

Begin here by typing in the year. Then tab or place your cursor in each gray shaded field as desired.
Federal Fiscal FY: 2010 Today's Date: 10/01/2009

Select project type from the drop-down box below:

Project Type: WATERSHEDS

PROJECT TITLE: Upper Snake Creek Watershed Project – Segment 2

PROJECT SPONSOR

NAME: Dakota Central Resource Conservation and Development (RC&D)

ADDRESS: 1717 N. Lincoln, Suite 104

ADDRESS:

CITY: Pierre STATE: SD ZIP: 57501-1258

PHONE: 605-224-1818 EXT:

FAX: 605-224-6615 E-MAIL: kelly.stout@sd.usda.gov

PRIMARY CONTACT

NAME: Kelly Stout PHONE: 605-224-1818 EXT:

SIGNATORY NAME: Tina Feyereisen PHONE: (OPTIONAL)

STATE CONTACT PERSON:

NAME: Ken Madison

PHONE: 605-882-5113 EXT:

FAX: 605-882-4066 E-MAIL: Ken.Madison@state.sd.us

CATEGORY & FUNCTIONAL CATEGORY

Drop-down lists. Please select up to 4 categories below.

NPS Category and Percent

The primary category of pollution is intended to identify the principal or main pollutant(s) the project is attempting to correct. The selections are obtained from drop-down list associated with the data element.

NPS Functional Category

These activities are intended to identify the principal or main approach, remedy, or solution to achieve the objective of the project. Selections are obtained from the drop-down list associated with the data element.

| NPS CATEGORY | Percent |
|--------------|---------|
| AGRICULTURE | 100 |

| NPS FUNCTIONAL CATEGORY OF ACTIVITY |
|-------------------------------------|
| BMP IMPLEMENTATION/DESIGN |

WATERSHED NAME: Upper Snake Creek

USGS HYDROLOGICAL UNIT CODE: 10160011

LATITUDE/LONGITUDE

Use degrees and decimals only. Do not put in degrees, minutes, seconds. For example: put in 45.55 rather than 45 deg 30 min 30 sec.

PROJECT LOCATION LATITUDE: 44.3211N LONGITUDE: 96.7865W

**WATERBODY TYPE
TMDL AND CLEAN LAKES INFORMATION**

A name indicating the type of waterbody/watershed associated with the NPS project.

A field that identifies the relationship of the given nonpoint source project's funding to total maximum daily load (TMDL) activities.

STREAMS
WETLANDS
LAKES
RESERVOIRS

TMDL PRIORITY: HIGH
TMDL DEVELOPMENT?: YES
TMDL IMPLEMENTATION?: YES

CLEAN LAKES PROJECT?: NO

POLLUTANT TYPE

The name of the pollutant that the particular nonpoint source project is made attempting to address. Selection of the pollutant is made from drop-down list.

Pollutants not listed in POLLUTANTS box if needed. Selection of the pollutant is from the drop-down list.

POLLUTANTS:
DISSOLVED OXYGEN (low)
PATHOGENS (COLIFORM)
PHOSPHORUS

ADDITIONAL POLLUTANTS:
SUSPENDED SOLIDS

FUNDING

PLEASE TAB OUT OF THE FIELD AFTER ENTRY

FY\$319(h) BUDGET FUNDS: \$ 288,170.00

NON-FEDERAL MATCHING FUNDS: \$ 261,675.50

OTHER FEDERAL FUNDS: \$ 47,535.50

STATE FUNDS: \$104,535.00

LOCAL FUNDS: \$ 157,140.50

TOTAL BUDGET: \$ 597,381.00

OTHER FUNDS:

STATE 319(h) FTE's FUNDED UNDER THIS GRANT:

GOALS AND PROJECT DESCRIPTION

NOTE: To add the GOALS and PROJECT DESCRIPTION just TAB to the shaded area and type or cut/paste text. You may type or cut/paste as much text as you like. The box will expand.

Narrative fields used to provide the anticipated benefits and goals of the project and the project description.

GOALS: Restore and protect the beneficial uses of Mina Lake, Loyaltan Dam, Cresbard Lake and Snake Creek by implementing best management practices (BMPs) in the Upper Snake Creek watershed that reduce sediment and nutrient loading and prevent bacterial contamination. Complete water quality assessments and develop TMDLs for Rosette Lake. Attaining the goals from the Mina, Loyaltan, and Cresbard assessment projects will meet the TMDLs.

