

**PROJECT SUMMARY SHEET****PROJECT TITLE NAME:** Vermillion River Basin Watershed Project - Segment II**NAME AND ADDRESS OF LEAD PROJECT SPONSOR:**

McCook County Conservation District  
 340 North Nebraska St., P.O. Box 121  
 Salem, SD 57058  
 PHONE: 605-425-2908

**STATE CONTACT PERSON:** Jeremy Schelhaas **TITLE:** Natural Resource Project Engineer**PHONE:** 605-362-3548**FAX:** 605-362-2768**STATE:** South Dakota**WATERSHED:** Vermillion River Basin**HYRDOLOGIC UNIT CODE (HUC):** 10170202 & 10170203**PROJECT TYPES:** [ ] BASE [X] WATERSHED [ ] GROUNDWATER [ ] I&E**PROJECT TYPES**

[ ] STAFFING &amp; SUPPORT

[X] WATERSHED

[ ] GROUNDWATER

[X] I&amp;E

**WATERBODY TYPES**

[ ] GROUNDWATER

[X] LAKES/RESERVOIRS

[X] RIVERS

[X] STREAMS

[ ] WETLANDS

**NPS CATEGORY**

[X] AGRICULTURE

[X] URBAN RUNOFF

[ ] SILVICULTURE

[ ] CONSTRUCTION

[ ] RESOURCE

[ ] OTHER

**EXTRACTION**

[ ] STORAGE/ LAND DISPOSAL

[ ] HYDROLOGIC MODIFICATION

[ ] OTHER

**SUMMARY OF MAJOR GOALS:** The goal of the Vermillion River Basin Watershed Implementation Project is: "Restore the beneficial uses of the Vermillion River through the implementation of Best Management Practices (BMPs) in the watershed that target sources of fecal coliform bacteria and suspended solids of the river". This project segment will continue installation of best management practices identified to implement the TMDLs developed to achieve full support status of all beneficial uses assigned to the river.

**PROJECT DESCRIPTION:** This project is the second segment of the locally planned Vermillion River Basin Watershed Project and is a multi-year effort to implement best management practices (BMPs) in the watershed that will restore the Vermillion River's water quality to meet designated uses. This project's proposed BMPs are based on impairment information identified during the Vermillion River Watershed Assessment. This project implements a Fecal Coliform TMDL and Total Suspended Solids TMDL in the Vermillion River watershed and continues the implementation of these TMDLs determined by the Vermillion River Watershed Assessment. The final report and establishment of TMDL was scheduled for completion during 2010.

FY-2011 SD 319 FUNDS: \$365,000

OTHER FEDERAL FUNDS: \$355,325

319 FUNDED FTE'S: .75

CONSOLIDATED FUNDS: \$65,000

LOCAL: \$199,506

**TOTAL PROJECT COST: \$984,831**

## **2.0 STATEMENT OF NEED**

### **2.1**

The Vermillion River Basin Watershed Project is a multi-year project designed to restore and protect the water quality of the Vermillion River, and the lakes and streams in the Vermillion River Basin Watershed. This two year project segment (segment 2) will continue the installation of best management practices (BMPs) to address the TMDLs to be established for the water bodies in the watershed.

The BMPs planned are based on the Watershed Assessment Information available and input from stakeholders and will reduce sediment (TSS), fecal coli form bacteria, and nutrient loading and thereby:

- protect and support the designated beneficial uses,
- address water quality impairments identified in the Vermillion River Basin Watershed Assessment,
- implement/support TMDLs established using the data collected during the Vermillion River Basin Watershed Assessment.
- The Long Term Project Implementation Plan (PIP) is scheduled for completion during Segment II, the current project being implemented continues through June 30, 2011. This long term PIP will be based on the Watershed Assessment Report scheduled for publishing in 2010, and additional stakeholder and watershed resident input.

The beneficial uses for segments of the Vermillion River, creeks, lakes and reservoirs in the watershed and Project Area are listed in Table 1. A map showing the location of the uses is shown in Figure 1.

The water bodies listed as having one or more beneficial uses impaired and the source of impairments are listed in Table 2 and shown in Figure 2 (*2008 South Dakota Integrated Report For Surface Water Quality Assessment*):

### **2.2 Vermillion River Basin Watershed:**

The Vermillion River is a tributary of the Missouri River. The basin has a surface area of approximately 1.43 million acres (2,652 square miles) covering portions of fourteen eastern South Dakota counties (Figure 2). The basin is about 150 miles north to south, and varies in width from 12 miles in the north to 36 miles in the south. Much of the lower 22 miles of the river is channelized.

### **2.3 The Watershed (See Figures 1-3)**

### **2.4 Vermillion River Basin Watershed Description.**

An estimated 96 percent of the total surface area is devoted to agriculture (Figure 3). Cropland accounts for 67 percent of the land use. The primary crops are corn, soybeans, alfalfa, and small grain. The basin has 330,000 acres of grasslands (= 23 percent) which are used primarily for livestock grazing. Grasslands are mostly concentrated in riparian areas and on the steeper sloping lands adjacent to the Vermillion River and its tributaries. Wetlands in the watershed comprise 2 to 3 percent of the project area and include small potholes, many of which have been drained, and other larger semi-permanent wetlands in addition to Swan Lake and Silver Lake.

The Vermillion River Basin Watershed Project (Segment 2) will include the entire Vermillion River

**Table 1: Beneficial Uses of TMDL Water Bodies: (Stream Segments and Lakes).**

<b>Water Bodies</b>	<b>From</b>	<b>To</b>	<b>Beneficial Uses</b>
<b>Vermillion River/Streams</b>			
Vermillion River	Missouri River	Baptist Creek	5, 8, 9, 10
Vermillion River	Baptist Creek	Turkey Ridge Creek	5,8,9,10
Vermillion River	Turkey Ridge Creek	Headwaters	5,8,9,10
West Fork Vermillion River	West Vermillion River Headwaters	Near Parker, SD.	6, 8, 9, 10
East Fork Vermillion River	Mouth with West Fork	Little Vermillion River Mouth	6,8,9,10
East Fork Vermillion River	Little Vermillion Mouth	McCook County Line	6,8,9,10
Little Vermillion River	Headwaters	Near Salem, McCook County	9,10
Camp Creek	Section 56, T99N, R52W	Vermillion River	6,8,9,10
Long Creek	Highway 44, Lincoln Co.	Vermillion River	6,8,9,10
<b>Lakes: Vermillion Watershed</b>			
East Vermillion Lake	McCook Co.		4, 7, 8, 9
Lake Henry	Kingsbury Co.		6, 7, 8, 9
Marindahl Lake	Yankton Co.		4, 7, 8, 9
Silver Lake Creek	Hutchinson Co.		6, 7,8,9
Swan Lake	Turner Co.		5,7,8,9
Lake Thompson	Kingsbury Co.		4, 7, 8, 9
Whitewood Lake	Kingsbury Co.		6, 7, 8, 9
North Island Lake	Minnehaha Co.		5,7,8,9

Watershed and the area is shown in Figure 2.

Numerical Key to Beneficial Uses listed in Table 1 and Table 2:

- (1) Domestic water supply waters;
- (2) Coldwater permanent fish life propagation waters;
- (3) Coldwater marginal fish life propagation waters;
- (4) Warm water permanent fish life propagation waters;
- (5) Warm water semi-permanent fish life propagation waters;
- (6) Warm water marginal fish life propagation waters;
- (7) Immersion recreation waters;
- (8) Limited contact recreation waters;
- (9) Fish and wildlife propagation, recreation, and stock watering waters;
- (10) Irrigation waters; and
- (11) Commerce and industry waters.

