,000	$18,000	$45,000
382 -Fencing	$1.80/ft	18389 ft	$19,860	$13,240	$33,100
001 - Cultural Resources	$1100/review	10 items	$6,600	$4,400	$11,000
550 - Range Planting	$40/ac	50 ac	$1,200	$800	$2,000
512 - Pasture & Hayland Planting[2]	$52/ac	400 ac	$12,480	$8,320	$20,800
390 - Riparian Herbaceous Cover	$300/ac	8 ac	$1,440	$960	$2,400
Partial Manure Mgmt System -Winter Feeding[3]	$30000/unit	3 units	$54,000	$36,000	$90,000
528A - Prescribed Grazing	$5.00/ac	2500 ac		$12,500	$12,500
		Total Costs	**$180,180**	**$132,620**	**$312,800**

1 Cash and/or In-Kind Match

2 Plantings to convert cropland to useful seasonal grazing areas

3 May include portable windbreaks, fencing, cover crops, tanks, pipelines, tree plantings, etc.

Appendix C
Letters of Support

United States Department of Agriculture

United States Department of Agriculture

Farm and Foreign Agricultural Services

Farm Service Agency

Mercer County FSA Office
1400 Hwy 49 N #101
Beulah, ND 58523-6066

PH: (701) 873-5290
FAX: (855) 813-6267

September 14, 2018

Mercer County Soil Conservation District
Brian Kerns, Watershed Coordinator
1400 Hwy 49 N #102
Beulah, ND 58523

Dear Mr. Kerns,

Thank you for inviting us to comment on your Goodman Creek Watershed Project. The Mercer County Farm Service Agency is interested in supporting natural resource projects like yours that address water quality needs and concerns for Mercer County. We can provide financial assistance to landowners through a variety of practices under the Continuous CRP Program. Our staff will work collaboratively with you to assess watershed needs and assist landowners in this area. Landowners can apply for assistance at their local county FSA office.

The Mercer County contact for the CRP Program is Kristyn Kasper. She can assist you in explaining the different practices available under the Continuous CRP Provisions. Please let us know if we can be of further assistance in advancing your Project.

Sincerely,

Cliff Orgaard

Cliff Orgaard
County Executive Director

NDSU | EXTENSION SERVICE
MERCER COUNTY

September 14, 2018

Brian Kerns
Watershed Conservationist
Mercer County Soil Conservation District
1400 Highway 49 N #103
Beulah, ND 58523

Dear Brian:

NDSU Extension Mercer County is in full support of the Spring Creek Watershed project that focuses on the best practices of riparian and waste management along the Spring Creek waterways throughout Mercer County.

The present and past watershed projects within Mercer County have increased conservation practices in the areas of education, soil/water health and land preservation. The watershed project as a whole is well received by producers and landowners that live or own land in the county.

Again, as the county agricultural agent of Mercer County I give one hundred percent support for this project to continue for the next three years and beyond.

Sincerely,

Craig Askim,
Extension Agent, Agriculture and Natural Resources

CA/ce

North Dakota State University
NDSU EXTENSION SERVICE | MERCER COUNTY
1400 Highway 49 N #103 | Beulah ND 58523-6066 | 701.873.5195 | Fax 701.873.5993
NDSU.Mercer.Extension@ndsu.edu | www.ag.ndsu.edu/mercercountyextension | www.ndsu.edu/extension

Mercer County Water Resource District

Ph. 701-748-2206
Fax 701-748-6200

P.O. Box 488
Hazen, ND 58545

September 18, 2018

Brian Kerns, Watershed Coordinator
Mercer County SCD
1400 Hwy 49 N
Beulah, ND 58523

Re: Goodman Creek Watershed Assessment Project

Dear Mr. Kerns:

I write to confirm the action taken by the Mercer County Water Board on September 12, 2018. On that date the Board decided to go on record as supporting the creation of a full project for the Goodman Creek area. They agreed to continue their current level of financial support for the next 12 months for this Project, and to continue this level of support through the three year term of a project, if project status is achieved.

Sincerely,

Gregory L. Lange
Secretary

GLL/ll

NORTH DAKOTA FOREST SERVICE

"To care for, protect and improve forest and natural resources to enhance the quality of life for present and future generations."