PROJECT DESCRIPTION: The Upper Snake Creek Watershed Project is a two segment project with the first segment to be completed by June 30, 2010. The project is restoring and/or maintaining Mina Lake, Loyaltan Dam, Cresbard Lake and Snake Creek water quality to meet designated beneficial uses. The Mina Lake / Snake Creek Watershed Assessment (March 2002), the Loyaltan Dam Watershed Assessment (October 2002), and the Cresbard Lake Watershed Assessment (October 2002) rated Loyaltan Dam, and Cresbard Lake as eutrophic while Mina Lake was rated as hyper-eutrophic with impairment from accumulated nutrients and sediment, and needing improvement and/or maintenance of nutrient loading and protection from potential bacterial contamination. An information and education campaign is currently being conducted to keep the public and stakeholders informed on project progress and provide technical information on BMPs and water quality. Rosette Lake is within the overall watershed and is in need of a TMDL as listed on the 2002 South Dakota 303(d) list.

1.0 PROJECT SUMMARY SHEET

PROJECT TITLE: Upper Snake Creek Watershed Project Segment 2

NAME, ADDRESS, PHONE AND E-MAIL OF LEAD PROJECT SPONSOR/SUBGRANTEE:

Dakota Central Resource Conservation and Development (RC&D) Association

Tina Feyereisen, Chairperson

Kelly Stout, Acting RC&D Coordinator

1717 N. Lincoln, Suite 104

Pierre, South Dakota, 57501-1258

Phone: 605-224-1818 Email: kelly.stout@sd.usda.gov

STATE CONTACT PERSON: Ken Madison

PHONE (605)-882-5113 **FAX** (605) 882-4066 **E-MAIL** Ken.Madison@state.sd.us

STATE South Dakota

WATERSHED Upper Snake Creek

HYDROLOGIC UNIT CODE 10160011

HIGH PRIORITY WATERSHED (yes/no) Yes – 303 (d) list

TMDL Development X and/or **Implementation** X (Check any that apply)

PROJECT TYPES

STAFFING & SUPPORT

WATERSHED

GROUNDWATER

I&E

WATERBODY TYPES

GROUNDWATER

LAKES/RESERVOIRS

RIVERS

STREAMS

WETLANDS

OTHER

NPS CATEGORY

AGRICULTURE

URBAN RUNOFF

SILVICULTURE

CONSTRUCTION

RESOURCE EXTRACTION

STOWAGE/LAND DISPOSAL

HYDRO MODIFICATION

OTHER

PROJECT LOCATION: LATITUDE ___ MIN. _____ LONGITUDE ___ MIN.

SUMMARIZATION OF MAJOR GOALS:

Restore and protect the beneficial uses of Mina Lake, Loyalton Dam, Cresbard Lake and Snake Creek by implementing best management practices (BMPs) in the Upper Snake Creek watershed that reduce sediment and nutrient loading and prevent bacterial contamination. Complete water quality assessments and develop TMDLs for Rosette Lake. Attaining the goals from the Mina, Loyalton, and Cresbard assessment projects will meet the TMDLs.

PROJECT DESCRIPTION:

The Upper Snake Creek Watershed Project is a two segment project with the first segment to be completed by June 30, 2010. The project is restoring and/or maintaining Mina Lake, Loyalton Dam, Cresbard Lake and Snake Creek water quality to meet designated beneficial uses. The Mina Lake / Snake Creek Watershed Assessment (March 2002), the Loyalton Dam Watershed Assessment (October 2002), and the Cresbard Lake Watershed Assessment (October 2002) rated Loyalton Dam, and Cresbard Lake as eutrophic while Mina Lake was rated as hyper-eutrophic with impairment from accumulated nutrients and sediment, and needing improvement and/or maintenance of nutrient loading and protection from potential bacterial contamination. An information and education campaign is currently being conducted to keep the public and stakeholders informed on project progress and provide technical information on BMPs and water quality. Rosette Lake is within the overall watershed and is in need of a TMDL as listed on the 2002 South Dakota 303(d) list.

