CLEAN WATER ACT SECTION 319

NONPOINT SOURCE CONTROL PROGRAM

FINAL REPORT

GRASSLANDS MANAGEMENT AND PLANNING PROJECT

SEGMENT 5

SPONSOR:

SOUTH DAKOTA GRASSLANDS COALTION

PROJECT COORDINATOR:

JUSTIN JESSOP

November 2020

This project was conducted in cooperation with the State of South Dakota and the United States Environmental Protection Agency, Region VIII.

Grant C99818517; C9981819

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EXECUTIVE SUMMARY

Project Title: Grasslands Management and Planning Project – Segment 5

Grants: C99818517
Project Start Date: July 24, 2017
Project Completion Date: August 31, 2020

Funding: Total Project Budget $447,057.41

Section 319 Grants C99818517	$200,000.00
Amendment	$ 69,000.00
Total Section 319 Grants	$269,000.00
Total Expenditures of EPA 319 Funds	$239,989.33
Total Section 319 Match Accrued	$157,068.08
CWSRF-State Funds Part of Match	$ 50,000.00
Other Federal	$ 0.00
Total Expenditures	$447,057.41

The project was the fifth segment of the Grasslands Management and Planning Project –Segment 5, by the South Dakota Grasslands Coalition to improve water quality and wildlife habitat, increase biodiversity and maximize economic sustainability**.** The project goal was to reduce sediment, nutrient and fecal coliform bacteria loading to surface waters in South Dakota by improving range condition.

The Coalition continued its partnership with grassland managers, grassland and livestock organizations, and local, state, and federal agencies to implement a strategy developed during previous project segments to design, implement, and monitor "management intensive" grazing systems to attain the project goal.

The partners established three objectives to continue progress toward attaining the goal:

1. Provide grassland managers with the technical assistance needed to plan 50,000 acres of managed grazing systems and complete the implementation of systems on an additional 50,000 acres of grasslands.
2. Transfer grassland management information to a minimum of 10,000 South Dakota producers, 20 researchers, 40 grassland specialists, and 190,000 members of the public.
3. Monitor and evaluate project progress toward the project goal by implementing the practices selected for the established objectives of this project segment.

During the project period, the budget and work plan were amended once. The amendment was a one-year extension of the project. As project partners developed grazing plans during this project segment, they continued to select practices to help the grazing system operator increase profits while improving the ecological status of the grasslands, improving water quality, and providing habitat for a healthy, more diverse wildlife population. Partners promoted the concept that managed grazing is a practice leading to improved soil health through project outreach and information transfer activities.

Segment 5 outreach and information transfer activities provided more than 99,000 individuals with opportunities to learn about the project and the environmental and economic benefits of managed grazing. Six grazing schools, 19 tours, and 38 workshops were held. Sixty-one media events reached over 96,000 people. Some of planner videos were shown on RFD-TV's Market Day report.

The number increases the cumulative total for all project segments to about 7.8 million since 2001. The totals include estimated booth traffic at events such as conferences and trade shows, attendance at field days, workshops, and meetings, circulation of periodicals and radio station market share. Working relationships with nature and environmental groups or members of groups such as the South Dakota Ornithologist Union, Ducks Unlimited, and the Sand County Foundation continued. Much of the circulation increase experience during the project period can be attributed to the targeted conservation and Leopold Award articles that appeared in *Successful Farming*, "Miami Herald", and Ducks Unlimited magazine, which have combined circulation of more than one million. Segment 5 funding allowed for the capacity to expand information to these markets. It has been suggested the value of grassland information through articles such as these is primarily in how they serve to build understanding and support for policies and programs that benefit grassland and water protection, such as the sod busters provision in the farm bill. These issues are often not well understood among policy makers and urban area residents that may not comprehend the connection of such programs

to the nation's environmental health, and our education and outreach platform helps create those connections among various segments of the population.

Since 2010, the Sand County Foundation has partnered with the Coalition, South Dakota Cattlemen's Association, SD Discovery Center and Aquarium, and other partners to sponsor the Leopold Conservation Award in South Dakota. The award recognizes leadership in voluntary conservation and ethical land management. The award recognizes the accomplishments of farm/ranch families in each of the 22 participating states each year and showcases conservation programs as viable tools for developing and operating agricultural operations that provide all residents with economic and environmental benefits.

Grazing management practices have been shown to reduce nitrogen, phosphorus, and sediment from entering waterways. Improvements in grazing practices resulted in the following non-point source reductions to waterbodies using the STEPL model. Acres with a grazing plan written by Grassland Coalition or partners were modeled assuming a change from fair to good condition during Segment 5. Load reductions for Segment 5 of the project are as follows:

Nitrogen (lbs.)	51,574
Phosphorous (lbs.)	11,002
Sediment (tons)	7,145

INTRODUCTION

The Grasslands Management and Planning Project was developed to continue the implementation of grazing management practices that reduce NPS by improving range condition initiated during 2001 by the Grazing Management & Planning Project. Segment 5 of the current project was funded in part by Environmental Protection Agency (EPA) Clean Water Act Section 319 Project Grant number C99818517 awarded through the South Dakota Department of Environment and Natural Resources (DENR).

According to the National Agricultural Statistics Service (NASS), the number of farms and ranches in the state decreased from 33,191 in 1997 to 31,989 in 2012 to 29,600 in 2017. NASS data indicates the number of beef cattle in the state increased from 1,610,559 head in 2012 to 1.7 million at the close of 2017; that's growth of approximately 90,000 head.

At the same time, according to the National Recourse Inventory (NRI), rangelands decreased from 22,232,400 acres in 2002 to 22,216,300 acres in 2012 to 22,141,600 acres in 2015. The 2017 NRI was not available. Rangelands are classified into ecological sites based on soils, topography, and climate that make up their unique characteristics. Each site has a characteristic plant community that has developed on the site according to these factors. Range specialists refer to this as the reference or "Historic Climax Plant Community." Deviations from this "reference" condition are indicated by the similarity index class with 0 showing zero percent of reference class condition (poor condition) and 100 showing alignment with the reference class condition(excellent condition).

The first accurately collected statewide data from Natural Resources Conservation Service's (NRCS) National Resource Inventory (NRI) was in 2003-2004, and below are the numbers from those two years combined:

Similarity Index Class:	Poor	Fair	Good	Excellent
	0-25%	25-50%	50-75%	75-100%
	=====	======	======	=======
	34.9%	33.0%	24.8%	7.3%

While data collection has continued, a wholesale re-evaluation of condition class due to management practices on these ranches has not occurred. Based on information provided by resource inventories and follow-up activities with producers who installed grazing systems, it is estimated using professional judgement from NRCS personnel that the practices installed resulted in 75 percent of a participant's grasslands being improved by one similarity index class when managed grazing is applied.

The Grassland Management and Planning Project is sponsored by the South Dakota Grasslands Coalition (SDGLC) in partnership with agricultural organizations, local, state, and federal agencies, and the academic community. Since the Coalition was formed in 1998, its principle project partners have included:

- South Dakota Association of Conservation Districts (SDACD),
- United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS),
- South Dakota State University (SDSU),
- South Dakota Department of Game, Fish & Parks (SDGF&P),
- United States Department of Interior-Fish and Wildlife Service (USFWS)-South Dakota Partners for Fish and Wildlife Service (US FWS),
- South Dakota Discovery Center and Aquarium
- SD Department of Environment and Natural Resources (DENR)
- SD Farm Bureau

The project partners contributed financial and/or technical assistance that generated the synergy needed for project acceptance by a wide range of interests and the level of success achieved. A complete list of project partners and their contributions to project success is in the coordination section of this report. SDGLC is part of the Natural Resources Conservation Service's Grazing Lands Conservation Initiative (GLCI). The initiative is a nationwide effort designed to provide technical assistance to private grazing land operators and increase the awareness of the importance of grazing land resources. For additional information about the SDGLC visit:

http://www.sdgrass.org/

During completion of the projects, referred to as project Segments 1- 5, SDGLC and its project partners installed, or were responsible for the installation of, grazing management practices on more than one million acres. This reduced nitrogen entering South Dakota's lakes and streams by more than 839,800 pounds, reduced phosphorous by 159,525 pounds, and lowered sediment by 95,866 tons.

Conservation practices used to install the grazing systems included:

- water development – wells, pipeline tanks, pasture pumps, dams and dugouts
- fence - cross, perimeter, and riparian exclusion
- managed /rotational grazing
- stream crossings
- grass seeding

Information and education (I&E) outreach activities completed during Segments 1-4 provided managed grazing information and opportunities to more than 10 million people who attended project sponsored grazing schools (23) and management workshops and tours (120), or were provided information using print and electronic media releases and feature articles (228) with total circulation/listeners = nearly 10 million). Segment 5 was designed to continue the implementation of NPS reduction BMPs on grasslands. During the completion of Segment 5, the SDGLC and its project partners provided:

- 58 livestock producers who manage nearly 110,903 acres of South Dakota grasslands with the assistance needed to design and install grazing systems ranging in size from 560 to more than 15,000 acres;
- 183,155 individuals with opportunities to learn about the project and the environmental and economic benefits of managed grazing.

More detailed information regarding the accomplishments listed above is provided in the Project Goals, Objectives, and Activities section of this report.

During Segment 5, producers requesting assistance had grazing lands rated in the fair, good, and excellent ecological categories while those with lands rated as poor were less likely to participate. The Grasslands Coalition maintained working relationships with nature and environmental groups along with members of groups such as the South Dakota Ornithologist Union, Sand County Foundation, North Dakota and Nebraska Grazing Lands Coalitions, World Wildlife Fund, and National Fish and Wildlife Foundation. These alliances have generated support of managed grazing as not only a water quality best management practice (BMP) that has a positive impact for producers installing the practice, but also a practice that promotes preservation of grasslands and therefore habitat for game and non-game species of animals and the preservation of native vegetation. It is suggested that this support may be a critical factor in generating support for programs that will slow the conversion of grassland to croplands that is taking place in the Prairie Pothole Region. Central SD is an area where the rate of conversion is especially high.