September 18, 2018

Brian Kerns, Watershed Coordinator
Mercer County Soil Conservation District
1400 Hwy 49 N #102
Beulah, ND 58523

Re: Goodman Creek Watershed

Dear Brian,

We are pleased to provide a letter of support for the Goodman Creek Watershed Project. This proposed 319 project will be instrumental in addressing water quality needs and concerns in Mercer County. North Dakota's Forest Action Plan identifies rural landscapes with riparian forests and planted windbreaks as priority areas. The restoration of riparian areas to ensure the health and sustainability of plant communities have important implications for water quality, flood control, wildlife habitat, and recreation opportunities. Likewise, the establishment and renovation of windbreaks provide significant benefits for soil conservation and wildlife habitat.

Staff from the North Dakota Forest Service are available to provide technical assistance through our Forest Stewardship Program to landowners interested in renovating windbreaks and applying conservation measures. Our staff may work collaboratively with you to assess watershed needs and implement forestry best management practices. Please feel free to contact Derek Lowstuter, Forest Stewardship Manager, North Dakota Forest Service, 916 East Interstate Avenue, Bismarck, ND 58503, telephone 701-328-9990.

Please feel free to contact my office if we can be of further assistance in advancing the Goodman Creek Watershed Project.

Sincerely,

Larry A. Kotchman

Larry A. Kotchman, State Forester

cc: Derek Lowstuter, Forest Stewardship Manager
Thomas Claeys, Forestry and Fire Management Team Leader

State Forester **Molberg Forestry Center** **307 1st Street East** **Bottineau ND 58318-1100**
Tel: (701) 228-5422 • Fax: (701) 228-5448 • E-mail: forest@nd.gov • www.ndsu.edu/ndfs

Dakota Prairies Resource Conservation & Development

919 S. Seventh St., Suite 310
Bismarck ND 58504
Phone: 701-250-4222 or 701-226-8409 (cell)
Web site: www.ndrcd.org
Email: dakotaprairiesrcd@gmail.com

Sept. 14, 2018

Greg Sandness, NSP Coordinator
North Dakota Department of Health/Water Quality
918 E. Divide Ave., 4th Floor
Bismarck, ND 58501

Dear Mr. Sandness,

Dakota Prairies RC&D Council strongly supports the Mercer County Soil Conservation District's 319 grant application to initiate programs in the Goodman Creek Watershed to address natural resource concerns.

This new application for funding is to address riparian grazing and manure runoff in the spring from winter feeding on or near the creek's two-mile corridor.

Protection of our natural resources, especially water, is a priority for our RC&D Council area that includes Mercer County. Protecting water resources and improving water quality is addressed in the long-range plan of Dakota Prairies RC&D.