319 funds requested: \$ 288,170.00

Other Federal Funds: \$ 47,535.50

319 Funded Full Time Personnel: 1

Local and State Match: \$ 261,675.50

Total project cost: \$ 597,381.00

2.0 STATEMENT OF NEED

2.1

The Upper Snake Creek Watershed Project is a two segment project with the first segment to be completed by June 30, 2010. The project is restoring and/or maintaining Mina Lake, Loyalton Dam, Cresbard Lake and Snake Creek water quality to meet designated beneficial uses. The Mina Lake / Snake Creek Watershed Assessment (March 2002), the Loyalton Dam Watershed Assessment (October 2002), and the Cresbard Lake Watershed Assessment (October 2002) rated Loyalton Dam, and Cresbard Lake as eutrophic while Mina Lake was rated as hyper-eutrophic with impairment from accumulated nutrients and sediment, and needing improvement and/or maintenance of nutrient loading and protection from potential bacterial contamination.

Impairments and potential impairments to the beneficial uses of Mina Lake, Loyalton Dam, and Cresbard Lake and Snake Creek are shown in Table 1.

Table 1. Beneficial Use Impairments Identified for Upper Snake Creek Watershed.

| Beneficial use | Snake Creek | Mina Lake | Loyalton Dam | Cresbard Lake | Rosette Lake |
|--|--------------------|------------------|---------------------|----------------------|---------------------|
| 1 Domestic water supply waters | | X | | | |
| 2 Coldwater permanent fish life propagation waters | | | | | |
| 3 Coldwater marginal fish life propagation waters | | | | | |
| 4 Warmwater permanent fish life propagation waters | | X | | | |
| 5 Warmwater semipermanent fish life propagation waters | | | X | X | |
| 6 Warmwater marginal fish life propagation waters | X | | | | X |
| 7 Immersion recreation waters | | X | X | X | X |
| 8 Limited contact recreation waters | X | X | X | X | X |
| 9 Fish and wildlife propagation, recreation, and stock watering waters | X | X | X | X | X |
| 10 Irrigation waters | X | | | | |
| 11 Commerce and industry waters | | | | | |

The beneficial uses impaired, as discussed above, impact the use of the lakes and watershed for swimming, boating, recreation, wildlife, and residential living. Mina Lake, Loyalton Dam, Cresbard Lake and Snake Creek are key components of the economic health and sustainability of the communities of Aberdeen, Cresbard, Ipswich and surrounding rural residents and agricultural producers. The sources of impairment for each of the water bodies as determined by assessments are summarized below, and in the reports available on the websites indicated.

Loyalton Dam Assessment link:

<http://www.state.sd.us/denr/DFTA/WatershedProtection/WQProjects/LoyaltonFinal101802.pdf>

Mina Lake Assessment link:

<http://www.state.sd.us/denr/DFTA/WatershedProtection/WQProjects/MinaLake.pdf>

Mina Lake:

Three water quality parameters: dissolved oxygen, fecal coliform and total suspended solids exceeded tributary water quality standards in Snake Creek during the project. A TMDL is being written by DENR for the dissolved oxygen violations. All Snake Creek water quality monitoring sites above Mina Lake (SC-1, SC-2, SC-6, SC-7 and SC-8) had at least one violation of water quality standards. Most fecal coliform bacteria standard violations (four of the five violations) were detected during increased hydrologic flows which suggest that runoff from land-applied manure, animal feeding areas, cattle pastured in the riparian areas of Snake Creek or poor manure management may be responsible for the high fecal concentrations.

Mina Lake was included in the impaired waterbodies list for an increasing TSI trend. Total phosphorus loading to Mina Lake is 15,304 kg/yr. Mina Lake appears to not fit ecoregion-based beneficial use criteria based on the large reduction in total phosphorus needed to meet current ecoregional targets.

Decreasing tributary sediment, nitrogen and phosphorus inputs from Snake Creek will lead to a reduction in Mina Lake TSI values. Tributary reductions of these parameters will reduce total phosphorus and chlorophyll-a TSI values and increase transparency. Increasing transparency (algal and non-algal turbidity) should increase the growth of submerged macrophytes, which should in turn increase the uptake of nitrogen and phosphorus thereby reducing available nutrients that cause algal blooms. These reductions, over time, should reverse present TSI trends. Increasing densities of submerged macrophytes will also create littoral zone cover for macroinvertebrates and forage fish, and ambush points for predator species.

Watershed treatments recommended include constructing fences or other barriers to control livestock access to riparian areas, livestock cross-over structures and alternative watering with nose pumps along Snake Creek, especially vulnerable areas frequented by livestock. Alternative treatments include seasonal access or rotational grazing but the reductions realized can be expected to be lower because livestock would still impact the riparian area seasonally.

Riparian restoration alternatives recommended include, but are not limited to, laying back steep banks and revegetating, riprapping selected areas, replanting barren and susceptible areas and willow planting.