**Table 2: Vermillion River Basin Water Bodies Listed as Impaired and the Source of Impairment**

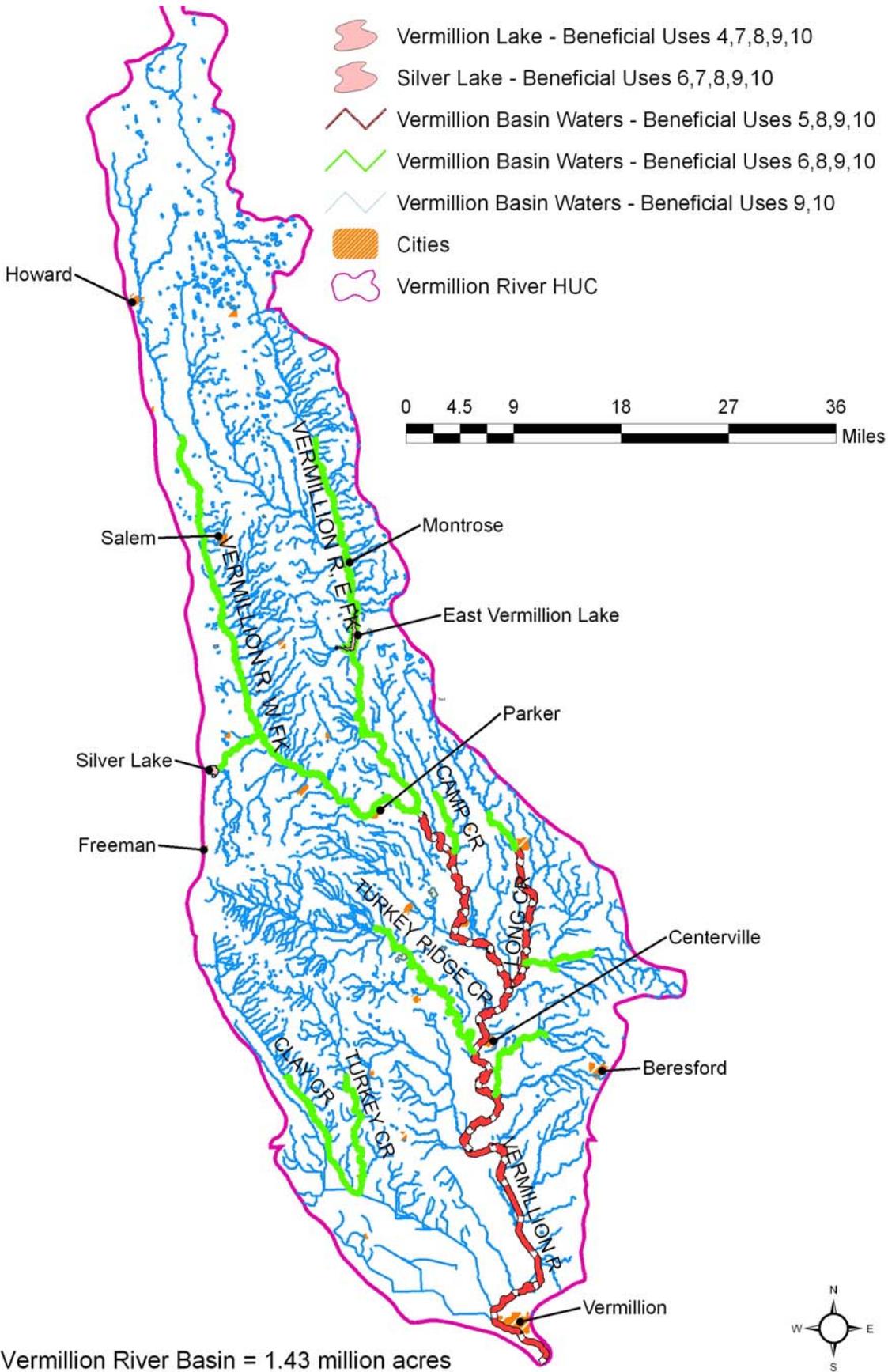
<b>Water Body</b>	<b>Beneficial Use Impaired</b>	<b>Listed Cause of Impairment</b>
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<b>Vermillion River/Streams</b>		
Vermillion River (mouth to Baptist Creek) (SD-VM-R-VERMILLION_03)		Total Suspended Solids (TSS)
Long Creek (SD-VM-R_LONG_01)	Limited Contact Recreation	Animal Feeding Operations
East Vermillion Lake (SD-VM-L-E_VERMILLION_01)	(4) Warm water permanent fish life propagation waters.	Trophic State Index (TSI)
Silver Lake (SD-VM-L-SILVER_01)	(6) Warm water marginal fish life propagation waters	Trophic State Index
Swan Lake (SD-VM-L-SWAN_01)	(5) Warm water semi permanent fish life propagation waters	Trophic State Index
Whitewood Lake (SD-VM-L-WHITEWOOD_01)	(5) Warm marginal fish life propagation waters	Trophic State Index
North Island Lake (SD-VM-L-ISLAND_N_01)	(5) Warm water semi permanent fish life propagation waters	Mercury in fish tissue.

The Vermillion River Basin watershed is in the Northern Glaciated Plains (46) ecoregion (Level III). The landscape is characterized by an upland plain that is moderately dissected by streams and entrenched drainages. Elevations range from about 1,600 feet mean sea level (MSL) in the northern parts of the watershed, to about 1,150 feet (MSL) in the southern. Major soil associations found in the western portions of the watershed include the well drained to somewhat poorly drained, nearly level to undulating, loamy soils in convex areas, swales, and shallow drainage ways on uplands. The soils include Clarno, Hand, Ethan, Bonilla, Prosper, Crossplain, Stickney, and Tetonka. Major soil associations found in the eastern portions of the watershed include the well drained to somewhat poorly drained, nearly level to undulating, silty soils in convex areas, swales, and shallow drainage ways on uplands. These soils include Egan, Wentworth, Chancellor, Trent, the loamy Ethan, Shindler, Wakonda, Tetonka, and Worthing. In the extreme southern portion of the watershed, the major soil associations include well drained, moderately well drained, somewhat poorly drained, poorly drained, level and nearly level loamy, silty and clayey soils on flood plains. These soils include Luton, Blenco, Haynie, Onawa, Grable, Owego, Lossing, Forney, Albaton, Salix, Napa, and Blyburg.