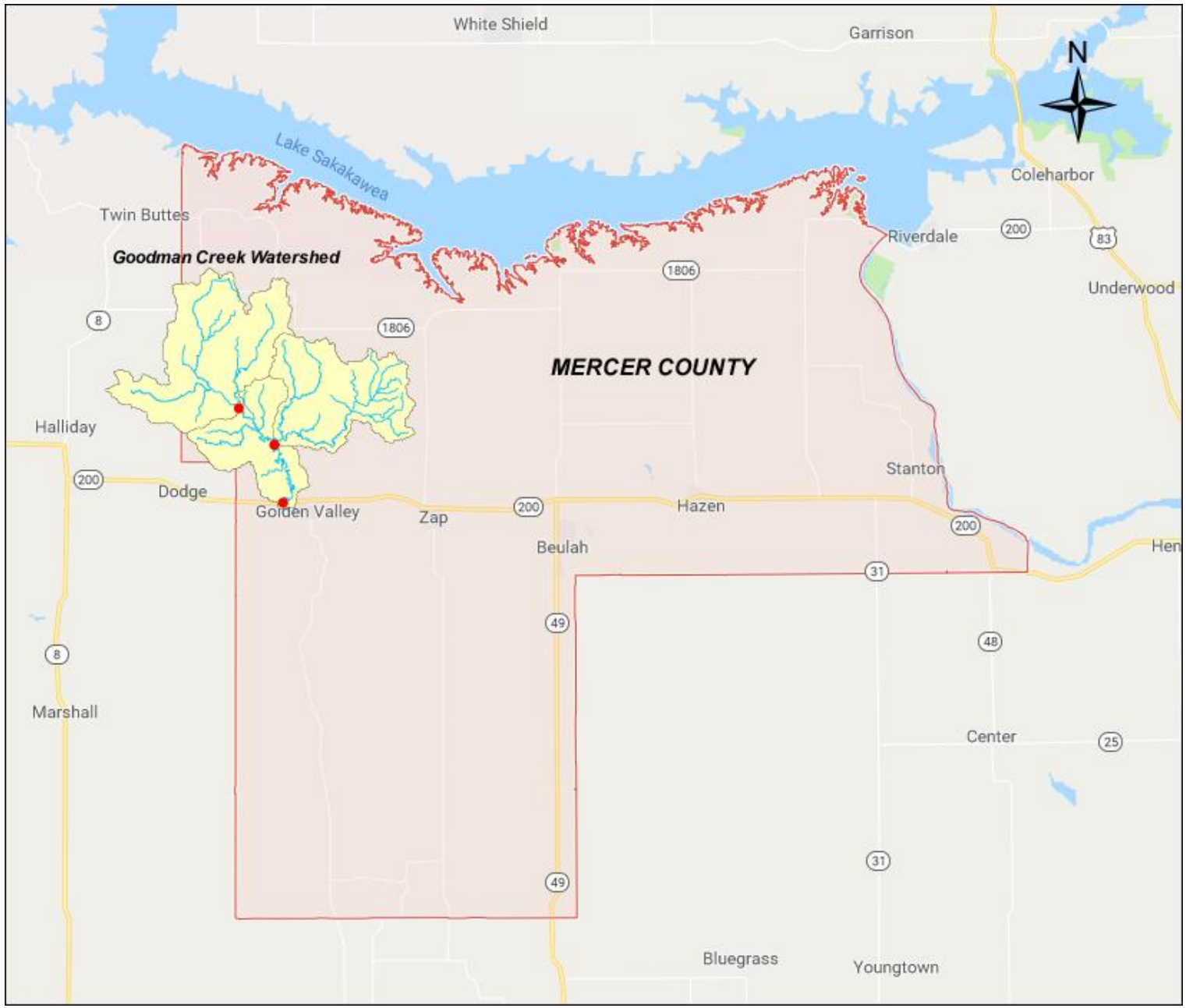
Again, we support the application of Mercer County SCD for an EPA 319 watershed grant to fund the plan of work for the Goodman Creek Watershed.