Of the seventy-six animal feeding areas identified using AGNPS, eleven feeding areas (14.5 percent) were classified as critical rating 41 to 62 based on a 0 (low impact) to 100+ (high impact) scale. An additional four feeding areas located in cells with multiple feedlots (feeding areas), rated greater than 40, but were not considered significant contributors.

Eleven feeding areas with AGNPS ratings of 40 or greater should have animal waste management systems constructed to lower nutrient loading to Mina Lake.

Mina Lake includes a residential area of permanent and summer homes. The City of Aberdeen located fifteen miles north of the lake has a population of 38,000 people and permanent residents at Mina Lake. Mina Lake is used by lake residents, visitors, and the residents of Aberdeen for family gatherings and picnics, walks and jogging, wildlife watching and photography, and other activities related to its aesthetic qualities. An estimated 38.8% reduction in phosphorus concentrations would be necessary to bring Mina Lake to a beneficial use classification of fully supporting.

Loyalton Dam:

Grazing livestock is a probable source of fecal coliform bacteria entering the lake. Grazing management strategies suggested to reduce loadings of fecal coliform bacteria include lakeshore and stream bank fencing, alternative livestock watering sources, and improved riparian buffer zones.

To reduce sediment and nutrient loads from the watershed, the installation of BMPs including conversion of highly erodible cropland to rangeland or CRP, improvement of land surface cover (C-factor) on cropland and rangeland, installation of grassed waterways, and enhancement of riparian buffer zones is recommended. An estimated 1,240 acres should be targeted for cover management, which includes all AGNPS phosphorus critical cells. An estimated 60% reduction in phosphorus concentrations would be necessary to bring Loylton Dam to a beneficial use classification of fully supporting.

Cresbard Lake:

Grazing livestock and feeding areas are the probable sources of the fecal coliform bacteria load. To reduce the loadings feedlots and/or feeding areas within AGNPS, cell numbers 317, 438, 594, 642, 781 should be evaluated for installation of BMPs. Alternative water sources should be provided where livestock have been restricted from access to the stream or lake. Grazing intensity and season of use should be limited to provide sufficient rest for grazing acres to encourage plant vigor and growth.

BMPs recommended to reduce sediment and nutrient loads from the watershed include the conversion of highly erodible cropland to rangeland or CRP, improvement of land surface cover (C-factor) on cropland and rangeland, reduction of fertilization to low levels (approximately 50 lb/acre of nitrogen and 20 lb/acre of phosphorus), and the installation of grassed waterways and riparian buffer zones.

An estimated 5,760 acres of crop and range lands are considered high priority or critical areas that would require the aforementioned management practices to attain the TMDL goal. All critical phosphorus cells should be targeted for increased surface cover management (i.e. a C-factor ≥ 0.1). A predicted 40% reduction in total phosphorus load can be achieved in this watershed to meet the TMDL goal of 2,785 kg or a mean in-lake TSI of 74.8.

Rosette Lake

The primary landuse in the Rosette Lake watershed is agricultural. Existing and previous management practices appear to contribute to increased sediment and nutrient runoff. Excessive sediment and nutrient loading have increased trophic levels of the lake which resulted in Rosette Lake being placed on the 1998 South Dakota 303(d) Waterbody List for TSI trend. Listing requires a watershed assessment and the development of a TMDL. Final assessment samples were taken during phase 1 to develop the final report.

2.2 Upper Snake Creek Watershed:

Mina Lake:

Mina Lake is located at 45.441667° Latitude and 98.731667° Longitude (SW NE SEC. 25-T123N-R66W). The lake is owned and managed by the South Dakota Department of Game, Fish and Parks (SD GF&P). The dam is 109.7 meters wide (360 feet), 9.8 meters high (32 feet) and has a 45.7 meter-wide spillway (150 feet).

The dam was designed by WPA. Construction was completed on February 4, 1934. The primary spillway was repaired and renovated during 1994, and during the spring of 2000, and the outlet reach above the dam was cleared of debris.

Mina Lake is a 326.2 hectare (806-acre) man-made impoundment located in northeastern Edmunds County, South Dakota (HUC 10160008). The 1998 South Dakota 303(d) Waterbody List identified Mina Lake for TMDL development for trophic state index (TSI), increasing eutrophication trend.