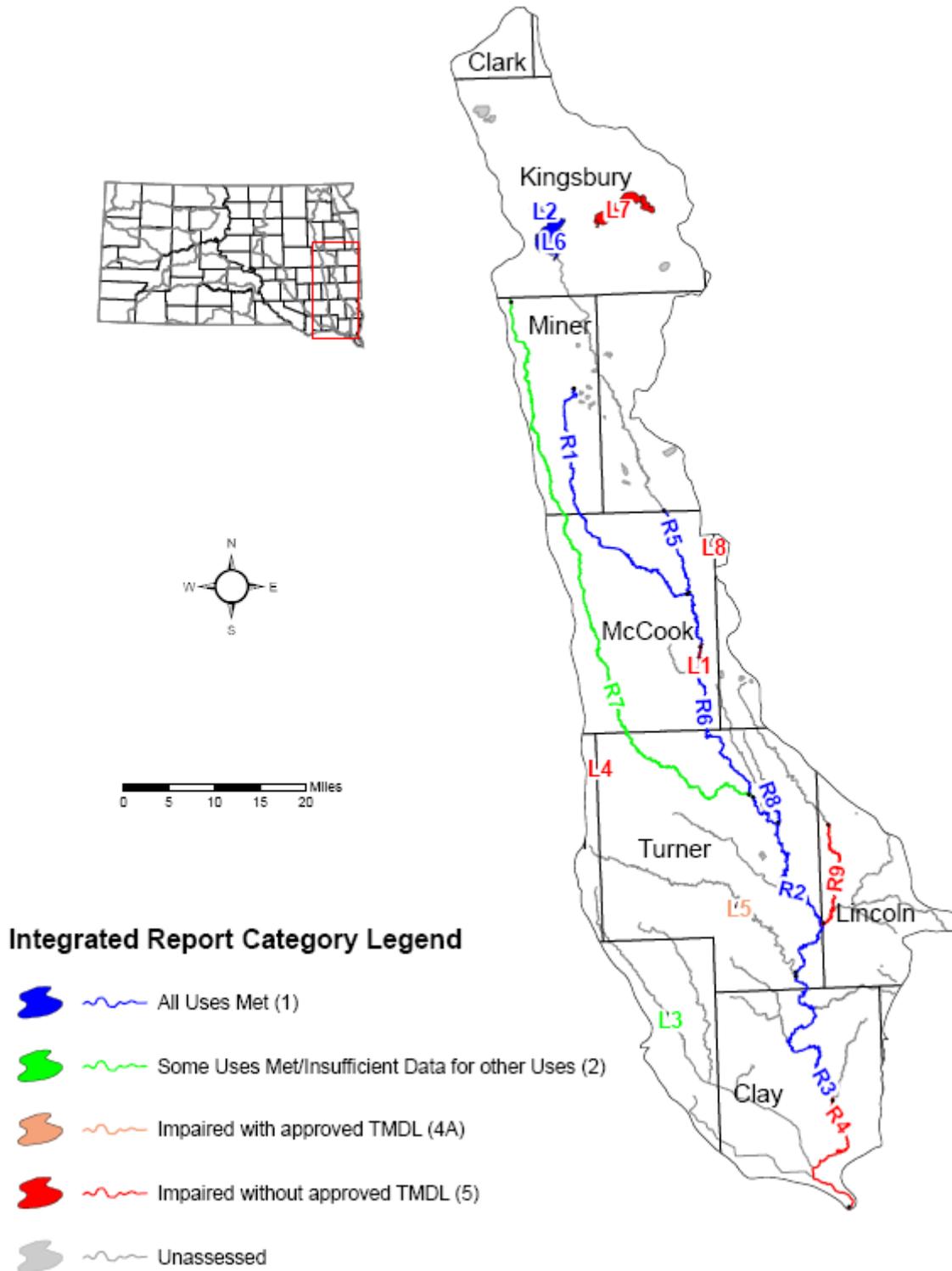
The average annual precipitation in the Vermillion River Basin ranges from 22 to 26 inches. Approximately 74 percent of the precipitation is received in the form of rain during the months of April through September. Summer temperatures average about 69.8 degrees F and winter temperatures about 22 degrees F. Tornadoes and severe thunderstorms strike occasionally. These storms are local and of short duration, and occasionally produce heavy rainfall events. The average annual snowfall is 30 inches (USDA, 1977). During the course of the watershed assessment, the Vermillion River had a constant flow, including the 2002-2003 drought, even though the majority of the discharge to the river occurs during the spring snow melt and after heavy rainfall events.

**Figure 1: Vermillion River Basin Beneficial Use Map**

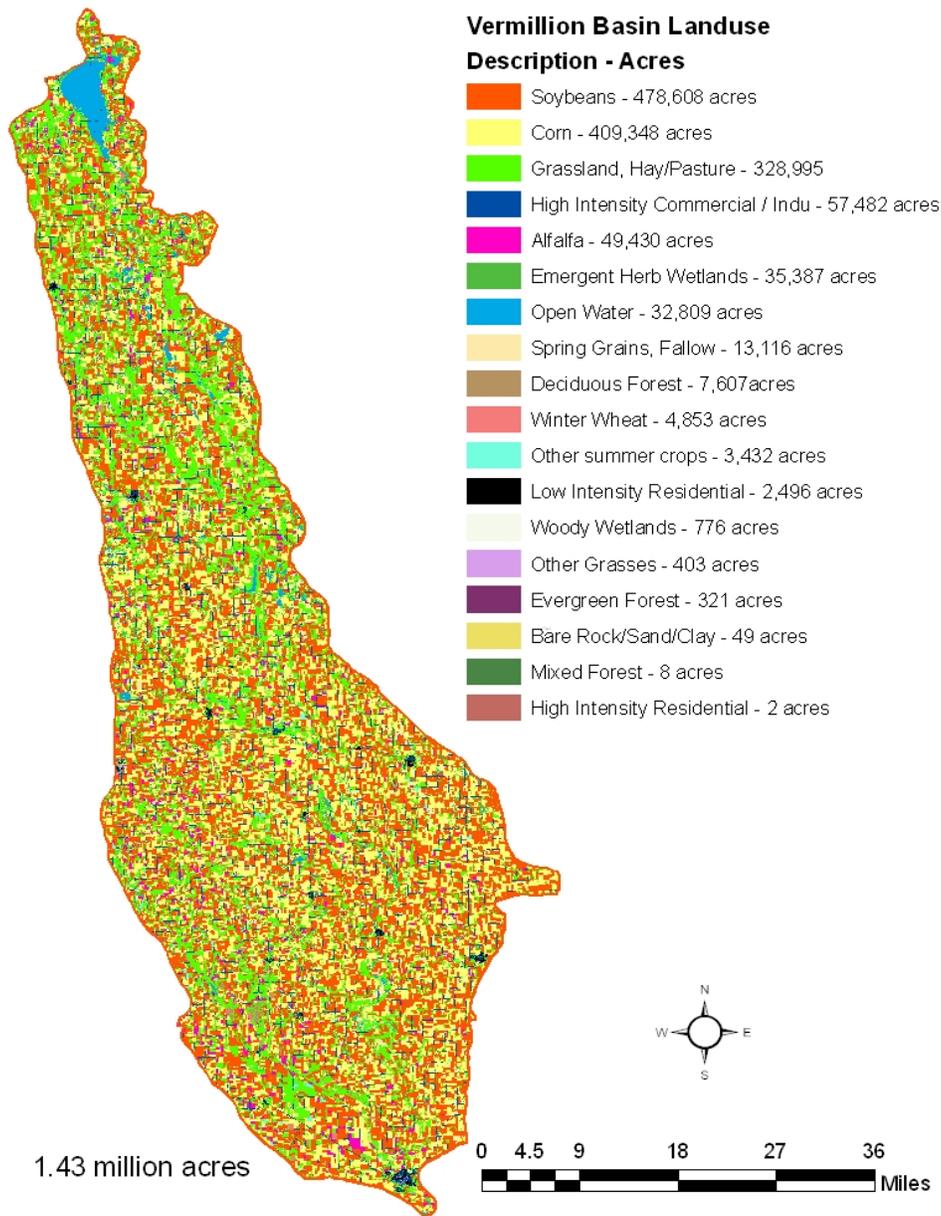


**Figure 2: Vermillion River Basin Watershed Map showing County Boundaries and Water Body Impairment Status (2006 South Dakota Integrated Report for Surface Water Quality Assessment).**

## Vermillion River Basin



**Figure 3: Land Use in the Vermillion River Basin.**



## 2.5 Water Quality Impairments

The Vermillion River Basin Watershed assessment project was initiated at the request of local organizations, and citizens concerned about water quality problems in the Vermillion River. The main water quality concerns were related to pathogens (coliform bacteria), turbidity and nutrients. The watershed assessment was completed during 2007. The final report from the assessment is scheduled for completion during 2010.

The assessment included the following activities:

- in-lake, tributary, and outlet water quality sampling during 2005,
- watershed modeling using the Annualize Agricultural Non-point Source model (AnnAGNPS),
- review of previous water quality data collected about the lake and watershed,
- biological monitoring,
- aquatic Macrophyte survey,
- sediment survey, and
- quality assurance

While the sources of impairment for the water bodies, as determined by the assessment, will be more fully identified in the final report scheduled for completion during 2010, preliminary information was reviewed by the project partners and stakeholders at the project Advisory Committee meeting on August 18, 2009. The information reviewed included the following:

- Fecal coliform bacteria exceed the limits for limited contact recreation in the lower reaches of the Vermillion River. The high coliform level is projected to be associated with land application of manure, livestock feeding areas, and/or cattle pastured in riparian areas.
- Water quality data indicates that high total suspended solids (TSS) concentrations are present in the lower reaches of the river during high flow storm events. The source of high TSS is thought to be associated with livestock grazing in the riparian zone, stream bank erosion, and soil erosion from uplands.
- Data collected from reservoirs in the watershed continues to be evaluated for Trophic State Indexes, and to identify sources of any impairment.