During 2010, because of the SDGLC's demonstrated success with the implementation of grassland conservation practices, the Sand County Foundation partnered with the South Dakota Grasslands Coalition and the South Dakota Cattlemen's Association to sponsor the Leopold Conservation Award in South Dakota. The Sand County Foundation offers the award in 22 states through partnerships with individuals, organizations, and agencies. The award recognizes leadership in voluntary conservation and ethical land management. Information regarding the award is available by accessing the sites listed below:

https://sandcountyfoundation.org/our-work/leopold-conservation-award-program

State recipients receive a Leopold Crystal, farm/ranch sign, and a $10,000 cash award. Information about the South Dakota winners is located on page 29

During the project period, the implementation plan was amended once. The action authorized by the amendment extended the project period through August 31, 2020.

A descriptive summary of the activities completed during project Segment 5 to achieve the results summarized above, a comparison of planned versus accomplished milestones, and an evaluation of the accomplishments in relation to attaining the project goal is provided in the report sections that follow.

PROJECT GOALS, OBJECTIVES, AND ACTIVITIES

South Dakota Grasslands Management and Planning Project Segment 5 was initiated July 24, 2017. Originally slated for completion in two years, the project period was extended through August 31, 2020. The goal of the project is to:

> Reduce sediment, nutrient, and fecal coliform bacteria loading of surface waters in South Dakota by improving range condition.

Three objectives for project Segment 5 were established to continue progress toward attaining the goal. These were:

1. Provide grassland managers with the technical assistance needed to plan 50,000 acres of managed grazing systems and complete the implementation of systems on an additional 50,000 acres of grasslands.
2. Transfer grassland information to 10,000 South Dakota producers, 20 researchers, 40 grassland specialists, and approximately 190,000 other individuals.
3. Monitor and evaluate project progress toward attaining the project goal by implementing the practices selected to reach the objectives established for this project segment.

Objective 1: Provide grassland managers with the technical assistance needed to plan 50,000 acres of managed grazing systems and complete the implementation of systems on an additional 50,000 grasslands.

Task 1: Provide livestock producers with the technical assistance needed to plan and operate grazing systems.

Product 1: Grazing management plans on 50,000 grassland acres.
Twenty-one producers who manage 57,405 acres have completed plans that are implemented.

The planning process:

- begins with a resource inventory of the land that will be included in the system and determination of the producer's management philosophy and capabilities.
- uses practice Prescribed Grazing – Practice Code 528 outlined in the *NRCS National Planning Procedures Handbook, National Range and Pasture Handbook, and the South Dakota Field Office Technical Guide.*
- includes development of alternative water sources to facilitate excluding grazing in riparian area.
- considers rural water hook up as the preferred alternative water source.

See Product 2 for the practices included in the plans developed.

Both of the NRCS publications referenced are available by accessing:

http://www.nrcs.usda.gov/technical/efotg/.

Project partners providing planning assistance included USFWS and NRCS. The planning accomplished by USFWS was possible through a National Fish and Wildlife Foundation (NFWF) grant to the SD Grassland Coalition.

- NFWF – 21 producers, 19,100 acres
- USDA NRCS Contribution Agreement – 22 producers, 39,829 acres

Criteria used to select the source(s) of funds to install the grazing systems included:

- "fit-to-program";
- availability in a timely manner;
- the operator's preference, and
- compatibility of the program to system manager's operation.

The increased reliance of planning services provided by project partners during Segment 4 allowed project staff to concentrate efforts more on outreach and education activities which in turn generated interest in implementing managed grazing practices. Nearly 60 percent (210,000) of the acres attributed to EQIP were from three operations in the western part of the state.

The systems planned ranged in size from 28 acres to 15,000 acres with the average size being in the 1,500–5,000-acre range when the three operations referenced above are not considered in the averages. The smaller operations tended to be more in the central to eastern portions of the state with the larger in the west. The averages reflect the operation size difference from east to west as annual precipitation decreases. An example of a grazing plan developed is shown in Figure 1. The system is divided into 10 paddocks using cross fence. Water was supplied using a pipeline and three tanks with each tank positioned to serve multiple paddocks.

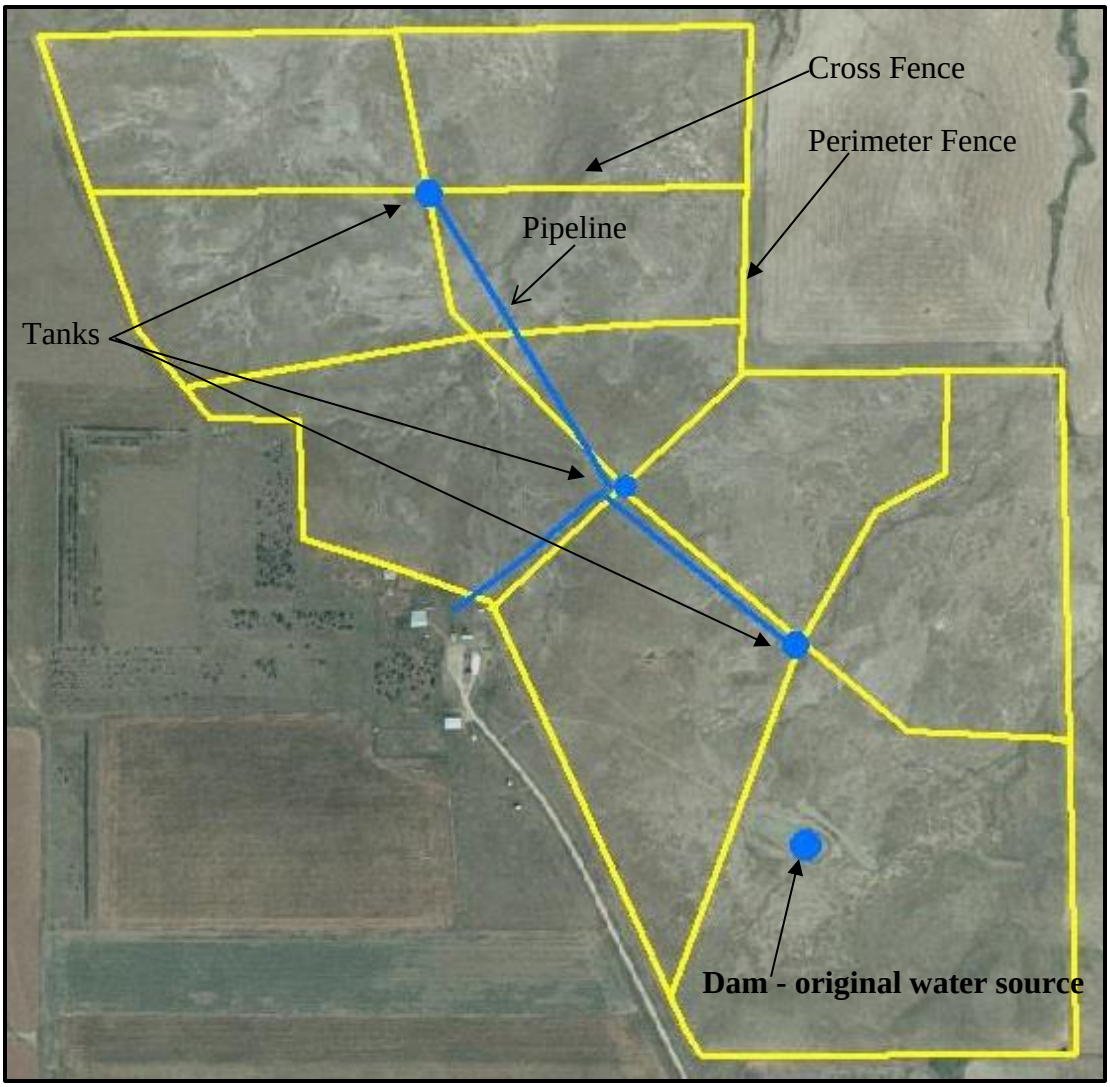

Figure 1. Managed grazing system design.

Grassland managers who are receiving technical assistance are provided with a copy of *Grassland Plants of South Dakota and the Northern Plains*. The book is intended to assist them in their inventory and monitoring activities. The book is also provided to grazing school students, FFA chapters, and 4-H clubs. Over 900 *Grassland Plants of South Dakota and the Northern Plains* books were purchased utilizing project funds and the NRCS contribution agreement during Segment 5.

A grazing stick is a specially designed yardstick with formulas, tips, and guidelines printed on the stick's four sides to help manage forage production relative to animal units using the pasture or paddock (Figure 2). Training regarding how to use the stick is always provided prior to distribution. Training occurs at events such as the grazing school (Figure 3) and pasture walks. An additional 2,500 grazing sticks were ordered during Segment 5 with the NRCS Contribution Funds.