The Mina Lake sub-watershed encompasses approximately 63,924.4 ha (157,960 acres) and is drained by Snake Creek. The damming of Snake Creek near the town of Mina, South Dakota created the lake, which has an average depth of 3.38 meters (11.1 feet) and over 33.6 kilometers (20.9 miles) of shoreline. The lake has a maximum depth of 8.23 meters (27 feet) and holds 7,258.5 acre-feet of water. The outlet for the lake empties back into Snake Creek, which eventually reaches the James River.

Loyalton Dam:

Loyalton Dam is located three miles southeast of Loyalton, South Dakota in south central Edmunds County. Construction of the 36-acre man-made dam began during 1933 and was completed during 1938. A federal relief program, intended to assist drought-stricken producers, funded the construction of the dam (Allbee, 1983). Dry Run Creek serves as both the inlet and outlet for Loyalton Dam and drains 6,419 acres above the impoundment. The creek receives runoff from croplands, which has resulted in declining water quality. Land use within the watershed is predominately agricultural, including cropland and pasture. Approximately 42% of the watershed area is cropland and 58% is grasslands (native and non-native).

Loyalton Dam is located within the James River Basin (HUC 10160008). The lake reaches a maximum depth of 14.0 feet (4.3m) and holds a total water volume of 214 acre-ft (at spillway elevation). The major inlet, Dry Run Creek, is located on the southeast side of the lake. Due to its shallow nature, the lake is not subject to stratification. The 1998 South Dakota 303(d) Waterbody List identified Loyalton Dam for TMDL development due to elevated trophic state index (TSI) values. Information supporting this listing was derived from statewide lake assessment data and the 1996 305(b) report.

Cresbard Lake:

Cresbard Lake is a 69-acre impoundment located within the James River Basin (HUC 10160008) in northwest Faulk County and southwest Edmunds County, South Dakota. The lake reaches a maximum depth at 14.0 feet (4.3m) and holds a total water volume of 904 acre-ft. The major inlet is located on the east side of the lake. Due to its shallow nature, the lake is not subject to stratification. The 1998 South Dakota 303(d) Waterbody List identified Cresbard Lake for TMDL development for trophic state index (TSI).

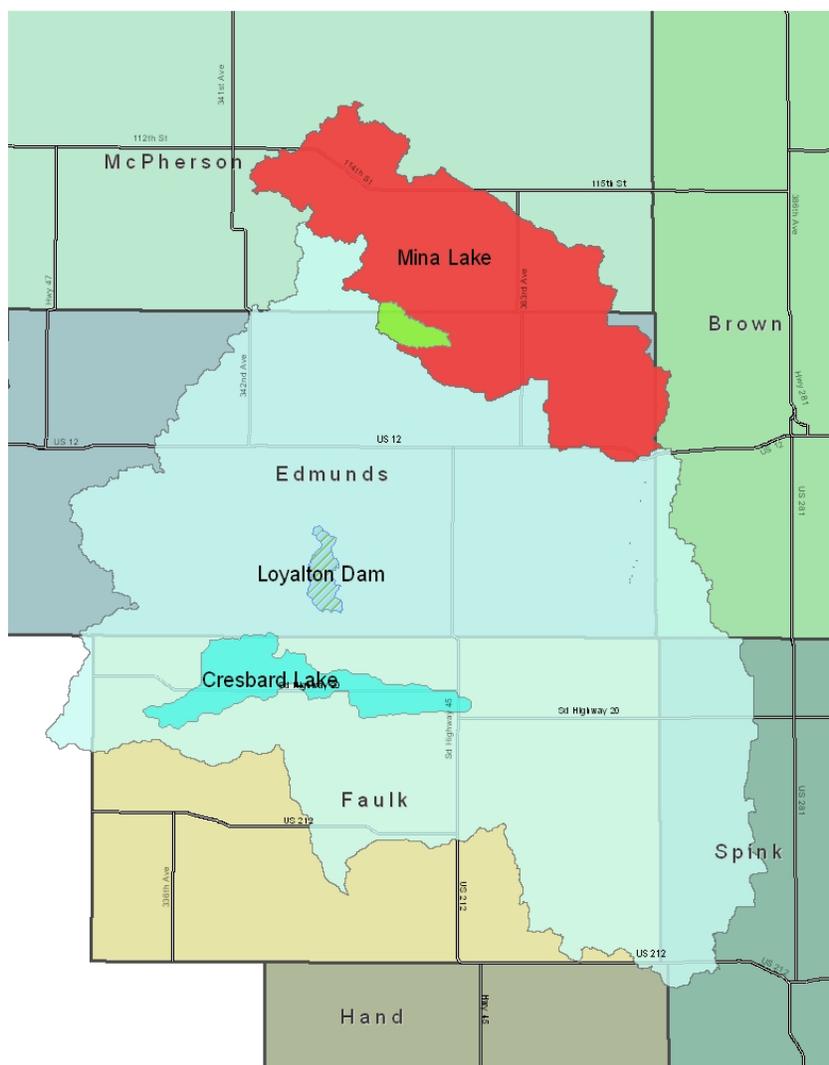
The inlet of Cresbard Lake (an unnamed tributary) drains approximately 40,858 acres. The North Fork of Snake Creek drains portions of Faulk County in South Dakota and is the outlet of Cresbard Lake. The small towns of Wecota and Norbeck are located in the Cresbard Lake watershed. The estimated population within a 65-mile radius of Cresbard Lake is 76,839.