During the assessment, 2,000 plus animal feeding areas were identified in the project area. Each will be evaluated and assigned a priority ranking, using the AGNPS Feedlot Rating Module. The animal feeding areas assigned a rating above 50 will subject to further evaluation. The higher rated ones will be targeted for installation of an animal waste management system to reduce fecal coliform impacts to the Vermillion River.

This project (Vermillion Basin Watershed Project Segment 2) will continue installation of BMPs, complete an information program, and based on the established TMDL implementation strategy develop a segment 3 PIP. The priorities of this segment (segment 2) include site assessments for livestock feeding areas, installation of agricultural waste management systems to include nutrient management plans, and initiation of a Riparian Area Management program for critical riparian areas. Completion of this project will support attainment of the beneficial uses in the watershed.

### **3.0 PROJECT DESCRIPTION**

**3.1 Project Goal:** The project goal is: “Restore the beneficial uses of the Vermillion River through the implementation of Best Management Practices (BMPs) in the watershed that target sources of fecal coliform bacteria and suspended solids of the river”. This project segment will continue installation of best management practices identified to implement the TMDLs developed to achieve full support status of all beneficial uses assigned to the river.

To attain the goal, the following actions will be taken during this project segment:

- install BMPs in high priority sites identified during the watershed assessment,

- complete a public education and outreach campaign and inform landowners, stakeholders, and residents of the Vermillion River Basin Watershed of the water quality issues and BMPs necessary to address the issues.

This two year project segment is the second of a locally planned multi-year effort to implement BMPs in the watershed that will restore the Vermillion River’s water quality to meet designated beneficial uses.

An estimate of BMPs needed to restore water bodies in the basin to meet their beneficial uses and the quantity of BMPs targeted by Segment 2 is shown in Table 3. It is anticipated that the suite of BMPs selected will require updating in subsequent project applications (segments) to reflect the recommendations contained in the completed watershed assessment report and TMDL reports and the project’s experience with producer acceptance of the practices.

**Table 3: Estimated Best Management Practice Implementation by Acres and Project Segment.**

Best Management Practice (BMP)	Total Long Term Estimated Need	Segment I, (3yr.)	Progress, Segment I, as of 9/28/10	Segment II (2 yr.)
<b>Cropland Management:</b>	50,000 ac.	2,500 ac.	1558 ac.	250 ac.
<b>Grassland Management:</b>				
-Riparian Area Management:	5000 ac.	500 ac.	0 ac	250 ac.
-Upland Rotational Grazing Systems	13,500 ac.	1,500 ac.	1640 ac	1,000 ac.
<b>Animal Nutrient Management Systems:</b>				
Feasibility Studies/Designs	100	3	7	3
Construction	75	6	2	2
Nutrient Management Plans	75	3	3	2

### 3.2 Objectives and Tasks:

**Objective 1:** Install best management practices in critical areas to reduce sediment, nutrient, and fecal coliform bacteria loading to the Vermillion River.

**Task 1:** Provide assistance to landowners for installation of BMPs on 1,250 acres of grassland to reduce sediment, fecal coliform bacteria, and nutrient loading from critical areas identified during the watershed assessment. BMPs planned on grasslands will reduce soil erosion and transport of sediment and nutrients through improved vegetative cover, provide a buffer against water pollution adjacent to water bodies, and protect stream banks from erosion.

BMPs planned will include initiation of a Riparian Area Management (RAM) Program on 250 acres through livestock exclusion utilizing land use agreements along with assistance for alternative water development and fencing.

#### **Product 1: Grassland Management - Riparian Area Management (RAM) Program (250 ac.)**

Two-hundred and fifty (250) acres of grazing management systems will be implemented on riparian areas to reduce nutrient and sediment transport to water bodies. This Vermillion River Riparian Area Management (VRRAM) program will assist landowners with exclusion of livestock from the riparian areas through planning and installation of grazing systems that utilize 15 year, 30 year, and permanent

land use agreements and/or easements (See the Attached VRRAM Practice Manuel). The livestock exclusion/lease agreements will be funded through the USDA Continuous CRP program, the Vermillion River Basin Water Development District, this Section 319, Clean Water Act project, and Landowner in-kind contributions. To complete this product, assistance will be requested for planning and implementation from the Grasslands Planning and Implementation Project (319), and the Natural Resources Conservation Service.

Applications from producers will be recommended by the Project Advisory Board using a ranking sheet that allocates priority towards the critical riparian areas identified from data collecting during the watershed assessment (See the attached VRRAM Practice Manuel). The Implementation of planned grazing systems on riparian grasslands will require the installation of practices that support the landowner's change in management, to include: livestock water development (pipelines, wells, tanks, ponds, rural water hook-ups, etc.), and fencing. Funding for these supporting practices will be through existing local, state, and federal programs and they are listed under Product 2: Grassland Management – Rotational Grazing. Fifteen year land use agreements will be monitored by the partnering conservation districts and 30 year and permanent easements monitoring will be done by a consultant. Practices planned for this Product include:

<b>BMP</b>	<b>Cost/Unit</b>	<b>Quantity</b>	<b>Total Cost</b>
15 year Land Use Agreements:			
CCRP	\$100/ac/yr	100 ac.	\$150,000
RAM w/ CCRP	\$66/ac.	100 ac.	\$ 99,000
RAM w/o CCRP	\$100/ac.	20 ac.	\$ 30,000
Monitoring(2year Seg.)	\$50/year ea.	5 agreements	\$ 250
Easements	\$1,000/ac.	30 ac.	\$ 30,000
Easement Monitoring	\$4000	1 agreement	\$ 4,000

Milestone: (See Milestone Table)  
250 acres Grassland Management – Riparian Area

Product 1: Total Cost: \$313,250 319 Cost: \$ 137,800

Product 2: Grassland Management – Rotation Grazing Systems (1000ac.)

One-thousand acres of rotational grazing systems will be implemented on grasslands to reduce nutrient and sediment transport to water bodies. The implementation of grassland management systems requires the installation of practices that support the landowners grazing management plans. The practices to be installed by landowners will include: rotational grazing systems, water developments (pipelines, tanks, ponds, rural water hook-up, etc.), fencing, livestock exclusion, and stream bank stabilization. Technical assistance for grassland planning and implementation will be requested from the Grasslands Planning and Implementation Project (319), and the Natural Resources Conservation Service. Financial assistance will be requested by landowners from existing local, state, federal and private programs such as: USDA Continuous CRP (CCRP), USDA Environmental Quality Incentives Program (EQIP), and the SD Game, Fish, and Parks. Practices planned for this Product (2) include:

<b>BMP</b>	<b>Cost/Unit</b>	<b>Quantity</b>	<b>Total Cost</b>
Rotational Grazing Systems	\$ 0.00	1000 ac.	\$ 0.00

Rural Water Hook-up	\$ 2,000 each	1 each	\$ 2,000
Pipeline (above ground)	\$ 2.50/LF	4000LF	\$10,000
Tanks:	\$ 1,000 each	2 each	\$ 2,000
Fencing:	\$ 1.00/LF	5000LF	\$ 5,000

Milestone: (See Milestone Table)

1,000 acres Grassland Management – Rotational Grazing Systems

Product 2: Total Cost: \$19,000 319 Cost: \$0.00

**Task 1: Total Cost: \$332,250 319 Cost: \$137,800**

Technical and Financial Assistance Sources (Task 1)

Technical Assistance Coordination:

McCook Conservation District  
Partnering Conservation Districts  
Project Coordinator

Implementation:

Project Coordinator  
Farmers and Ranchers  
McCook Conservation District  
Partnering Watershed Conservation Districts  
Grassland Planning and Implementation Project  
USDA – Natural Resources Conservation Service

Financial Assistance:

USDA – NRCS/Farm Service Agency  
Water Quality 319 Projects  
Vermillion Basin Water Development District  
Farmers and Ranchers  
SD Game, Fish and Parks

Monitoring Assistance:

McCook Conservation District  
Partnering Watershed Conservation Districts  
Project Coordinator  
SD Department of Environment and Natural Resources

### **Task 2: Cropland Management:**

Provide assistance to landowners with installation of BMPs on cultivated cropland and grassland BMPs in the watershed that reduce fecal coliform bacteria, nutrient, and sediment loadings from cultivated cropland and grasslands. Technical Assistance for practice installation will be provided by partnering watershed conservation districts, NRCS Field Office staff, and the project coordinator. Funding for practice installation will be from the NRCS Conservation Programs (CCRP, EQIP), Wildlife Programs (GF&P and US F&WS), Soil and Water Conservation Program and Landowners.