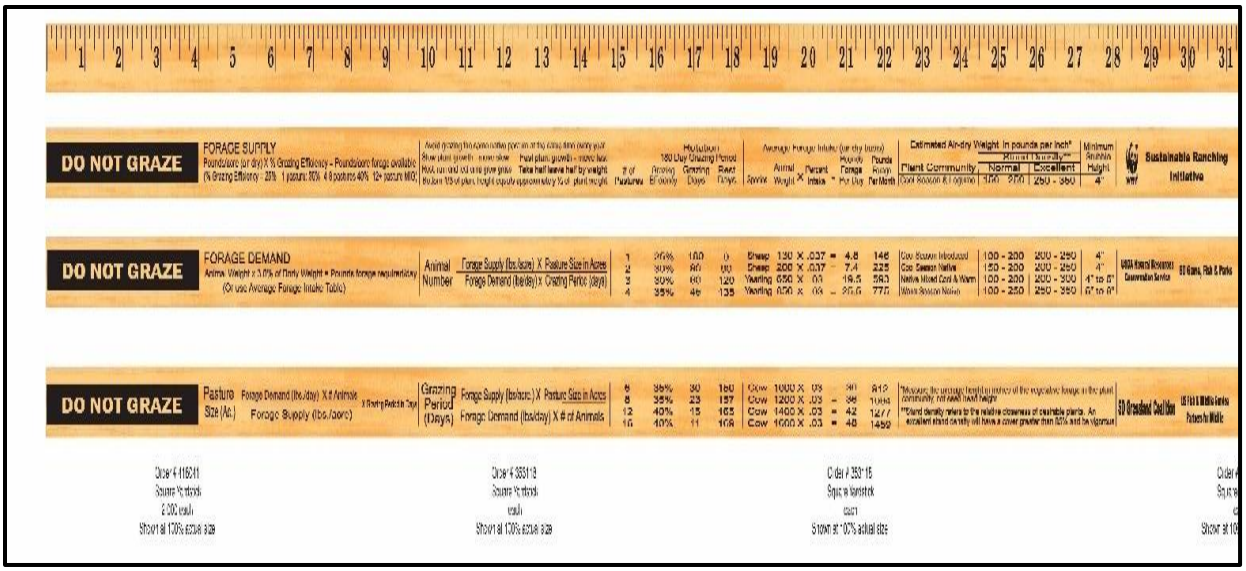

Figure 2. Information on each side of the grazing stick.

Figure 3. Attendees at a SD Grazing School learn to use a grazing stick.

A good example of the Coalition's role in outreach can be found in Figure 4. This image shows the current (July 2020) rangeland production map based on drought indicators. This map goes beyond simple drought conditions, allowing producers to plan for how drought affects the forage base across the state. As shown, most of the state is not suffering from a projected drop in grass production, regardless of specific climatic or precipitation variables.

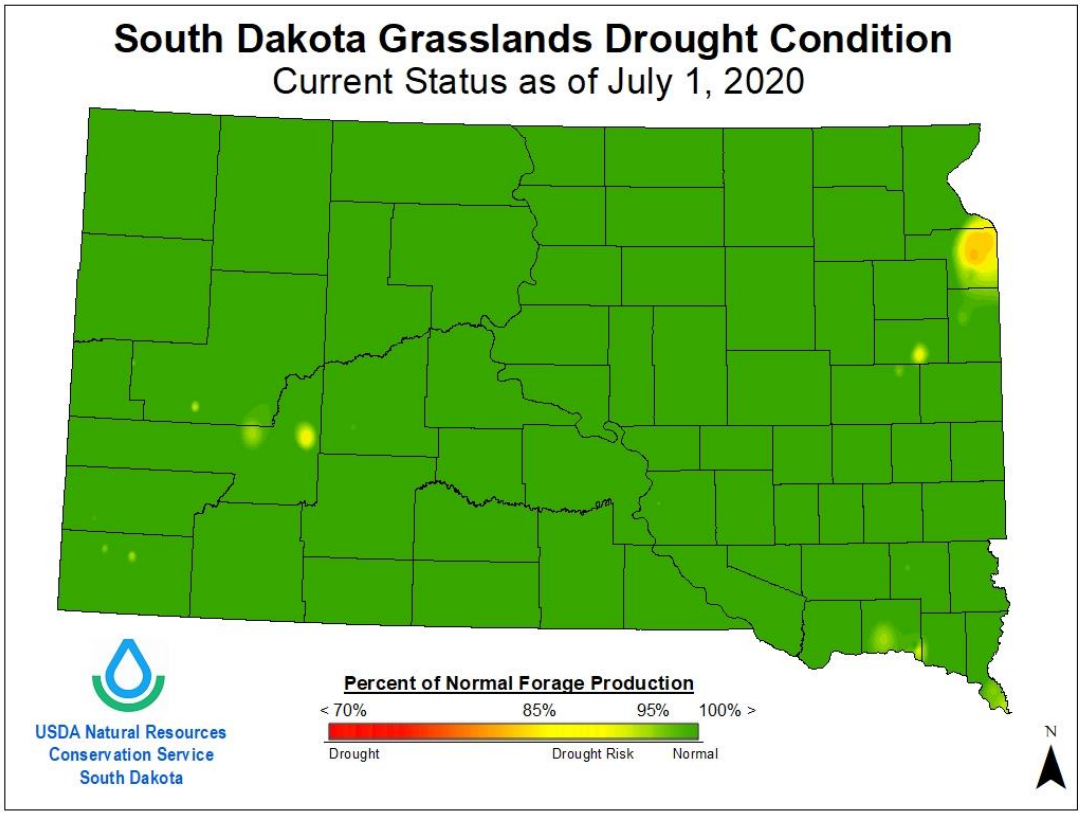

Figure 4. South Dakota NRCS Grassland Drought Condition, July 1, 2020 map.

For comparative purposes, Figure 5. below shows the rangeland production conditions for the same period in 2018. It is this level of basic education and outreach that allows the Coalition to serve individuals while ensuring best information and best management practices from partner organizations are disseminated in a timely fashion. Ultimately, either bringing new producers to our door in need of technical support or continuing to support those producers who have already received our services in the past.

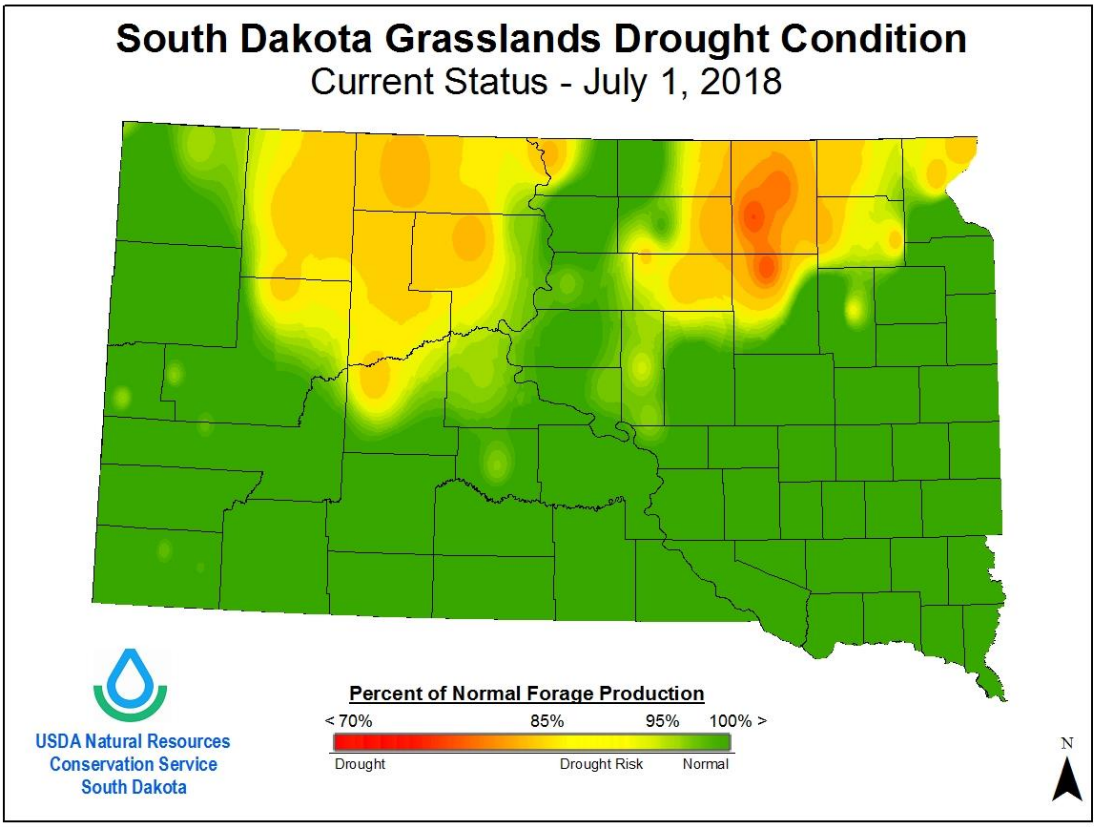

Figure 5. South Dakota NRCS Grassland Drought Condition, July 1, 2018 map.

Product 2: Install grassland management systems on 100,000 acres.

During the project period 471,434 acres of managed grazing systems were installed using assistance provided by project staff and its partners. The total includes 223,434 acres assisted by the project staff and 248,000 acres by project partners. The locations of the 51 systems installed during Segment 5 appear in Figure 6. The graphic also shows the location of systems installed during previous project segments and the relationship to active 319 project areas.

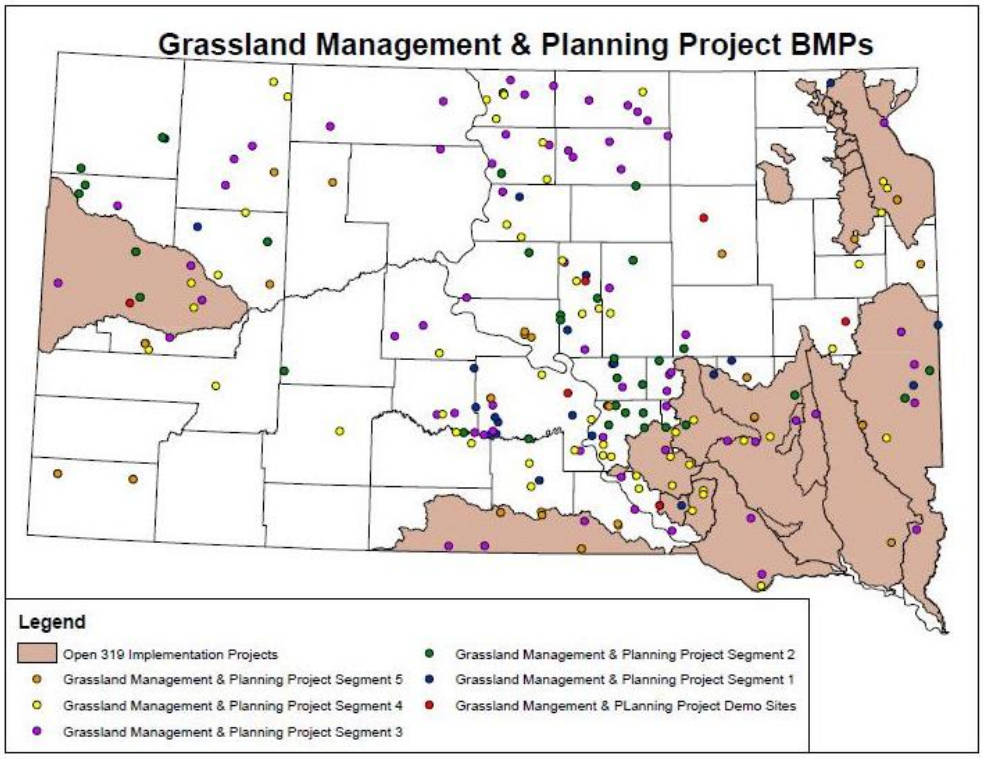

Figure 6. Locations of managed grazing systems installed relative to current 319 projects.