Rosette Lake

Rosette Lake is a 14.5-acre (5.9 ha) impoundment located within the James River Basin (HUC 10160008) in north central Edmunds County, South Dakota. The lake reaches a maximum depth at 18.0 feet (5.5 m) and holds a total water volume of 169 acre-ft. The major inlet is located on the northeast side of the lake. Due to its shallow nature, the lake is not subject to stratification. The 1998 South Dakota 303(d) Waterbody List identified Cresbard Lake for TMDL development for trophic state index (TSI).

The inlet of Rosette Lake (an unnamed tributary) drains approximately 5,517 acres. The estimated population within a 65-mile radius of Rosette Lake is 83,400. Through water quality monitoring, stream gauging and land use analysis, the sources of impairment to the lakes will be documented and feasible recommendations for restoration will be presented in the final project report.

2.3 Maps



Landuse in the watershed is primarily agricultural. Approximately 46.7 percent of the land is cropland (cultivated and non-cultivated); 39.4 percent range and pastureland. Wheat, row crops and hay are the dominant crops on cultivated lands. Some winter animal feeding areas are located in the watershed. The streams in the watershed drain and receive runoff from agricultural operations. The landscape is characterized by an upland plain that is moderately dissected by streams and entrenched drainageways. Land elevation ranges from about 1,968 feet msl in the west and north parts of the watershed to about 1,413 feet msl in the eastern part. Major soil associations found in the watershed include Niobell-Noonan, Bryant, Williams-Vida and Williams-Bowbells associations.

Average annual precipitation is approximately 18.3 inches. Approximately 73% of the precipitation occurs during the months of April through September. In the summer, the average temperature is about 70 degrees F. During the winter, the average temperature is about 18 degrees F. Tornadoes and severe thunderstorms strike occasionally. These storms are local and of short duration and occasionally produce heavy rainfall events. The average seasonal snowfall is 27.4 inches per year (USDA, 1977).

Most of the Upper Snake Creek watershed is in the Northern Glaciated Plains (46) ecoregion (Level III) with the extreme eastern edge of the watershed in the Northwestern Glaciated Plains (42) ecoregion (Level III). The Mina Lake watershed is also located in two Level IV ecoregions. One, the Drift Plains (46i), is located within the Northern Glaciated Plains (46) ecoregion and the other is the Missouri Coteau (42a) located within the Northwestern Glaciated Plains (42) ecoregion (Bryce et al., 1997).

In the 1998 South Dakota Unified Watershed Assessment, the Snake Creek Hydrologic Unit Code (HUC #10160008) was scored, categorized and ranked as being a watershed in need of restoration. Some factors involved in the ranking were landuse, treatment needs and point source density; but the ranking was weighted based on the density of TMDL acres within the HU. The final ranking for Snake Creek was 15 out of a total 39 HU (watersheds) assessed in this manner (SD DENR, 1998b)

2.5 The Upper Snake Creek watershed assessment projects were initiated at the request of local organizations, and citizens concerned about water quality problems in Mina Lake, Loyalton Dam, and Cresbard Lake. The main concerns included water quality problems related to algae blooms and water safety for swimming and boating.

The watershed assessment completed during 2002 included:

- In-lake, tributary, and outlet water sampling in 2001
- Watershed modeling using AnnAGNPS
- Review of previous water quality data collected on the lake and watershed
- Biological Monitoring
- Aquatic Macrophyte Survey
- Sediment Survey
- Quality Assurance

Mina Lake, Loyalton Dam, and Cresbard Lake are classified as eutrophic with a TSI more or less typical (81.35, 68, and 74.8 respectively) of the Northern Glaciated Plains Ecoregion but considered low enough to support the lake's beneficial uses. The implementation of conservation practices in the watershed have

reduced nitrogen loading to a greater extent than phosphorus loading. Likely sources of phosphorus loading are livestock waste. Due to occasional bacterial problems and algae blooms, the assessment recommended improving the TSI of the waterbodies.