### **Product 3: Installation of Cropland BMPs – (250 acres)**

Provide technical assistance to landowners for the installation of BMPs on 250 acres of cropland to



Technical Assistance to landowners will be provided using the services of private consultants and/or the Ag Nutrient Management Team. The assistance providers will complete feasibility studies that provide alternative systems to include a cost estimate for each alternative. The alternative selected by the landowner will have a system design completed. Funding for feasibility studies/designs will be from this project and the landowner.

The two Animal Waste Management Systems (AWMS) constructed will include Nutrient Management Plans, and Cultural resources studies. Technical Assistance to landowners for AWMS installation will be provided using the services of private consultants and/or the Ag Nutrient Management Team (NRCS). Funding for AWMS will be from the NRCS (EQIP), Consolidated Water Facilities Construction Fund, Landowners, and this 319 Project. Practices planned for this Product (4) include:

<b>BMP</b>	<b>Cost/Unit</b>	<b>Quantity</b>	<b>Total Cost</b>
AWMS Feasibility Study	\$20,000 each	3	\$60,000
Animal Waste Mgt. System	\$187,500 each	2	\$375,000
Nutrient Management Plan	\$2,500 each	2	\$5,000
Cultural Resources Study	\$500 each	2	\$1,000

**Milestone: (See Milestone Table)**

- Three (3) Animal waste management system feasibility studies
- Two (2) Animal waste management systems constructed.
- Two (2) Nutrient Management Plans completed.

**Task 3 Product 4: Total Cost: \$441,000**

**319 Cost: \$92,750**

**Technical and Financial Assistance Sources (Task 3)**

Technical Assistance Coordination:

- McCook Conservation District
- Partnering Watershed Conservation Districts
- Project Coordinator

Implementation:

- Project Coordinator
- Farmers and Ranchers
- McCook Conservation District
- USDA – Natural Resources Conservation Service
- Animal Nutrient Management Team (NRCS)
- Private Consultants

Financial Assistance:

- USDA – NRCS/Farm Service Agency (EQIP)
- Consolidated Water Facilities Construction Fund
- Water Quality 319 Projects
- Landowners

Monitoring Assistance:

- Project Coordinator
- SD Department of Environment and Natural Resources

**Objective 2:** Provide BMP and project information to watershed residents, landowners, and members of

stakeholder organizations to inform them of project activities and BMP installation, and to maintain local support and involvement.

**Task 4:** Conduct outreach and information campaigns to reach 9,000 watershed landowners and residents.

**Products 5:** Newsletters, Press Releases, web site maintenance, and presentations to stakeholder groups.

Assistance will be provided to the McCook Conservation District and project partners to develop and implement an outreach/information campaign that informs project residents of opportunities for involvement in and progress of the project. Activities planned include:

<b>Activity</b>	<b>Activity Cost:</b>
Web Site: Maintenance:	\$2000 (1000/yr/2yr.)
3 Newsletters @ \$500.00 each	\$1,500.00
2 Project informational presentations	(Cost included in personnel costs)
3 Project Media Outreach	(Cost included in personnel costs)

**Milestones: (See Milestone Table)**

Website and maintenance for two years.

Newsletters - 3

Project information presentations - 2

News releases to local/area media - 3

**Task 4 Product 5: Total Cost: \$3,500.00**

**319 Funds: \$2,000.00**

**Responsible Agencies:**

Technical Assistance:

Project Coordinator  
McCook Conservation District  
Vermillion Basin WDD  
Partnering Watershed Conservation Districts

Implementation:

Project Coordinator

Financial Assistance:

Water Quality 319 Project  
McCook Conservation District  
Partnering Watershed Conservation Districts

**Objective3: Prepare and submit project progress** reports using the prescribed format(s) as required by the project sponsor and Partners.

**Task 5:** Monitor, evaluate and report project progress.

**Product 6:** Semi-annual, annual, final project reports and segment III PIP.

The reports completed will include:

1. Semi-annual (April) and annual reports (October):

The semi-annual and annual reports will be submitted to DENR in a format that meets the GRTS reporting requirements. The reports will include information on:

- load reductions for BMPs estimated utilizing annualized AGNPS, STEPL, and RUSLE2.
- location and land use where BMPs have been installed and/or utilizing a GIS layered land use location mapping system,
- narrative description of project activities, and
- a planned versus accomplished milestone comparison.

2. Final Report:

The final report, prepared following the format provided by DENR, will include a narrative summary of progress towards reaching project objectives to improve water quality in the Vermillion River Basin Watershed, milestone and budget comparisons pictures of project activities, and maps showing the locations of completed BMPs. Annualized AGNPS, STEPL, RUSLE2, and GIS will be used to show estimated project load reduction accomplishments, and current land use status in the watershed

3. Segment III, project application:

A Segment III, project application will be completed to continue project implementation based on the long term PIP, stakeholder input, and project progress.

**Milestones: (See Milestone Table – Page 16)**

- Semi-annual reports - 2
- Annual reports - 2
- Final Report – 1
- Segment III, PIP - 1

Responsibility:

- |                       |   |
|-----------------------|---|
| Implementation:       | Project Coordinator<br>Advisory Committee |
| Technical Assistance: | SD DENR                                   |
| Financial Assistance: | 319 Funds<br>Conservation Districts       |

**Task 5 Product 6: Total Cost:** Included in personnel costs

3.3 Milestone Table:

# Milestone Table

## Vermillion River Basin Watershed Project

7/1/2011 through 6/30/2013

Task	Group	Quantity	2011		2012		2012		2013	
			Jul/Aug/Sep	Oct/Nov/Dec	Jan/Feb/Mar	Apr/May/Jun	Jul/Aug/Sep	Oct/Nov/Dec	Jan/Feb/Mar	Apr/May/Jun
<b>OBJECTIVE 1: Project Implementation Plan</b>										
<b>Development</b>										
<b>Objective 1: BMP Implementation:</b>										
Task 1: Grassland Management BMPs	1,2,3,4	1,250 ac.								
Product 1: Riparian Area Management		250 ac.		125				125		
Product 2: Rotational Grazing Systems		1000 ac.		300			300	400		
Task 2: Cropland Management BMPs										
Product 3: Cropland BMPs - 250 acres	1,2,3,5	250 ac.				125				125
Task 3: Animal Waste Management Systems										
Product 4: Animal Waste Management Systems	1,2,3									
Feasibility Studies:		3				1				2
Animal Waste Storage Facilities:		2					2			
Nutrient Management Plans:		3				1				2
Cultural Resources Studies:		3				1				2
<b>Objective 2: Informational Outreach</b>										
Task 4: Information Campaign										
Product 5: Web Site, Newsletter, Press Release, etc.	1,2,3,4									
- Web site Maintenance		1								
- Newsletter		3		1				1		1
- Presentations		2			1				1	
- Press Releases		3	1			1		1		
<b>Objective 3: Project Reports</b>										
Task 5: Semi-annual, annual, final and monthly reports.										
Product 6: . Reports	1,2									
Semi - annual reports		2				1				1
Annual report		2		1				1		
Final report		1								
Segment III - PIP	1,2,3,4	1								1

Groups

1. Project Coordinator/McCook Conservation District
2. Federal = NRCS/USFWS/LJRC&D
3. State = SDGF&P/SDSU/SDRCF/DENR/SDDOA
4. Local = VBWDD,/Producers/Conservation Districts

### 3.4 Permits

McCook Conservation District will secure all required local, state and federal permits including 401, 404, and storm water construction permits and comply with historic preservation and threatened and endangered species requirements prior to implementation of grant funded activities. The sponsor will comply with historic preservation and threatened and endangered species compliance requirements following guidance provided by DENR. Reference and field surveys will be conducted by professionals recognized by SD SHPO to complete the survey.