Of the 15 systems, none were in active 319 project areas. The Grasslands Management & Planning is as statewide project. Being a statewide project, staff are able to assist producers outside active 319 project areas. Nearly half of the systems are in the central area of the state which has experienced recent cropland conversion. This suggests that even though this area has experienced significant grassland loss, livestock producers who remain are among the most active in installing managed grazing systems as a strategy to maintain profitability.

Assistance to 22 of the producers was provided using funds from a National Fish and Wildlife Foundation Grant during Segment 5. During 2017, the SDGLC was a recipient of a National Fish and Wildlife Foundation Grant, 'Enhancing Rangeland Ecology by Improving Ranch Management Options in South Dakota (Phase II)' to improve grassland management through improved grazing management, with a primary goal of improving overall habitat for all associated species, especially grassland birds. Primary partners were the US Fish and Wildlife Service's Partners for Fish and Wildlife Program and the South Dakota Department of Game, Fish, and Parks' Private Lands program. Phase II provided funding to help 22 private landowners improve habitat on 19,100 acres through long-term conservation agreements and included habitat improvement techniques such as fencing (14.5 miles) and water development for prescribed/ecological grazing as well as grassland/wetland restoration (438 acres).

Technical and financial assistance to install the practices selected to construct the systems (Table 1).

Technical assistance was provided by:

- NRCS
- SD GF&P
- US FWS, and
- Local conservation districts

Financial assistance was provided by local, state and federal organizations and agencies which included:

- US Fish and Wildlife Service (USFWS) South Dakota Partners for Fish and Wildlife using the North American Wetlands Conservation Act Grants (NAWCA)
- NRCS - EQIP
- South Dakota Game, Fish and Parks (GFP) – SD GF&P Private Lands Habitat program
- SD Conservation Commission – Soil and Water Conservation Fund
- DENR – Section 319 TMDL Implementation Project Grants

Table 1. Conservation practices used to install grazing systems

Practice	Milestone	
[redacted]	Planned	Achieved
Cross Fence (feet)	50,000	76,645
Pipeline (feet)	40,000	67,557
Rural Water Hook-ups	2	0
Tanks	40	30
Dugouts/Dams	6	0
Stream Crossing	1	0
Grass Seeding (acres)	500	374
Well	1	1

Fencing installed include single wire, three wire, high tensile electric, or poly wire. Three wire was most often used for an exterior fence; single wire was used for cross fence within a system. Grass

seeding was used to convert cropland to native vegetation. Occasionally a producer included a non-native species such as alfalfa in the seed mixture planted to provide greater forage value in the event a paddock was harvested for hay. One stream crossing was installed as it was determined to be necessary at the location to provide water access.

Options to supply water to a grazing system included rural water systems, wells, and dams/dugouts. Rural water was the method of choice when available. Rural water is a reliable source of water which promotes improved herd health, reduces incidence of livestock entering surface water bodies, and provides consistent, positive environmental and economic benefits. Some rural water systems are at or near capacity to supply. Producers need to be aware of the limitations of their respective rural water system during their design process. They may need to add storage tanks if the pressure and flow of the system will not supply their herd needs. For example, a producer whose grazing system was located at the end of delivery line installed a storage tank to meet peak demand periods for his livestock. The source of water to a grazing system was the determining factor relative "delivery" to the livestock within the system. When wells and rural water were the source, pipeline delivered the water to tanks.

Pipeline installed included both above and below-ground (buried). Project staff assisted producers with placing orders for the one-inch above-ground polyethylene pipe (Figure 7). The pipe is relatively inexpensive, lightweight, and flexible and affords the system manager advantages over installing buried pipe. Using above ground pipe, producers can supply water to paddocks to pasture subdivisions at a lower cost than when using buried pipe. In addition, the portability of above ground pipe allows the producer to try water placement in an area before making the decision to put in a permanent system. Using easy to install quick couplers (Figure 7) to tap the above ground pipe allows grass managers a source of water wherever they determine a tank should be placed. Once the key is inserted into the riser, water is free flowing.

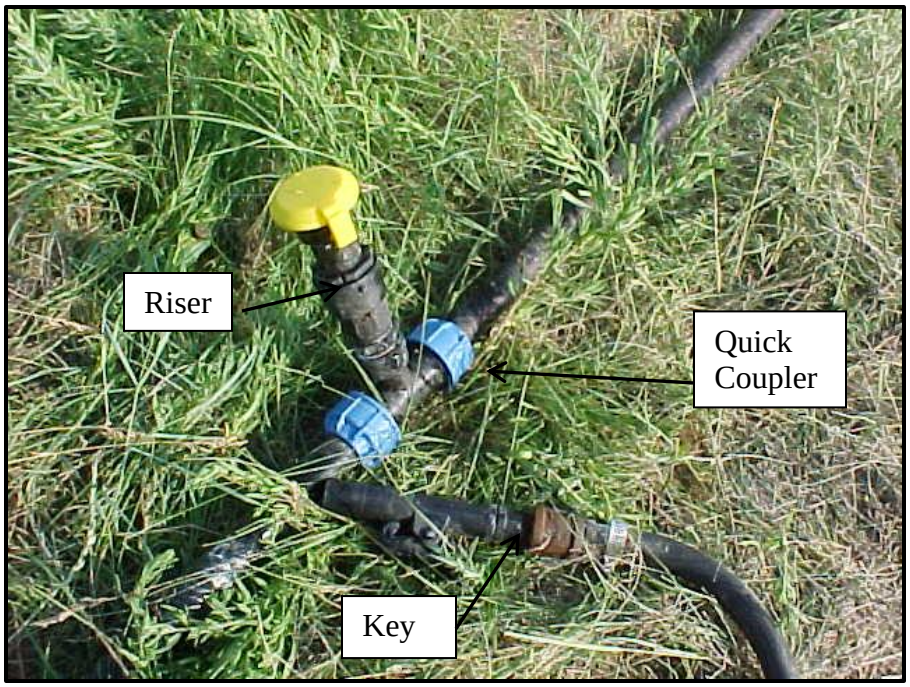

Figure 7. Above-ground pipe with coupler, riser, and key.

Load reductions realized from the systems installed were determined using the Spreadsheet Tool for Estimating Pollutant Loads (STEPL) developed by EPA Region 5. The load reductions achieved during each project year were provided to DENR in partial fulfillment of reporting requirements. The data was included in annual reports prepared using the format provided by DENR to facilitate entry into EPA's Grants Reporting and Tracking System (GRTS).

NPS pollution load reductions to SD lakes and streams realized from grazing systems installed during project Segment 5 is listed in Table 2.

Table 2. NPS Load Reductions based on grazing systems installed.

Pollutant	Load Reduction
Nitrogen (lbs.)	51,574
Phosphorus (lbs.)	11,002
Sediment (tons)	7,145

Objective 2: Transfer information on grassland information in South Dakota to 10,000 producers, 20 researchers, 40 grassland specialists, and approximately 190,000 other individuals.

Task 2: Complete information and outreach activities that promote and provide opportunities for involvement in grassland management and bring about an awareness of the water quality impact(s) of improved grassland management targeted towards 319 TMDL implementation project areas, riparian areas, and grasslands in southeast South Dakota.

Product 3: Existing website maintenance, farmer/rancher workshops, grazing schools, news releases and summer grazing tours.

The project coordinator working in partnership with SDSU Range Science and NRCS outreach and public affairs persons and conservation district personnel continued to provide livestock producers, resource managers, the research community, students, and the general public with opportunities to learn about grassland management. The SD Grasslands Coalition lists upcoming events and activities on its website and Facebook page. URLs for the sites follow:

http://www.sdgrass.org/
https://www.facebook.com/SouthDakotaGrasslandCoalition

The activities provided opportunities to learn about the project and the environmental and economic benefits of managed grazing to more than 100,000 people during this project segment and more than 10 million people since the project were initiated in 2001. The totals include estimated booth traffic at events such as conferences and trade shows; attendance at field days, workshops, and meetings; circulation of periodicals; radio station market size; page views, and tweets. Milestone comparisons of planned versus accomplished outreach activities for project Segment 5 and cumulative for all project segments are summarized in Table 3.

Table 3. Information transfer - educational outreach activities milestone comparison

Activity	Project Segment 5			Cumulative		
	Planned	Completed	Individuals Reached	Planned	Completed	Individuals Reached
Grassland Birding Tours	2	2	138	10	17	1,057
Grazing Schools	2	7	221	17	30	877
Leopold Award Tours	2	3	380	9	114	981
Meetings & Workshops	12	38	1,963	63	147	7,974
News Releases- print articles about project related activities	8	61	96,003	189	228	10,124,140
Website	1	1	84,450	1	1	647,105
Totals			183,155			10,682,134

The information transfer and involvement opportunities were, for the most part, a continuation of activities initiated during previous project segments and build on previous successes. Therefore, the summary of accomplishments/outcomes that follows is limited to a brief description and highlights of transfer and involvement opportunities provide during this project segment, with cumulative information regard all project segments. For a more descriptive summary regarding involvement opportunities visit:

- www.sdgrass.org
- https://www.facebook.com/SouthDakotaGrasslandCoalition
- http://www.sdconservation.org/grassland/managing/gmd/index.html
- http://denr.sd.gov/dfta/wp/wqinfo.aspx#Project

The SDGLC had the following presenters at the 2017-2019 Road Shows:

Table 4. 2017-2019 Winter Road Show presenters, Number of locations & attendance.