Sincerely,

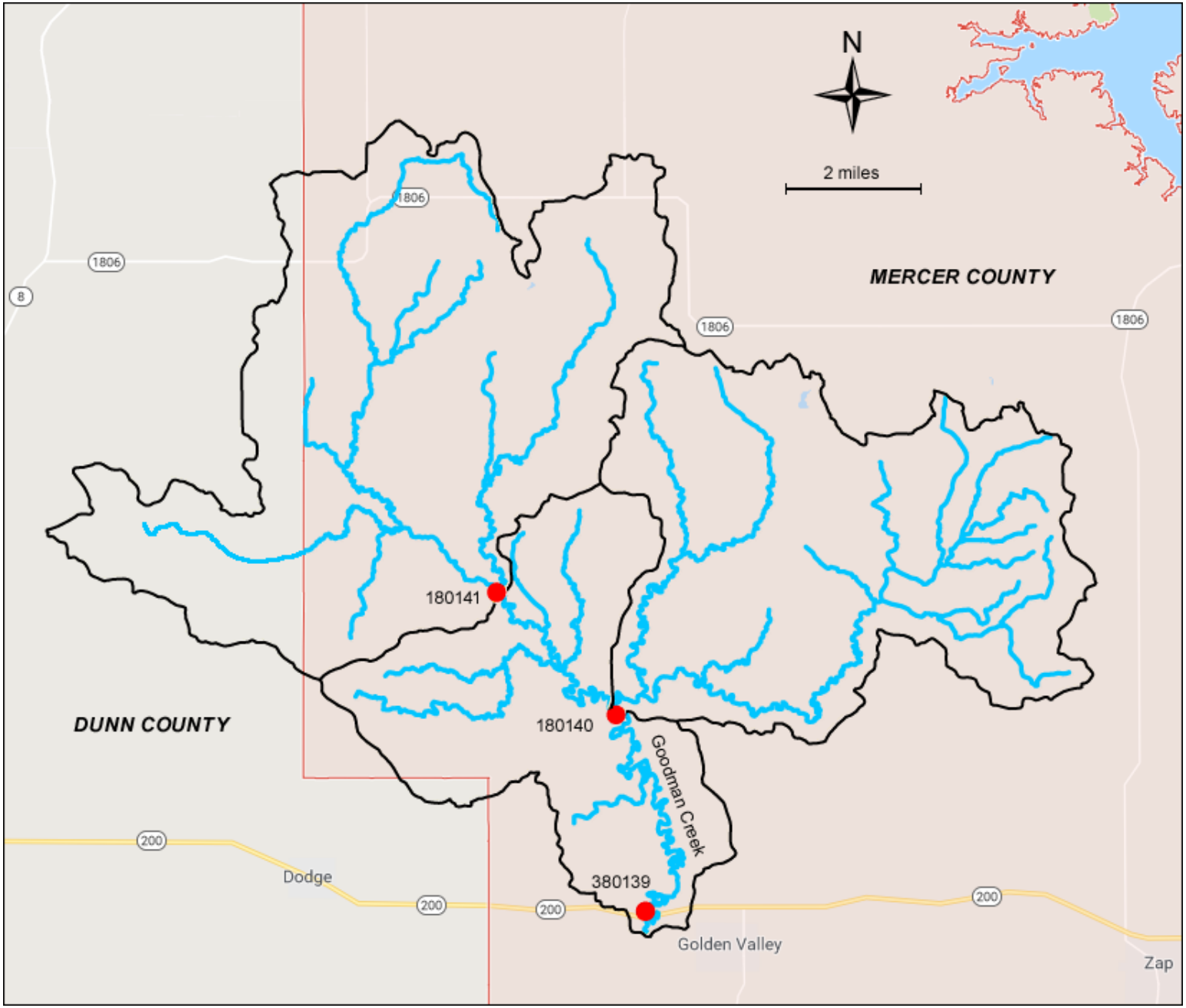
Susan L Davis

Susan L. Davis
Executive Director

Appendix D
Maps



Goodman Creek Watershed location in Mercer and Dunn Counties



Goodman Creek Watershed sampling locations and two-mile corridor high-priority area of interest on Goodman Creek and its tributaries

Appendix E
Summary of BMP practices

340 - Cover Crop - Grasses, legumes, and forbs planted for seasonal vegetative cover. Purpose: This practice is applied to support one or more of the following purposes: Reduce erosion from wind and water. Maintain or increase soil health and organic matter content. Reduce water quality degradation by utilizing excessive soil nutrients. Suppress excessive weed pressures and break pest cycles. Improve soil moisture use efficiency. Minimize soil compaction.

380 - Windbreak/Shelterbelt Establishment - Windbreaks or shelterbelts are single or multiple rows of trees or shrubs in linear configurations. The purpose is to reduce soil erosion from wind. Protect plants from wind related damage. Alter the microenvironment for enhancing plant growth. Manage snow deposition. Provide shelter for structures, animals, and people. Enhance wildlife habitat. Provide noise screens. Provide visual screens. Improve air quality by reducing and intercepting air borne particulate matter, chemicals and odors. Delineate property and field boundaries. Improve irrigation efficiency. Increase carbon storage in biomass and soils. Reduce energy use

060 - Weed Barrier - Herbaceous vegetation established in rows or narrow strips in the field across the prevailing wind direction. The purpose is to reduce soil erosion from wind. Reduce soil particulate emissions to the air. Protect growing crops from damage by wind or wind-borne soil particles. Enhance snow deposition to increase plant available moisture.

391 - Riparian Forest Buffer - A riparian forest buffer is an area of trees and shrubs located adjacent to streams, lakes, ponds, and wetlands. Riparian forest buffers of sufficient width intercept sediment, nutrients, pesticides, and other materials in surface runoff and reduce nutrients and other pollutants in shallow subsurface water flow. Woody vegetation in buffers provides food and cover for wildlife, helps lower water temperatures by shading the stream or waterbody, and slows out-of-bank flood flows. In addition, the vegetation closest to the stream or waterbody provides litter fall and large wood important to fish and other aquatic organisms as a nutrient source and structural components to increase channel roughness and habitat complexity. Also, the woody roots increase the resistance of streambanks and shorelines to erosion caused by high water flows or waves. Some tree and shrub species in a riparian forest buffer can be managed for timber, wood fiber, and horticultural products.