### 3.5 Lead Project Sponsor

The McCook Conservation District is the project sponsor. The Vermillion River Basin Watershed lies in Clark, Hamlin, Kingsbury, Brookings, Miner, Lake, McCook, Minnehaha, Hutchinson, Turner, Lincoln, Yankton, Clay and Union Counties. The districts have a working relationship with both landowners and community organizations and citizens. The sponsor will complete a memorandum of understanding (MOU) or joint powers agreement (JPA) with each district. The agreements will outline how the Districts will cooperatively implement the work plan for this and future project segment.

### 3.6 Operation and Maintenance Responsibilities

Responsibilities for operation and maintenance of 319 funded BMPs will be provided for through conservation district - landowner contracts. Contracts developed for BMP installation will specify operation and maintenance needs, procedures for BMP failure or abandonment, and the life span for which the BMP will be maintained under the contract. The McCook Conservation District will be responsible for completing operation and maintenance scheduling, on-site evaluations, and follow-up with landowners when actions need to be taken to ensure BMP operation for its designated life span.

## 4.0 COORDINATION PLAN

### 4.1 Lead Project Sponsor

The lead project sponsor is the McCook Conservation District. McCook Conservation District will document cash and in-kind match to this project, and is responsible for completion of this project's goal, objectives, and tasks. A one person staff will implement this project.

A steering committee comprised of representatives from the resource agencies and organizations listed below will advise the project sponsor, and develop priorities, practice manuals, work plans and strategies for this and future project segments.

- **Clark, Hamlin, Kingsbury, Brookings, Miner, Lake, Minnehaha, Hutchinson, Turner, Lincoln, Yankton, Clay and Union Conservation Districts:** Project partners by MOU, will provide technical assistance, local support.
- **The Vermillion Basin Water Development District** will continue to provide local support and financial and technical assistance.
- **US Fish & Wildlife:** The Fish and Wildlife Service's Partners For Fish and Wildlife Program will be requested to assist with grassland BMP's through both technical and financial assistance.
- **USDA Farm Service Agency** - cost-share and program support for continuous and regular CRP.
- **Natural Resources Conservation Service** - Technical assistance and cost-share

funds to landowners for BMP installation such as buffer strips, grass waterways and AWMS largely through the EQIP.

- **South Dakota Department of Environment and Natural Resources** - Technical assistance for water quality sampling and project management. Funds managed by DENR that will be requested include: 319 and Consolidated Facilities Construction Funds for ag waste system work and to help restore the water quality of the Vermillion River.
- **South Dakota Game, Fish, and Parks (GFP)** – Technical advice and cost-share funds through the agencies “Private Lands Programs” for grazing improvements, wetland restoration, and grass seeding.
- **South Dakota Department of Agriculture** – Funding through the South Dakota Land and Water Conservation Grant Program will be requested for technical assistance and conservation practice implementation.
- **South Dakota Association of Conservation Districts (SDACD)** – Technical advice, website host, and staff.
- **SDSU Cooperative Extension Service:** Technical assistance to plan and implement BMPs and the outreach/information Campaign will be provided largely through the service’s county offices.
- **Lower James RC&D and the Vermillion Watershed RC&D Applicant Area:** Technical assistance for project management.

#### **4.2 Local Support**

The Vermillion River watershed is an important economic and social resource to the communities and rural residents in the project area. The McCook Conservation District, the Vermillion River Basin Water Development District, and the other project area conservation districts have provided leadership for the project. Through community support, the Vermillion River Basin Watershed Assessment project was initiated during 2004 and completed during 2007. During the assessment, the Vermillion River Basin Water Development District staff visited with landowners in the watershed to inform them of the project, and discuss implementation of BMPs. This Segment II, project proposal was developed using local representatives of Clark, Hamlin, Kingsbury, Brookings, Miner, Lake, McCook, Minnehaha, Hutchinson, Turner, Lincoln, Yankton, Clay, and Union Conservation Districts, Vermillion River Basin Water Development District, Natural Resources Conservation Service (NRCS), South Dakota Department of Environment and Natural Resources (DENR), Lower James RC&D, meeting as a project advisory work group on August 18, 2009. The Vermillion River Basin Watershed Project will be implemented using the advisory committee of Conservation Districts, the Vermillion River Basin WDD, and partners to coordinate and manage the project.

#### **4.3 Coordination with Other Programs**

The Vermillion River Basin Watershed Project will be coordinated by a steering committee made up of representatives from local, state, and federal partners (see section 4.1) to maximize technical assistance and funding for successful project implementation.

In addition, this project will utilize training and other technical assistance available such as:

- Rapid Watershed Assessment Program (USDA NRCS),
- Conservation Reserve Program (USDA FSA),
- Partners for Fish and Wildlife (USF&WS),
- Project Coordinator training workshops (SD DENR),
- Technical training (USDA NRCS),
- South Dakota Non-point Source Information and Education Project,
- South Dakota Citizen's Volunteer Lake Monitoring Program,
- Technical assistance for grassland management through the Grassland Management Team and 303(d) Watershed Planning and Assistance Projects, and
- Technical and administrative training provided by the SD Association of Conservation Districts (SDACD), SD DENR, and NRCS.

**4.4 Similar Activities in the Watershed**

This project will be implemented through coordination and in partnership with other organizations and programs to create complementary activities. The key programs that complement those planned for this project include:

- Vermillion River Watershed Assessment Project: The project is scheduled for completion during 2010. This project's steering committee will use the report and public input to develop a long-term water quality implementation plan for the Vermillion River Basin by June 30, 2010.
- BMP implementation: The implementation of BMPs in the watershed will be cost-shared using 319 funds, with the exception noted below, to provide for timely planning, design, and implementation under current funding expectations for other funding options. Exceptions to 319 BMP funding include: establishment of riparian buffers, which may include tree planting, grass seeding; and alternative water development to provide greater cost-share and land rental payments to landowners through CCRP versus 319.
- Technical assistance for BMP implementation will be provided through a coordinated effort to include delivery by the project coordinator, NRCS field office staff, Conservation District staff, existing 319 Grassland Project, 303(d) watershed planning and assistance project staff, and other state and federal service providers. Technical assistance resources will be invited to participate in the local project work group for coordination of services.

**5.0 EVALUATION AND MONITORING**

**5.1 Monitoring Strategy**

Monitoring and evaluation efforts will include:

1. Monitoring all project proposed tasks relative to meeting project milestones.
2. Evaluating quality and effectiveness of BMPs installed using AnnAGNPS, STEPL and Rusle2.

The procedures that will be employed to evaluate effectiveness/determine load reductions of BMPs installed (see section 3.0), and follow project evaluation and monitoring efforts set forth in section 5.0 are listed in Table 4.

**Table 4: Location of Analysis Procedures for each applicable task**

Task 5	Use of the AGNPS	Watershed Modeling	Volume I
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	computer model		Section 13.0 pages 1-2
	STEPL	GRTS Section of the Watershed Protection Home Page	
	Rusle2	NRCS Technical Guide	Section 1 Erosion Prediction

The McCook Conservation District, with technical support from DENR, will develop a project-specific sampling and analysis plan (SAP) for this project, using existing state standard operating procedures.

The McCook Conservation District will monitor project progress based on project milestones and include progress in a semi-annual project report. Progress to meet milestones will include a financial accounting of funds, and the source of funds expended on each milestone or project task.

The effectiveness of BMPs installed relative to improvement in water quality will be evaluated using tools available from project partners such as:

1. Feedlot assessments before and after installation of the waste storage facilities. (AnnAGNPS)
2. Sheet, rill, and gully erosion formulas for soil loss and transport. (RULSE2)
3. Reductions in fecal coliform bacteria and sediment and nutrient loading by establishing buffers and riparian vegetation. (STEPL AND AnnAGNPS)
4. AnnAGNPS, STEPL and RUSLE2 models for changes in loadings due to BMP installation.