Presenter	Year	Number of locations	Attendees
Gabe Brown	2017	5	364
Jerry Doan	2018	1	110
Roland Kroos & Patrick Toomey	2019	5	200
Tom Noffsinger	2019	5	91
Josh Dukart	2019	5	175
Total			936

Gabe Brown, Bismarck, ND, was the speaker for our 2017 Winter Road Show and Annual Meeting. Brown, his wife Shelly, and their son, Paul, operate a diversified farm/ranch and grass-fed meat/retail businesses. Brown's passion is to share with others the joys of regenerative agriculture. Brown is excited to see so many others interested in healthy soil which leads to clean air, clean water, healthy plants, healthy animals, and healthy people.

Figure 8. Brown, right, discusses mycorrhizal fungi with former SD DENR Project Officer, Dennis Clarke.

The SD Grassland Coalition was chosen as host for the 2018 Grass-fed Exchange Annual National Conference held in Rapid City in June 2018. A theme of "Grass-fed and Grassland Conservation" was selected with a strong emphasis on local and regional grass-based business models that highlight local foods, water/soil conservation, public/private partnerships, and wise use of public lands. Conference participants were exposed to important grassland management issues while acquiring technical knowledge/skills through presentations, field tours, and discussion with industry leaders. Partner participation included the Grass-fed Exchange, SDSU Extension, NRCS, SD Soil Health Coalition, USFWS, SD GFP, and private organizations. 525 attendees representing 42 states as well at participants from Australia, Canada, London, New Zealand, and the United Kingdom.

Figure 9. Buffalo graze on the 777 Ranch by Hermosa, SD during one of the tours at the 2018 Grassfed Exchange.

The 2018 Annual Meeting was a celebration of the South Dakota Grassland Coalition's 20th Anniversary. SDSU President Barry Dunn presented in the morning. President Dunn was involved with the SD Grassland Coalition when he was with South Dakota State University's Extension Service. President Dunn assisted with the first grazing schools and the writing of the newsletter for a time. Former board members and agency personnel were recognized. The afternoon speaker was Jerry Doan. Doan and his wife Renae operate Black Leg Ranch along with their sons Jeremy, Jay, and Jayce Doan. Their daughter Shanda is also involved. The ranch was homesteaded in 1882 by Jerry's great-grandfather in what was then Dakota Territory. They use Holistic Management to operate their ranch regenerating the natural resources and allowing wildlife to flourish. They have made huge strides in improving the soil health of their cropland and native rangeland while improving the bottom line and quality of life for their family. They operate Rolling Plains Adventures, a full service hunting operation and Black Leg Events, an Agri-Tourism operation on the ranch. These ventures have allowed them to spread a positive message about agriculture to thousands of consumers, including people from all 50 states and 40 foreign countries. The ranch is a living classroom for many soil health and grazing tours as well as university students and others wanting to learn from across the globe. One hundred ten people attended the event.

Figure 10. South Dakota State University President Barry Dunn addresses attendees at the South Dakota Grassland Coalition's 20 Year Anniversary.

In January 2019, the South Dakota Grassland Coalition had Roland Kroos and Patrick Toomey, Holistic Management instructors and consultants, present at five locations across the state. Roland Kroos has been helping farmers and ranchers implement holistic management practices for over 40 years. After working with Dr. Allan Savory at Holistic Management International, Kroos ventured out on his own and created Crossroads Ranch Consulting focusing on the Northern Plains. Patrick Toomey is a holistic management consultant with Crossroads Ranch Consulting. After working as a reclamation specialist on the oil and gas fields, Toomey began working with the InterTribal Buffalo Council. Through various networks, Toomey discovered Crossroads and began working with Kroos in July 2018. While Toomey has since left Crossroads to take a position closer to his home, he remains a consultant for the Grazing School Follow Up project.

In September 2019, Dr. Tom Noffsinger presented a livestock handling workshop at four location across the state. Dr. Noffsinger specializes in animal handling and staff development. He grew up on a ranch in eastern Colorado. Dr. Tom's presentation was titled "What low stress

livestock handling can do for the animals on your ranch or farm while improving profit." Some take-aways from the presentations were preparing animals for low stress weaning starts at birth, maintaining a strong immune system in calves during weaning or shipping eliminates cortisol release in calves so the immune system can function normally. This tip was especially useful to show reduced vet bills and safer working conditions for people. At the Watertown location, Lake Area Technical Institute brought 30 students for the school.

Our speaker for the December 2019 Road Show & Annual Meeting was Josh Dukart. Dukart has been practicing Holistic Management since 2008 by identifying and working toward his family's financial, environmental, and social goals. Dukart, along with his wife Tara, speak, teach, consult, and coach upon request throughout the United States and internationally. Their ranch in western North Dakota focuses on using the principles of Holistic Management to regenerate and enhance their land, animals, quality of life, finances, and community. They have made major career changes, important family decisions, and managed resources with the help of the Holistic Context they created together. Joshua is a Certified Educator of Holistic Management. He holds a degree in Agricultural and Biosystems Engineering from North Dakota State University. His career has spanned from engineer and conservationist to educator, rancher, and business owner. *Cattle Business Weekly* presented Joshua with a Top 10 National Industry Leaders Award in 2015, and Joshua was recognized as one of North Dakota's Top 40 Professionals Under Age 40 in 2012.

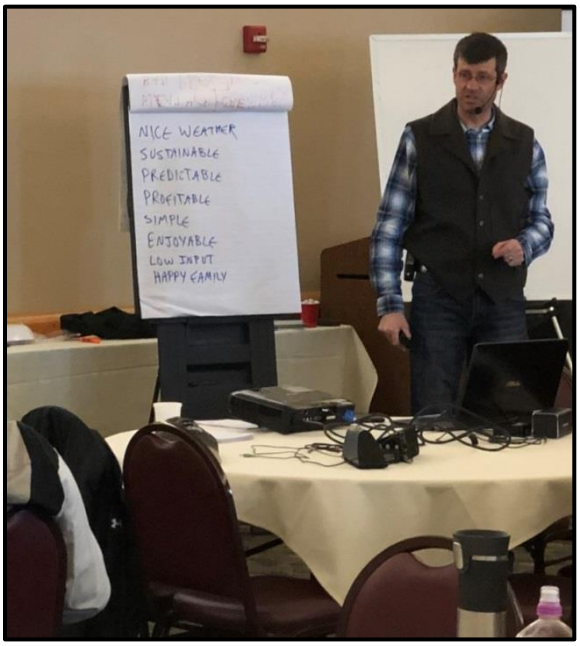

Figure 11. Dukart presents to the attendees at the SD Grassland Coalition's 2019 annual meeting.

The Washington Pavilion in Sioux Falls, SD, hosts an Ag Day event. For information about the pavilion's Ag Day event visit:

http://pavilionagday.org/

The coalition has been attending since 2008. Project staff used the "plant-a-brand" activity from South Dakota Ag in the Classroom (Figures 12 and 13). Participants traced their "brand" on construction paper with glue then sprinkled grass seed on the glue. Instructions for planting the grass and benefits of a healthy grass ecosystem were printed on the back of the card. This event allows agricultural groups to show non-agricultural people how farmers and ranchers can implement practices to enhance water quantity and quality. See Table 6 for attendance figures during Segment 5.

Figure 12. An Ag Day attendee's initials outlined with grass seed.

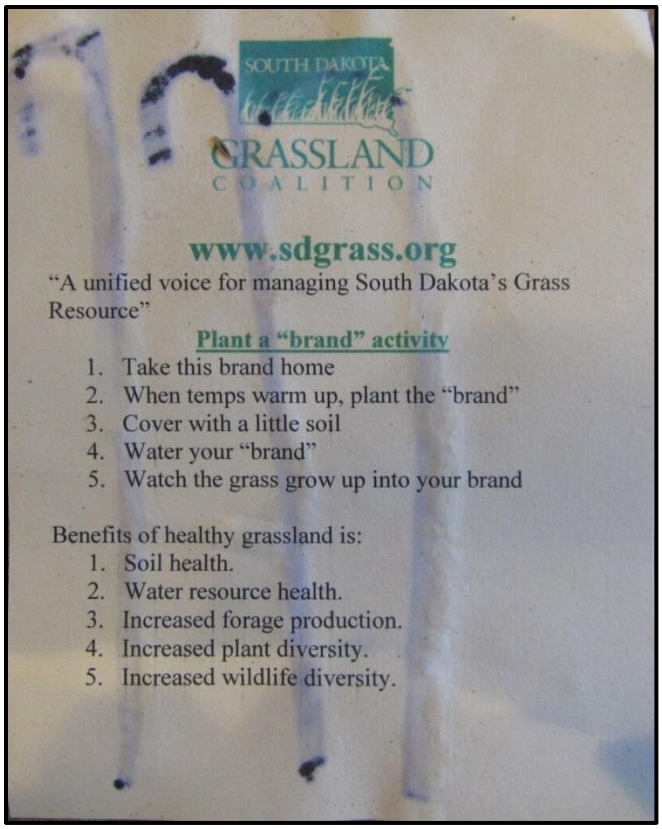

Figure 13. The back side of the Plant-a-Brand card provides information on activity and the benefits of healthy grasslands.

In 2015, Washington Pavilion staff started an Ag Friday event geared toward third graders from Sioux Falls and the surrounding area.

An activity matching toy animals and grass was used at 2018 and 2019 Ag Friday events (Figures 14 and 15.)

Figure 14. Toy animals and grass samples for the Ag Friday event.

Figure 15. Sandy Smart, SDSU Range Professor, interacts with third graders at the Washington Pavilion's Ag Friday.