3.0 PROJECT DESCRIPTION

3.1 Project Goal: Restore and protect the beneficial uses of Mina Lake, Loyalton Dam, Cresbard Lake and Snake Creek by implementing best management practices (BMPs) in the Snake Creek watershed that reduce sediment and nutrient loading and prevent bacterial contamination, and complete water quality assessments and develop TMDLs for Rosette Lake. Attaining the goals from the Mina, Loyalton, and Cresbard assessment projects will meet the TMDLs.

3.2 Objectives and Tasks:

Objective 1: Through the application of best management practices in the watershed reduce sediment, nutrient, and fecal coliform bacteria loading to Mina Lake, Loyalton Dam, Cresbard Lake and Snake Creek.

Task 1: Grassland/Cropland Management

Provide assistance to landowners to install BMP's that reduce nutrient loadings through uptake of nutrients, reduction of nutrient transfer, and/or reduction of available nutrients for transport; and practices that reduce sediment transfer through application of land management systems that reduce soil erosion.

Product:

- 7,500 acres of planned grazing systems and grassland restorations that reduce sediment and nutrient transfer through reduced runoff, improved streambank vegetation, and improved vegetation on riparian grasslands. Grazing systems will be associated with restoring riparian areas by fencing off the area, which may also include a new riparian planting. BMP's will be implemented using funds available through existing and new 319 projects, EQIP, and wildlife programs. BMP's will include but are not limited to: planned grazing systems, water developments (pipelines, tanks, pasture pumps, dugouts, dams), fencing (crossfencing, perimeter fencing, riparian area fencing), tree planting (riparian), stream crossings, grass waterways, and grass seeding.

Milestone: Project Segment- 7,500 acres of planned grazing systems and grassland/riparian restorations.

Responsible Agencies:

Technical Assistance Coordination:

Dakota Central Resource Conservation and Development (RC&D) Steering Committee
North Central RC&D Coordinator
Project Coordinator

Information Transfer:

Project Coordinator

SD Association of Conservation Districts
Natural Resources Conservation Service

Implementation:

Project Coordinator
US Fish and Wildlife Service
Farmers and Ranchers
SD Game, Fish and Parks
Faulk, McPherson, Edwards, Brown, and Spink Conservation Districts
USDA – Natural Resources Conservation Service (NRCS)

Financial Assistance:

USDA – NRCS/Farm Service Agency
Water Quality 319 Projects
SD Department of Agriculture – Conservation Commission

Monitoring Assistance:

Project Coordinator
SD Department of Environment and Natural Resources

Total Cost: \$348,796.00

319 Funds: \$ 119,585.00

Task 2: Livestock Nutrient Management, Ag. Waste Systems & Nutrient Mgt. Plans

Assist livestock producers with less than 1,000 head to install livestock waste management systems and implement nutrient management plans to reduce nutrient and fecal coliform levels in the watershed and lakes.

Product:

- One agriculture waste system with a nutrient management plan installed by a livestock producer who was identified as a priority in the watershed assessment. This product will be completed with assistance from the Animal Nutrient Management Project.

Milestone: Project segment- 1 agriculture waste system with nutrient management plan.

Responsible Agencies:

Technical Assistance Coordination:

Dakota Central Resource Conservation and Development (RC&D) Steering Committee
North Central RC&D Coordinator
Project Coordinator

Information Transfer:

Project Coordinator
SD Association of Conservation Districts
Natural Resources Conservation Service

Implementation:

Project Coordinator
Farmers and Ranchers
Faulk, McPherson, Edwards, Brown, and Spink Conservation Districts
USDA – Natural Resources Conservation Service (NRCS)

Financial Assistance:

Water Quality 319 Projects
SD Department of Agriculture – Conservation Commission
NR Fees

Monitoring Assistance:

Project Coordinator
SD Department of Environment and Natural Resources

Total Cost: \$ 120,000.00

319 Funds: \$ 40,000.00

Objective 2: Information and Education/Public Participation

Task 3: Progress Reports

Provide project information through personal contacts, on-site visits, workshops, demonstration tours, news media, and direct mailings.