## 5.2 Data

The McCook Conservation District will be responsible for collecting, storing, and managing data collected during implementation of this project. South Dakota DENR will provide technical assistance and guidance to help the Conservation District set-up the appropriate record systems and computer software for project data collected. Data collected will be forwarded to SD DENR for entry into the STORET database.

## 5.3 Models

The McCook Conservation District will receive technical assistance and training on which models to use and how to use them from SD DENR. The AnnAGNPS, STEPL and RUSLE2 models will be used to evaluate the impact of BMP installation in the watershed.

## 5.4 Major Activities

The major activities of this project will involve contracts (to include US Fish and Wildlife Service and Wildlife Extension Agreements) with landowners for BMP operation and maintenance. The operation and maintenance section of these contracts will specify the BMP maintenance life span, and identify responsibility for maintenance and operation. The McCook Conservation District is responsible to ensure O&M agreements are carried out. The Conservation District will continue to lead efforts to identify, fund, and implement needed O&M, as well as other additional improvements needed for the watershed beyond this proposal's grant period.

## 6.0 Budget

### Vermillion River Basin Watershed - Detailed Budget

Budget: Segment 2: July 1, 2011 Through June 30, 2013

ITEM	Year 1	Year 2	Total	319	GF&P/ Cons.Comm.	CWFCF	USDA	Local
<b>Personnel Support</b>								
Project Coordinator (Vermillion River Watershed Project)	\$36,652	\$37,753	\$74,405	\$74,405				
Payroll Tax	\$2,766	\$2,849	\$5,615	\$5,615				
Health Insurance	\$3,665	\$3,775	\$7,440	\$7,440				
Workmans Comp.	\$436	\$449	\$885	\$885				
Unemployment Insurance	\$131	\$135	\$266	\$266				
Retirement (3% of salary)	\$1,100	\$1,133	\$2,233	\$2,233				
<b>Travel:</b>								
Vehicle Lease:	\$3,075	\$3,075	\$6,150	\$6,150				
Fuel/Oil	\$3,736	\$3,780	\$7,516	\$7,516				
Repairs/service	\$750	\$800	\$1,550	\$1,550				
Vehicle and General Liability Insurance	\$1,218	\$1,279	\$2,497	\$2,497				
Lodging/Meals/Expenses	\$523	\$540	\$1,063	\$1,063				
<b>Administration:</b>								
Office Supplies	\$195	\$205	\$400	\$400				
Postage	\$50	\$53	\$103	\$103				
Phone	\$300	\$315	\$615	\$615				
Office Space	\$1,350	\$1,350	\$2,700	\$2,700				
Contract Management: (McCook CD)	\$1,113	\$1,113	\$2,226	\$2,226				
Project Management: (Sponsor and Advisory Board)	\$3,562	\$3,669	\$7,231					\$7,231
SDACD Contract Management	\$6,953	\$6,953	\$13,906	\$13,906				
Computer Support:								
Computer Lease	\$675	\$680	\$1,355	\$1,355				
Computer Maintenance	\$750	\$775	\$1,525	\$1,525				
<b>Personnel Support Total:</b>	<b>\$69,000</b>	<b>\$70,681</b>	<b>\$139,681</b>	<b>\$132,450</b>				<b>\$7,231</b>
<b>Objective 1: Best Management Practice (BMP) Implementation</b>								
<b>Task 1: Grassland Management (1,250 acres)</b>								
<b>Product 1: RAM Program Implementation (250 acres)</b>								
Livestock Exclusion: (5 miles of River/tributary benefited)								
15-year Land Use Agreements with CCRP (200 acres)								
CCRP @ \$100/ac/yr @ 100 acres enrolled @ 15 years	\$75,000	\$75,000	\$150,000				\$150,000	
Vermillion River RAM @ \$66/ac/year. @ 100 acres enrolled @ 15 years	\$49,500	\$49,500	\$99,000	\$94,000				\$5,000
15-Year Agreement without CCRP (20acres)								
Vermillion River RAM @ \$100/ac/year. @ 20 acres enrolled @ 15 years	\$15,000	\$15,000	\$30,000	\$19,800				\$10,200
Monitoring 15-year Agreements: 5 agreements @ 2 yrs. @ \$25/yr.		\$250	\$250					\$250
30-year and/or Permanent Easements with CCRP: (30 acres)								
RAM @ \$1000/ac/easement @ 30 acres enrolled		\$30,000	\$30,000	\$20,000			\$10,000	
Monitoring Easements: 30-year and Permanent (Contractual)								
One (1) easement @ \$4000		\$4,000	\$4,000	\$4,000				

# Vermillion River Basin Watershed - Detailed Budget (Continued)

Budget: Segment 2 - July 1, 2011 Through June 30, 2013

ITEM	Year 1	Year 2	Total	319-EPA	GF&P/ Cons.Comm.	CWFCF	USDA	Local
<b>Product 2: Rotational Grazing Systems:(1000 ac.)</b>								
Alternative Water Developments: Grassland/Riparian Management.								
Rural Water Hook-up: 1 @ \$2000 each		\$2,000	\$2,000				\$1,500	\$500
Pipeline: Below Ground: 4000 LF @ \$2.50/LF		\$10,000	\$10,000				\$5,000	\$5,000
Tank: 2 each @ \$1000 each		\$2,000	\$2,000				\$1,000	\$1,000
Fencing: 5000LF @ \$1/LF		\$5,000	\$5,000		\$2,500			\$2,500
<b>Task 2: Cropland BMPs</b>								
<b>Product 3: Cropland BMPs (250 Acres)</b>								
Seeding: Perennial Vegetation: 200 ac. @ \$100/ac.	\$10,000	\$10,000	\$20,000		\$15,000			\$5,000
Filter Strips/Grassed Waterways:								
Filter Strips: 25 Ac. @ \$100/ac.		\$2,500	\$2,500				\$1,875	\$625
Grassed Waterways: \$27,000LF \$1.70/LF		\$45,900	\$45,900		\$10,000		\$12,950	\$22,950
<b>Task 3: Animal Waste Management Systems (AWMS)</b>								
<b>Product 4: Animal Waste Management Systems:</b>								
Feasibility studies: 3 @ \$20,000 each	\$20,000	\$40,000	\$60,000	\$36,000		\$9,000		\$15,000
AWMS Construction: 2 @ \$187,500 each	\$187,500	\$187,500	\$375,000	\$53,150		\$55,100	\$173,000	\$93,750
Nutrient Management Plans: 2 @ \$2500		\$5,000	\$5,000	\$3,000		\$750		\$1,250
Cultural Resources Studies: 2 @ \$500 each	\$1,000		\$1,000	\$600		\$150		\$250
<b>Total: BMP Implementation</b>	<b>\$358,000</b>	<b>\$483,650</b>	<b>\$841,650</b>	<b>\$230,550</b>	<b>\$27,500</b>	<b>\$65,000</b>	<b>\$355,325</b>	<b>\$163,275</b>
<b>Objective 2: Informational Outreach</b>								
<b>Task 4: Information Campaign (9000 watershed residents)</b>								
<b>Product 5: Newsletters, Press Releases, web site and presentations</b>								
Web Site: Maintenance	\$1,000	\$1,000	\$2,000	\$1,000				\$1,000
Newsletters: 3 @ 1000 printed/newsletter @ \$.50/mailling (\$500)	\$500	\$1,000	\$1,500	\$1,000				\$500
Presentations: 2 (Included in Personnel Costs)								
Press Release/Media Event: 3 (Included in Personnel Costs)								
<b>SubTotal: Informational Outreach</b>	<b>\$1,500</b>	<b>\$2,000</b>	<b>\$3,500</b>	<b>\$2,000</b>				<b>\$1,500</b>
<b>Objective 3: Project Reports</b>								
<b>Task 5: Project Reports for EPA, DENR, and Partners.</b>								
<b>Product 6: Semi-annual, annual, final, and Segment 3:</b>								
(Cost of this task included in Personnel Costs)								
Semi-Annual Reports - 2 each								
Annual Reports - 2 each								
Final Report - 1 each								
Project Segment 3 PIP								
<b>Total Project Cost:</b>	<b>\$428,500</b>	<b>\$556,331</b>	<b>\$984,831</b>	<b>\$365,000</b>	<b>\$27,500</b>	<b>\$65,000</b>	<b>\$355,325</b>	<b>\$172,006</b>
<b>Match:</b>								
Ineligible Match - Federal and/or Project Allocated			\$355,325				\$355,325	
Match: Project Totals For Match			\$629,506	\$365,000	\$27,500	\$65,000		\$172,006
Match Percentages:				58%				