Table 5. Ag Friday and Ag Day attendance figures.

Year	Ag Friday	Ag Day
2018	479	2,600
2019	440	2,700
Totals	919	5,300

Two bird tours (Figures 16, 17, and 18) were hosted by the SDGLC in partnership with the SD Ornithological Union, SD Game Fish and Parks, US Fish and Wildlife Service, and SDSU on working ranches during the project period.

The 2018 annual “Birds. At Home on the Range” tour was held at the Sieck and Perman Ranches in the northcentral part of South Dakota. Doug and Merilee Sieck run a cow/calf/yearling operation and Lyle and Garnet Perman along with their son and daughter-in-law, Luke and Naomi, run a cow/calf operation. Both Doug Sieck and Lyle Perman are former directors of the SD Grassland Coalition. Fifty-seven people attended the event and observed 48 species of birds.

The 2019 “Birds at Home on the Range” tour was held at the Doug & Holly Hansen Ranch near Mitchell, SD and adjacent to the James River. The Hansens are setting up a grazing system with the assistance of NRCS. Fifty-two bird species were identified and over 70 people attended the tour. The Hansens run a cow/calf operation.

Figure 16. Lyle Perman, red shirt, and Garnet Perman, maroon coat, address the attendees at the "Birds. At Home on the Range" tour held at their ranch in June 2018.

Figure 17. Stan Boltz, Regional Soil Health Specialist at USDA-NRCS, explains the rainfall simulator to the 2018 "Birds. At Home on the Range" tour attendees at the Perman Ranch.

Figure 18. KC Jensen, SDSU Associate Professor Wildlife & Fisheries, explains the bird banding process to the 2019 "Birds. At Home on the Range" tour attendees.

Table 6. Bird Tour attendance by years and total attendance.

Year	Attendees
2018	51
2019	81
Total	132

During 2010, the SDGLC and the South Dakota Cattlemen's Association partnered with the Sand County Foundation to start the Leopold Conservation Award in South Dakota. The Leopold Conservation Award, named in honor of world-renowned conservationist Aldo Leopold, is comprised of a farm/ranch sign, a Leopold crystal, and a $10,000 cash award. The award is

presented annually in 22 states to private landowners who practice responsible land stewardship and management. For more information about the Leopold Conservation Award visit:

http://leopoldconservationaward.org/

Blair Brothers Angus was selected as the 2020 SD Leopold Conservation Award winner. The Blair Ranch was established on the rolling prairie of western South Dakota adjacent to the Black Hills over a century ago by Enos Blair.

A conservation-minded philosophy of being stewards enhancing the resources of land, livestock, wildlife, and people has allowed Blair Brothers Angus to evolve and grow with each generation. Today, the diverse cow-calf, stocker, and feedlot operation spans up to 40,000 acres of deeded and leased rangeland and offers a livelihood for four families representing the third, fourth, and fifth generations.

The family partnership includes brothers Ed and Rich Blair along with their wives Wanda and Jeanie respectively. Additional partners include: Ed and Wanda's son Chad, his wife Mary and their three children, EC, Kate and Clara; and Rich and Jeanie's son Britton, his wife Amanda and their two boys, Jack and Colt. Ed works on the day-to-day ranch activities with Chad, Britton, and their families. Rich lives and works in town as an independent commodity broker. His ranch role includes assisting with marketing, AI mating, and customer relations.

Figure 19. The Blair Family poses for a picture.

South Dakota ranchers receiving the award and links to videos showcasing their operations follows:

Table 7. List of SD Leopold Conservation Award winners and links to videos.

Year	Winner, Location	Link to Leopold Conservation Award Winner's Video
2010	Doud Ranch, Midland	https://youtu.be/jIsXmwClrsw
2011	Mortenson Ranch, Hayes	https://youtu.be/xZJF-PRitnI
2012	Kopriva Ranch, Raymond	https://youtu.be/3toNGoGIR34
2013	Guptill Ranch, Quinn	https://youtu.be/DGsjUdScWZM
2014	Rock Hills Ranch, Lowry	https://youtu.be/LmLc1ZHf65o
2015	Jorgensen Land & Cattle, Ideal	https://youtu.be/W-re0Xc5ONY
2016	Cronin Farms, Gettysburg	https://youtu.be/oGLNvyFiJ6c
2017	Blue Bell Ranch, Clear Lake	https://youtu.be/YItULwuYaI8
2018	Cammack Ranch, Union Center	https://youtu.be/VFb9rm6wLbk
2019	Johnson Farms, Frankfort	https://youtu.be/2w2VcWEsO5o
2020	Blair Brothers Angus, Sturgis	Video will be released December 2020

During May 2015, the SD Cattlemen's Association, SD Association of Conservation Districts, SD No-Till Association, SDSU Extension, Natural Resources Conservation Service, and the SD Grasslands Coalition formed the SD Soil Health Coalition. The coalition's mission is the promotion of soil health.

The Soil Health Coalition website and Facebook page, listed below, promote events and communicate with members.

http://www.sdsoilhealth.org/
https://www.facebook.com/groups/1601091053504662/

The SD Soil Health Coalition and the SD Grassland Coalition collaborate on events. Project staff give a presentation on fencing and water systems during the annual Soil Health School. The Soil Health School utilizes the Grazing School Trailer for the field exercises of the SD Soil Health School. The SD Soil Health School used the SD Grazing School as a template for the Soil Health School and adapted including the Pasture Allocation Exercise to cover crops.

Figure 20. South Dakota Soil Health School students listen to a presentation on grazing cover crops.

The Grazing School curriculum was continued into Segment 5. Agencies and organization involved with developing and hosting the South Dakota Grazing Schools included representatives from several natural resource agencies and organizations. Among these were:

- SD Grasslands Coalition
- SDACD
- SDSU and the SD Cooperative Extension Service
- DENR
- SD Department of Agriculture
- SD GFP
- NRCS
- US Fish & Wildlife Service-South Dakota Partners for Fish & Wildlife.

The mission statement for the schools held during previous project segments was:

> "Give the grazing lands managers of South Dakota the tools to maintain healthy prosperous families, and diverse ecosystems, and profitable livestock operations while contributing to the well-being of communities."

During the 2 ½ day grazing school, students attend classroom presentations such as Adaptive Management and Mineral Needs of Livestock. Outdoor activities include the Pasture Allocation Exercise (Figure 16), Transect Reading and Soil Health and Water Infiltration using the NRCS Rainfall Simulator (Figure 17). A complete list of topics can be found on the grazing school brochure.

https://www.sdgrass.org/grazing-schools/

The 2017–2019 South Dakota Grazing Schools were held in the AmericInn in Chamberlain, SD, with the outdoor portion being held on the Totton Ranch, north of Chamberlain, SD. Totton has a registered Angus herd and was part of a Mob Grazing Study conducted by SDSU Range Professor Sandy Smart. The mission statement of the school, which was developed during a previous segment of this project, is: Provide land managers the means to measure, manage and add profit to all types of grazing land.

Through funding from a USDA-NRCS CCGA grant in 2019, a West River Grazing School was added. The classroom portion of the additional school was held in Wall Community Center, Wall, SD with the outdoor portion was held on Pat Guptill's ranch. Guptill is a board member of the South Dakota Grassland Coalition. Thirty-six people attended the school in Wall.

Figure 21. Grazing School students build their fence for the pasture allocation exercises.

Figure 22. Grazing School students study water infiltration using SD NRCS's rainfall simulator.

Historic and current project segment attendance at the Grazing Schools held is shown in Table 8.

Table 8. Attendance at Grazing Schools.

School Number	Date	Attendance
1	September 2003	36
2	September 2004	28
3	September 2005	23
4	September 2006	18
5	September 2007	20
6	September 2008	22
7	September 2009	31
8 (2 schools)	September 2010	54
9 (2 schools)	September 2011	55
10 (2 schools)	September 2012	46
11	September 2013	25
12	September 2014	34
13	September 2015	33
14 (2 schools)	September 2016	62
15 (2 schools)	September 2017	61
16 (2 schools)	September 2018	61
17 (Wall)	June 2019	36
18 (2 Schools)	September 2019	61
19	August 2020	22
20	September 2020	Planned
Total		727

The South Dakota Grassland Coalition with a contribution agreement with USDA-NRCS has printed a ranch planner since 2013. The project is called the South Dakota Grassland Planner & Grassland Stewardship Communications Project. Starting with the 2018 planner, 12 ranching operations were featured every year. A photographer and videographer visited each operation to obtain quality, high resolution portraits of the manager and appropriate landscape images for the respective topic and month. An article was written on each operation. These articles have appeared in the *Successful Farming* magazine and its digital platforms as well.

The videos were released around the first of every month. The list of videos follows:

Table 9. List of Amazing Grassland Videos

Amazing Grassland Videos		
Year	Month	Link
2018	January	Our Amazing Grasslands: Jorgensen Ranch
	February	Our Amazing Grasslands: Michalski Ranch
	March	Our Amazing Grasslands: Schooley Ranch
	April	Our Amazing Grasslands: Grim Ranch
	May	Our Amazing Grasslands: Schell Ranch,
	June	Our Amazing Grasslands: Hamann/Blue Bell Ranch,
	July	Our Amazing Grasslands: Anderson Ranch
	August	Our Amazing Grasslands: Lockner Ranch
	September	Our Amazing Grasslands: Livermont Ranch
	October	Our Amazing Grasslands: Mimi Hillenbrand, 777 Bison Ranch
	November	Our Amazing Grasslands: Ron & Carol Brownotter, Brownotter Buffalo Ranch
	December	Our Amazing Grasslands: Tracy Rosenberg
2019	January	Jody and JoAnn Brown
	February	Bart and Shannon Carmichael
	March	Dan and Cindi Conner
	April	Stuart and Lisa Schmidt
	May	Sandy and Jacki Limpert
	June	Gary and Amy Cammack
	July	The Ausland Family
	August	The Rittberger Family
	September	Charlie & Tanya Totton
	October	Suelflow Family
	November	Rohrbach Family
	December	Little Family
2020	January	Chuck & Koreen Anderson
	February	Jeannie Franceus
	March	George & Suzanne England
	April	The Dells
	May	Lance Vilhauer
	June	Johnson Family
	July	Hove Family, SD
	August	Fran Fritz, SD

This project gathered content that is available to partners, then, in the public domain for communicating both technical grassland management information as well as the value and importance of healthy grasslands.