516 - Pipelines - Pipeline having an inside diameter of 8 inches or less. This practice may be applied as part of a resource management system to achieve one or more of the following purposes: Convey water from a source of supply to points of use for livestock, wildlife, or recreation. Reduce energy use. Develop renewable energy systems (i.e., in-pipe hydropower).

614 - Tank/Trough - A watering facility is a means of providing drinking water to livestock or wildlife. The purpose is the store or provide designated access to drinking water for livestock or wildlife to: supply daily water requirements, improve animal distribution, provide a water source that is an alternative to a sensitive resource.

642 - Well - A hole drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer for water supply. The purpose is to provide water for livestock, wildlife, irrigation, and other agricultural uses. Facilitate proper use of vegetation, such as keeping animals on rangeland and pastures and away from streams and providing water for wildlife.

382 -Fencing - Managing the harvest of vegetation with grazing and/or browsing animals with the intent to achieve specific ecological, economic, and management objectives. This practice is applied as a part of a conservation management system to achieve one or more of the following: Improve or maintain desired species

composition, structure and/or vigor of plant communities. Improve or maintain quantity and/or quality of forage for grazing and browsing animals' health and productivity. Improve or maintain surface and/or subsurface water quality and/or quantity. Improve or maintain riparian and/or watershed function. Reduce soil erosion and maintain or improve soil health. Improve or maintain the quantity, quality, or connectivity of food and/or cover available for wildlife. Manage fine fuel loads to achieve desired conditions.

001 - Cultural Resources - Cultural Resources are tangible remains of past human activity. The purpose is to examine existing information to determine the likelihood that cultural resources are, or may be, present in an area that may be affected by BMP undertakings. This review includes checking the current National Register of Historic Places, as well as equivalent state level registers and state site files, consulting the State Historic Preservation Officer, and talking with the landowner(s)/cooperator(s). If resources are found a reconnaissance survey will examine all or part of an area in sufficient detail to generalize the types and distributions of cultural resources that may be present.

550 - Range Planting - Establishment of adapted perennial or self-sustaining vegetation such as grasses, forbs, legumes, shrubs and trees. The purpose is to restore a plant community like the Ecological Site Description reference state for the site or the desired plant community. Provide or improve forages for livestock. Provide or improve forage, browse or cover for wildlife. Reduce erosion by wind and/or water. Improve water quality and quantity. Increase carbon sequestration

512 - Pasture & Hayland Planting - Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production. This practice may be applied as part of a conservation management system to accomplish one or more of the following purposes. Improve yield and plant longevity by providing guidance for selection and establishment of adapted and compatible plant varieties, species, and cultivars. Improve or maintain livestock nutrition and/or health. Provide or increase forage supply during periods of low forage production. Reduce soil erosion. Improve soil and water quality. Produce feedstock for biofuel or energy production.

390 - Riparian Herbaceous Cover - Grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats. The purpose is to provide or improve food and cover for fish, wildlife and livestock, Improve and maintain water quality. Establish and maintain habitat corridors. Increase water storage on floodplains. Reduce erosion and improve stability to stream banks and shorelines. Increase net carbon storage in the biomass and soil. Enhance pollen, nectar, and nesting habitat for pollinators. Restore, improve or maintain the desired plant communities. Dissipate stream energy and trap sediment. Enhance stream bank protection as part of stream bank soil bioengineering practices.

393 - Filter Strip - A strip or area of herbaceous vegetation that removes contaminants from overland flow. The purpose is to reduce suspended solids and associated contaminants in runoff and excessive sediment in surface waters. Reduce dissolved contaminant loadings in runoff. Reduce suspended solids and associated contaminants in irrigation tailwater and excessive sediment in surface waters.

Partial Manure Management System for Winter Feeding - Manure management changes that minimize the water quality impacts associated with an animal feeding operation. The specific types of practices used within a partial system will vary considerably and be dependent on several factors including facility size, type of animals, and the producer's management objectives.

528A - Prescribed Grazing – Managing the harvest of vegetation with grazing and/or browsing animals. This practice may be applied as a part of conservation management system to achieve one or more of the following: Improve or maintain desired species composition and vigor of plant communities Improve or maintain quality and quantity of forage for grazing and browsing animals' health and productivity. Improve or maintain surface

and/or subsurface water quality and quantity. Improve or maintain riparian watershed function. Reduce accelerated soil erosion and maintain or improve soil condition. Improve or maintain the quantity and quality of food and/or cover available for wildlife. Manage fine fuel loads to achieve desired conditions.