**PART 1: FUNDING SOURCES**

Funding Source	2011/12	2012/13	Total
<b>EPA SECTION 319 FUNDS</b>			
1.) FY 08 (FA)	\$162,346	\$ 202,654	\$ 365,000
Subtotals	\$162,346	\$ 202,654	\$ 365,000
<b>OTHER FEDERAL FUNDS</b>			
1.) NRCS (FA-EQIP,etc.)	\$ 86,500	\$108,825	\$195,325
2.) FSA (FA – CCRP)	\$ 75,000	\$ 85,000	\$160,000
Subtotals	\$161,500	\$193,825	\$355,325
<b>STATE/LOCAL MATCH (FA&amp;TA)</b>			
1.) Local CD (TA)	\$ 4,365	\$ 4,366	\$ 8,731
2.) Landowners(FA)	\$ 60,089	\$ 101,186	\$163,275
3.) GF&P(FA)	\$	\$ 2,500	\$ 2,500
4.) DENR (FA – CWFCF)	\$ 30,700	\$ 34,300	\$ 65,000
5.) DOA (FA- Soil and Water Cons. Grant)	\$ 7,500	\$ 17,500	\$ 25,000
Subtotals:	\$104,654	\$159,852	\$ 264,506
<b>TOTAL BUDGET</b>	<b>\$428,501</b>	<b>\$ 556,331</b>	<b>\$ 984,831</b>

FA:	Financial Assistance	NRCS	USDA Natural Resources Conservation Service
TA	Technical Assistance	US F&W	US Fish and Wildlife Service
CD	Conservation District	FSA	USDA Farm Service Agency
GF&P	SD Game, Fish and Parks Department		
DENR	SD Department of Environment and Natural Resources		
DOA	SD Department of Agriculture		

**7.0 PUBLIC INVOLVEMENT**

**7.1** The project steering committee will meet twice each year to provide input for project management and coordination of resources to McCook Conservation District. The committee consists of representatives from Clark, Hamlin, Kingsbury, Brookings, Miner, Lake, McCook, Minnehaha, Hutchinson, Turner, Lincoln, Yankton, Clay, and Union Conservation Districts, County Commissions, South Dakota Game, Fish, and Parks, SD DENR, South Dakota Department of Agriculture, SDACD, USDA NRCS and FSA County Field Offices, US F&WS, and the Vermillion River Basin Water Development District.

The McCook Conservation District, through completion of Objective 2 (Information and Education) of this proposal, will provide information to the public through a website, a watershed newsletter, press releases and informational meetings.

## **8.0 THREATENED AND ENDANGERED SPECIES**

The species listed in the federal list of threatened and endangered species in the Vermillion River Basin Watershed are the American Burying Beetle (*Nicrophorus americanus*), Dakota Skipper (*Hesperia dacotae*), Interior Least Tern (*Sterna Antillarum Athalassos*), Osprey (*Pandion haliaetus*), Pallid Sturgeon (*Scaphirhynchus albus*), Peregrine Falcon (*Falco peregrinus*), Piping Plover (*Charadrius Melodius*)(SDGFP,

2003), Scaleshell Mussel (*Leptodea leptodon*), Topeka Shiner (*Notropis Topeka*), Western Prairie Fringed Orchid (*Platanthera praeclara*), and the Whooping Crane (*Grus americana*) as species that could potentially be found in the area. None of these species were encountered during the Vermillion River Basin Assessment Project; however, care will be taken when implementing best management practices in the Vermillion River Basin Watershed.

The Pallid Sturgeon and Scaleshell Mussel are known to occur below Yankton in the Missouri River but not in the Vermillion River Watershed. The Osprey and Peregrine Falcon, were at one time migrants through the project area but none have been seen in recent times. The American Burying Beetle historically occurred in the project area but current South Dakota populations are located west of the Missouri River.

The procedures that will be followed to ensure the project will not adversely affect threatened and endangered species are based on the following premises:

1. The best management practices to be implemented will promote the improvement of water quality, which will benefit threatened and endangered species that depend on water.
2. The occurrence of migratory endangered species is expected to be transitory, and if they are present, project activities will cease until they have left the area.

The endangered species that could potentially be found in the area are as follows:

### **1. Topeka Shiner**

The project proposal gives priority to improving grazing management on grasslands within two miles of the major riparian waterways in the watershed. Planned riparian buffers and stream bank stabilization will improve stream channel and habitat conditions at several locations. There may be some short-term increases in suspended solids concentrations during stream bank stabilization activities. Appropriate measures directed by the US Fish and Wildlife Service and the South Dakota Topeka Shiner Management Plan will be followed. Under no circumstances will in stream construction be completed during the spawning period from May 15<sup>th</sup> to July 31<sup>st</sup>. Other BMP's to be implemented on cropland and animal feeding areas will improve water quality for the Shiner.

### **2. Interior Least Tern**

The Least Tern nests along the shoreline of sandy beaches or gravelly shorelines of some portions of the Missouri River. These areas are outside of the project area; therefore, little or no impact to the species should occur. No project activities are planned that will disturb nesting or reduce food sources. If a Least Tern is observed at any project site, all mechanical activities will be suspended. Work will be altered so that no harm will come to the organism(s).

### **3. Piping Plover**

The Piping plover nests mainly along unrestricted stretches (shore lines) of the Missouri River. These areas are not considered a part of this project, therefore little or no impact to the species should occur. No project activities are planned that will disturb nesting or reduce food sources. If a Piping Plover is observed at any project site, all mechanical activities will be suspended. Work will be altered so that no harm will come to the organism(s).

### **4. Western Prairie Fringed Orchid**

At this time there are no documented populations of the western prairie fringed orchid in South Dakota. *Platanthera praeclara* grows up to four feet tall and has two dozen or more white to creamy colored, one-inch long flowers on a stalk. This species is distinguished from eastern prairie fringed orchids by larger flowers, differing petal shape, and longer nectar spur. The flowers emerge in May, bloom from June to July, and are pollinated by sphinx moths. Fringed orchids are found in tall grass prairies, most often in moist habitats or sedge meadows, and require direct sunlight for growth. They persist in areas disturbed by light grazing, burning, or mowing. Western prairie fringed orchids are known to have occurred from Northeastern Oklahoma, within the Ark/Red, as well as locations in Kansas, Missouri, Nebraska, Iowa, Minnesota, and South Dakota. The greatest threat to the species is conversion of tall grass prairie to other land uses.

If an orchid is observed at any project site, all mechanical activities at the site will be suspended. Work will be altered or the plant(s) protected so no harm will come to it.

### **5. Blandings Turtle**

The Blandings Turtle winters under or near water, in mud, or under vegetation or debris. During the nesting season, a female Blandings Turtle may be found no more than a kilometer from where it hibernated. There is no confirmed documentation of Blandings Turtle in the Vermillion River Basin Watershed, therefore little or no impact to the species should occur. No project activities are planned that will disturb hibernation, nesting, or reduce food sources. If a Blandings Turtle is observed at any project site, all mechanical activities will be suspended. Work will be altered so that no harm will come to the organism(s).

### **6. Whooping Crane**

If a Whooping Crane or Cranes are observed at any project work site, all mechanical activities at the site will be suspended until the bird(s) leave the site under their own volition.