Since 2018, 43,500 planners have been printed and distributed to partners, producers, and workshop attendees. In addition, the planners are inserted in two weekly ag publications for distribution. The publications are the *Cattle Business Weekly* and the *Tri-State Livestock News*.

Figure 23. Front cover of the 2020 planner.

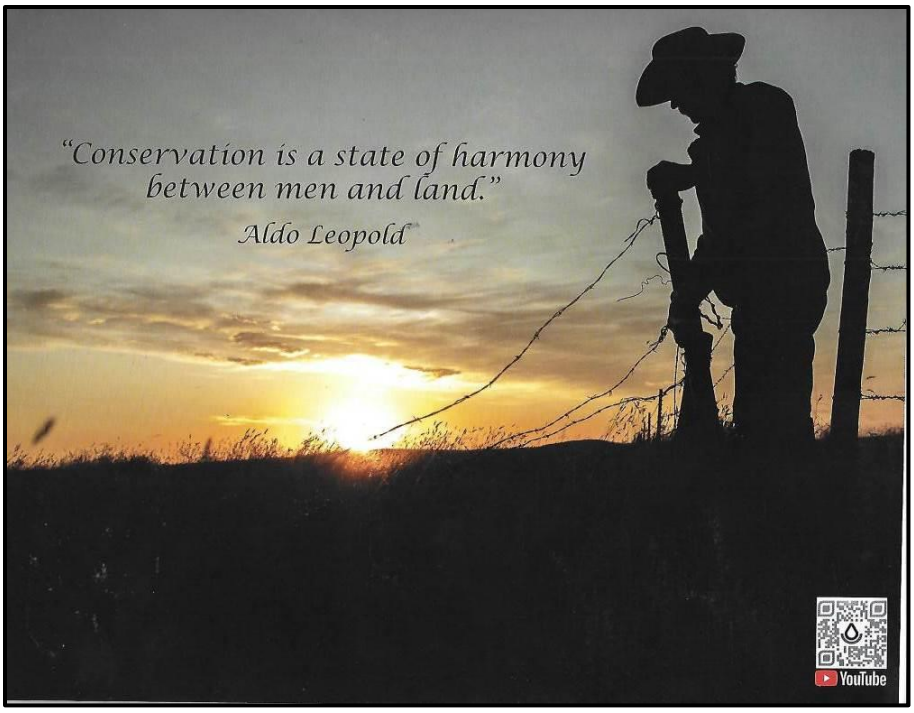

Figure 24. Back cover of the 2020 planner.

Covid-19

The Covid-19 virus changed our consulting, outreach, and tour activities. The following events were cancelled:

Washington Pavilion's Ag Friday & Ag Day
2020 Birds. At Home on the Range Tour
Pasture Walks

The in-person consulting portion of the CCGA was stopped and resumed on June 1 with social distancing requirements in place.

The Wall/West River Grazing School scheduled for June 2020 was postponed to August 25-27 in Wall. One grazing school was planned and held in Chamberlain on September 15-17, 2020.

Objective 3: Monitor project activities and file reports as outlined in the project implementation plan to determine compliance with grant and contractual agreements, memoranda of understandings, reporting requirements, and the SDGLC by-laws.

Task 4: Ensure all activities, reporting requirements, personnel actions, and financial obligations associated with the project are completed, and terms of all agreements complied with as outlined in implementation plans, grant and contractual agreements, memoranda of understandings, any state and federal reporting requirements, and the Coalition's by-laws.

Product 4: Reporting and project management will be completed using a management agreement with the SD Association of Conservation Districts for project management and administration.

Four annual reports were submitted using the format provided by DENR.
This document completes the requirement for the final report for project Segment 5

MONITORING AND EVALUATION

Project monitoring was completed by a team consisting of:

- the project coordinator
- grassland managers/producers
- SDSU, Animal and Range Science Department staff (Outreach Coordinator)
- other advisory team members and other project partners.

The data collected was stored and managed by the project staff under the direction of the project coordinator. The project used participating producer and partners' expertise and equipment for data storage and analysis.

The information collected was used by the SDGLC to complete annual (October) reports of project activities, which was provided to all project partners and prepare the final report.

Mid-year reports were not required as the project was on schedule.

Evaluation of success in reaching the project goal was accomplished by monitoring project activities to measure meeting established milestones and contributions to improving sustainability of grassland operations. Overall, project success was evaluated based on the monitoring data to ascertain the effectiveness of BMPs in protecting/improving water quality.

Monitoring Activities

Project activities were monitored and evaluated relative to project milestones. The information collected included:

- acres of grazing plans developed.
- acres of grassland management plans implemented.
- units of conservation practices installed to develop the grazing systems.
- project accounting (expenditures, receipts, matching funds, and their sources).
- location of operations assisted using GPS and entry into a GIS database.
- load reductions realized from the systems developed.
- evaluation of workshops/schools sponsored to determine if the activity in helping attain the overall project goal.

The data collected is included in the Project Goals, Objectives, and Tasks Section of this report by product.

Evaluation

The data collected through monitoring activities indicate that:

- most project milestones were met.
- the outreach component of the PIP was successful in transferring information about and increasing participation in the project. During 2020, the Covid pandemic forced us to cancel our annual "Birds. At Home on the Range" tour, our planned pasture walks during the summer of 2020. and our June 2020 Wall Grazing School.
- there is support for managed grazing as an effective environmental practice by conservation and nature groups such as the Sand Country Foundation, ornithologists, and the World Wildlife Fund,
- managed grazing practices reduce NPS pollution to surface waterbodies.

See next section for load reduction information.

Even though project milestones were met or exceeded, and attendance at outreach meetings was greater than expected, the rate of installation for managed grazing practices is projected to have been slowed somewhat by drought.

Drought has always been a factor for grassland management in South Dakota. Drought was not a big factor in this segment; in fact, during 2019, excess moisture was of greater concern.

Data collected at riparian demonstration sites in eastern and western South Dakota during previous project segments provided evidence that management practices that entice livestock to drink from sources other than the riparian area are beneficial to water quality.

Results from rainfall simulation show that:

- runoff, sediment yield, and nutrients entering eastern South Dakota streams from pasturelands is likely quite low whereas in western South Dakota, runoff and sediment can be significant during intense rainfall periods leading to gully erosion.
- proper stocking rates leading to good vegetation and litter cover are important to enhance infiltration and reduce runoff.

Data collected at eastern SD demonstration sites during project Segment 2 suggest that:

- livestock grazing of riparian pastures in eastern South Dakota does not impact sediment loading from the surrounding uplands.
- the use of vegetation was fairly even across the pastures monitored as indicated fusing vegetation measurements at different distances from the stream.
- as riparian pasture size was relatively small at the eastern South Dakota locations, livestock distribution tends to be even across the pasture.
- cattle tend to not overgraze near the stream, possibly because vegetation is not as palatable and/or hummocky terrain deters livestock from overusing these areas.
- To minimize stream bank erosion and reduce direct access to streams by livestock, alternative water sources, rock crossings, and fencing could be effective strategies. Fencing out wide buffers alongside the stream may not be necessary.

LOAD REDUCTIONS

Load reductions obtained from the systems grazing installed (Table 10) were determined using the Spreadsheet Tool for Estimating Pollutant Loads (STEPL) developed by EPA Region 5. The load reductions achieved were:

- entered in the DENR project management system (Tracker).
- provided to watershed project coordinators for use in determining total daily maximum load (TMDL) implementation, and
- included in annual reports prepared using the format provided by DENR to facilitate entry into EPA's Grants Reporting and Tracking System (GRTS).

Table 10. NPS load reductions realized from grazing system installed.

NPS Pollutant	**Load Reduction**	
	Project Segment 5	**Cumulative**
Nitrogen (lbs.)	51,574	839,800
Phosphorus (lbs.)	11,007	159,530
Sediment (tons)	7,145	95,866

During project Segment 5 the TMDL watershed assessment and implementation projects provided load reduction data for the 15 drainage areas that follow bring the total drainage areas to 122 for Segments 2, 3, 4 and 5. See Table 11 for Segment 5 reductions by reach.

BEST MANAGEMENT PRACTICES DEVELOPED OR REVISED

While the development and/or revision of best management practices was not included in or added to the project implementation plan, monitoring activities:

- documented the effectiveness of the BMP as a NPS reduction tool for livestock producers.
- provided information regarding the placement of practices to achieve reduction of nutrients, sediment, and fecal coliform bacteria loads to TMDL waterbodies.
- increased the acceptance of managed grazing by not only livestock producers but also teachers and environmental group members such as birders and the wildlife community.
- SDSU mapping project will assist grassland managers in better protecting virgin grasslands and better select grasslands with the best potential for restoration to near virgin state.

COORDINATION AND PUBLIC PARTICIPATION

Coordination Project activities were directed by a project coordinator provided through a management agreement with SDACD. The coordinator was responsible for producer assistance, tour leadership, and assistance at the grazing school**.** The coordinator's activities were completed with supervision provided by SDACD and policy direction from the SDGLC Board of Directors.

In setting policy and program direction, the coalition board used input from partner agencies and organization. As indicated previously in this report, coordination of efforts between the partners was accomplished at resource meetings scheduled by partner agencies for similar purposes.

Coordination efforts to develop and review the accomplishments of cooperative agreements with partner agencies and groups were completed by direct interaction with the partner(s) who were party to the agreements. Among the partners with which the coalition had formal or informal cooperative agreements during the project period were:

- NRCS
- USFWS
- SD GF&P
- SDSU
- SD Discovery Center and Aquarium
- SD Farm Bureau

See Table 12 for a comprehensive list of project partners and their contributions to project success.

Public Participation

Public participation was encouraged using the activities completed to implement the project outreach and information transfer program (Objective 2). The activities included:

- workshops
- grazing schools
- news releases
- tours
- field days

Refer to Table 3 for summaries of the activities listed above.

Table 11. Project Partners' contributions

Agency/Organization	Contribution
Nongovernmental	
Audubon Dakota	Planner and Consultant Sponsor
Ducks Unlimited	Planner, Consultant, and Workshop Sponsor
SD Association of Conservation Districts	Provided interim coordinator through contractual services; technical assistance for administration and BMP planning through the 319 funded Watershed Planning and Assistance Project.
SD Cattlemen's Association	Leopold Conservation Award Support
SD Discovery Center and Aquarium	I & E mini grant for the Leopold Award
SD Farm Bureau	Grazing School for BeefSD program participants
The Nature Conservancy	Planner & Staff Sponsor
World Wildlife Fund	Planner and Workshop Sponsor
Governmental	
Local	
Conservation Districts	BMP planning and installation.
State	
SD Department of Agriculture	Financial assistance for BMP installation and technical assistance to conservation districts.
SD DENR	Technical assistance and training with water quality sampling and data interpretation, project management and BMP installation through the 319 Program. Financial assistance for water quality sampling using fee funds; Consolidated Water Facilities Construction Fund grant for AWMs.
SD Game Fish & Parks-Wildlife Division	Planner & Staff sponsor
SDSU and SDSU Cooperative Extension Service	Project management and coordination; demonstration site establishment and monitoring and outreach activities.
Federal	
US EPA	Financial through Clean Water Act Section 319
USDA FSA	Financial assistance for BMP installation through the CRP Program.
USDA NRCS	Financial and technical assistance for BMP installation through the EQIP Program.
USDI FWS	Technical assistance for implementation of grassland seeding, grazing systems, multiple purpose ponds, and riparian fencing Partners for Fish and Wildlife Program. Planner Sponsor

RECOMMENDATIONS

Aspects of the Project that Did Not Work Well

Once a grassland manager requested assistance, a consultant was assigned to that manager. The project allowed for 40 hours of consultation per manager. After initial visits to the grazing school follow up participants, more questions from the operators came up. This additional questions and concerns are welcome and encouraged; however, this caused the consultants to use more than their allotted time with the producers.

Recommendations

During Segment 5, the range consultant position was outsourced to private consultants, SDSU Range personnel and South Dakota Grassland Coalition Education Specialist. The Education Specialist position was funded through a Collaborative Conservation Grant Agreement (CCGA) with South Dakota NRCS.

As demonstrated by the increasing number of participants in outreach activities and demand for the technical assistance to provide grazing management assistance listed below, it is recommended these activities be continued.

- Grazing school attendees recommended continuing the school and indicated they would encourage others to attend. In addition, grazing school attendance is included as part of the BeefSD curriculum.
- The project conducted more than three times as many workshops and tours/field days than planned with a commensurate increase in attendance.
- The successes experienced by the project, its leadership, and managed grazers have resulted in regional and national opportunities to reach a large urban and policy maker audience, thereby garnering support for conservation programs.
- Unsolicited producer requests for assistance and attendance at outreach events often exceeds expectations and stretches both project and partner staff capacities to provide requested services.

Based on the positive environmental and economic benefits realized from the activities completed during this and previous project segments, the continuation of support for the development and installation of managed grazing systems in South Dakota is recommended.

PROJECT BUDGET AND EXPENDITURES

The project budget was amended during the project period to fund follow-up activities necessary to evaluate use of systems and assist producers with overcoming management skill and system design challenges encountered.

The budget as amended with a comparison to actual expenditures appears in Table 13.

Table 12. Project budget expenditures comparison.

Item	BUDGET			EXPENDED		
	319	Other Funds	Budget Total	319	Other Funds	Expended Total
SALARY						
Project Coordinator	$141,000.00	$59,000.00	$200,000.00	$128,512.62	$110,144.67	$238,657.29
Project Work Group		$141,300.00	$141,300.00			-
Range Consultant/	$40,000.00	$20,000.00	$60,000.00	$38,417.20	$20,000.00	$58,417.20
SD State University	$28,000.00	$4,000.00	$32,000.00	$22,268.42	-	$22,268.42
Administration	$8,600.00		$8,600.00	$10,449.09	-	$10,449.09
TOTAL	$217,000.00	$224,300.00	$441,900.00	$199,647.33	$130,144.67	$329,792.00
NON SALARY						
Computer	$2,550.00		$2,550.00	$1,123.61		$1,123.61
Cultural Resources		$2,000	$2,000.00	-		-
General Liability	$1,000.00		$1,000.00	-		-
Phone	$1,550.00		$1,550.00	$1,900.00		$1,900.00
Postage	$600.00		$600.00	$2,490.78		$2,490.78
Supplies	$3,500.00		$3,500.00	$1,596.90		$1,596.90
Travel	$32,700.00		$32,700.00	$25,000.93		$25,000.93
TOTAL	$41,900.00	$2,000.00	$43,900.00	$32,112.22		$32,112.22
BMPs						
Objective 1	$0.00	$162,150.00	$162,150.00	-	$22,365.74	$22,365.74
Objective 2	$4,500.00	$136,650.00	$141,150.00	$5,095.00	$28,174.68	$33,269.68
Objective 3	$5,000.00	$2,200.00	$7,200.00	$3,135.00	$26,382.99	$29,517.99
TOTAL	$9,500.00	$301,000.00	$310,500.00	$8,230.00	$76,923.41	$85,153.41
MATCH						
Grassland Coalition		$31,000.00	$31,000.00		-	-
Landowner Cash/In-Kind		$107,200.00	$107,200.00		$76,923.41	$76,923.41
State(CWSRF)		$50,000.00	$50,000.00		$50,000.00	$50,000.00
Other State		$21,200.00	$21,200.00		-	-
Private Organizations		$29,000.00	$29,000.00		$80,144.67	80,144.67
TOTAL		$238,400.00	$238,400.00		$207,068.08	$207,068.08
Matching total						
Percent Match						46%

CONCLUSIONS

As stated previously in the evaluation component of this report, the data collected through monitoring activities indicate:

- project milestones were met or exceeded. (See Table 14 below for comparison summary.)
- the outreach component of the PIP was successful in transferring information about and increasing participation in the project
- there is support for managed grazing as an effective environmental and sustainable agriculture practice by producer, conservation, and nature groups.

Table 13. Comparison of planned vs. accomplished milestones.

Milestone	Planned		Accomplished	
	Segment 5	Cumulative	Segment 5	Cumulative
Grazing plans developed (acres)	50,000	942,000	57,405	1,031,405
Grazing plans implemented (acres)	50,000	854,000	57,405	965,767
Fence (feet, cross & exclusion)	50,000	905,000	76,645	1,037,152
Pipeline (linear feet)	40,000	875,000	67,557	966,822
Wells(number)	1	34	1	13
Tanks (number)	20	295	30	381
Rural Water Hook-ups	2	5	0	5
Dugouts/dams (number)	0	48	0	9
Grass seeding (acres)	50	3,450	374	2,325
Website-Visitors/Years	60,000 /2		570,000	18
Farmer/Rancher Workshops/Attendees	12/360	47/1,950	38/1,963	118/6,644
Grazing Schools/ Students	5/140	17/425	8/241	10/1,814
Videos (32), Commercials/ Contacts	6 /830,000		44/ 102,000	
Dakota Fam Talk (Radio) Segments/Audience	36 Segments/ 300,000		37 Segments/ 300,000	
Feature Articles & News Releases Print & Electronic/Contacts	10/ 250,000	193 / 2,126,800	62/ 96,762	238 /7,883,034
Presentations to schools/Civic Groups/ Attendees	11 Meetings/ 250		38 Meetings/ 1,963	
Social Media Releases	271,000/ 54 Posts		201,000/ 350 Posts	
Leopold Conservation Award Tours/Attendees	3/300	6/400	3/380	10/1,814
Grassland Birding Tours/Attendees	2/100	10/500	2/138	13/811
Other Tours During Segment 5/Attendees			18/917	
Reports	3	26	3	26
Administration	1	5	1	5

APPENDIX

Through the process of completing the Grasslands Segment 5 final report. DENR Watershed Protection Program staff reviewed the final report and reported the following questions:

1. The project had good outreach and I & E efforts. Do you know what percentage of participants changed their management approaches and implemented the practices from the outreach efforts?
2. On page 34, it is stated that the project worked with the Soil Health group. Did the project work with other 319 projects?
3. On page 11, did the project focus outside of current 319 projects to implement in other areas of the state that did not have active projects?

Below are the responses DENR Watershed Protection Program received from the Grasslands Coalition project coordinator Judge Jessop.

Response to Question 1.
From our more focused workshops (such as the Dr. Noffsinger Livestock Handling Workshop, etc.), the figure would be 50-100%. The people that attend these workshops are doing some BMPs but are looking for the next "thing" for their operation.

For the annual meeting/Winter Road show with Josh Dukart, the figure would be 25-50%. Some that attend these types of meetings are beginners and there are seasoned veterans. The beginners attend to formulate ideas and the veterans attend to affirm what they have been doing or maybe take another look at what they have been doing. As a side note, we have advanced HRM course with Josh Dukart in Faith February 3-5, 2021. Most attendees to the advanced HRM course will have already started the cultural change process in their business before attending. This advanced school gives them the tools to move forward with sound decision making practices.

Where we got the biggest bang was young producers and NOLOs (non-operating landowners) that probably were not working with a family member. These young producers did not have to argue/convince the older generation to try a new practice.

Grazing School Follow up. During the grant period we had 241 grazing school graduates, we have 70 people in the grazing school follow-up program

Response to Question 2.
We have worked with the Belle Fourche project in the past, and the Lower James.

Response to Question 3.
We went to areas that requested our I & E and /or grazing school follow-up.