Products:

- Periodic news releases, newsletter articles, and newsletters
- Information meetings and workshops
- Direct mailings to landowners and interested parties (As needed)
- Production of watershed BMP implementation and TMDL reduction results

Milestone: Project segment 2- See Milestone Table, page 24.

Responsible Agencies:

Technical Assistance Coordination:

Dakota Central Resource Conservation and Development (RC&D) Steering Committee
North Central RC&D Coordinator
Project Coordinator

Information Transfer:

Project Coordinator
SD Association of Conservation Districts
Natural Resources Conservation Service

Implementation:

Project Coordinator
Farmers and Ranchers
Faulk, McPherson, Edwards, Brown, and Spink Conservation Districts
USDA – Natural Resources Conservation Service (NRCS)

Financial Assistance:

Water Quality 319 Projects
SD Department of Agriculture – Conservation Commission
Faulk, McPherson, Edwards, Brown, and Spink Conservation Districts

Total Cost: \$ 9,420

319 Funds: \$ 9,420

Objective 3: Rosette Lake Assessment.

Rosette Lake final assessment is currently being written. Feasible restoration alternatives are being developed that will provide adequate background information needed to drive a watershed implementation project to improve sedimentation and nutrient problems with the lakes and the creeks of the watersheds to produce (2) TMDL reports. Monitoring samples will be used to evaluate the alternative management and/or practices that will be used to improve the water quality.

The goal of the Rosette Lake Assessment Projects is to implement feasible restoration recommendations that support the Upper Snake Creek Watershed Implementation Project.

Task 4 In-Lake Sampling

This objective is to monitor current conditions in the lake and calculate the trophic state of Rosette Lake. Lake sampling will be done on a voluntary basis. This information will be used to determine if a positive change is occurring in the total amount of nutrient trapping that is occurring in the lake and the amount of reduction of nutrients required to improve the trophic condition of Rosette Lake. Nutrient and solids parameters will be sampled at two in-lake sites in Rosette Lake. Samples will be collected from the surface and bottom at all in-lake sampling sites. The samples will be collected on a monthly schedule for a period of one year except during periods of unsafe ice cover and during June, July, and August. The South Dakota State Health Laboratory in Pierre will analyze all samples. In-lake parameters to be measured are shown Table 3. The purpose of the in-lake samples is to assess ambient nutrient concentrations in the lake and identify trophic state condition. Water column dissolved oxygen, pH, conductivity and temperature profiles will be collected during the scheduled lake samples. Water samples will be collected and the sample bottles will be iced and shipped to the lab by the most rapid means available. The SD State Health Lab in Pierre will analyze fecal coliform and E. coli samples. A macrophyte survey will be conducted during the summer to assess relative percent coverage of the lake by macrophytes. Perform a sediment survey on Rosette Lake to document existing sediment depth and location in each waterbody.

All samples will be collected using the methods described in the Standard Operating Procedures for Field Samplers by the State of South Dakota Water Resources Assistance Program. Table 2 describes the in-lake sampling sites for Rosette Lake.

Table 2. Rosette In-lake Water Quality Monitoring Site

| Rosette In-lake Sampling Site | Latitude | Longitude |
|--|-----------------|------------------|
| RSL-1 (in-lake site closest to the dam) | 45.555924 | -99.040759 |

Task 5: AnnAGNPS Modeling

Evaluation of agricultural impacts to the water quality of the watershed will be completed through the use of the Agricultural Non-point Source (AGNPS) model. The Rosette Lake watershed has been previously modeled using AGNPS 3.65 during the Mina Lake Watershed Assessment Project. Changes to the model are currently being made to reflect current conditions. All sampling will be done on a voluntary basis.

Products:

- In-Lake Sampling
- Install Monitoring Sites and Calculate Discharge Relationships
- Tributary Sampling
- QA/QC Sampling
- AnnAGNPS, FLUX, and BATHTUB Modeling

Responsible Agencies:

Technical Assistance Coordination:

Dakota Central Resource Conservation and Development (RC&D) Steering Committee
 North Central RC&D Coordinator
 Project Coordinator

Task Implementation:

South Dakota Department of Environment and Natural Resources
 Project Coordinator
 Dakota Central RC&D

Financial Assistance:

Water Quality 319 Projects
 NR Fees
 Local Match/Conservation Districts

Monitoring Assistance:

Project Coordinator
 SD Department of Environment and Natural Resources

Design and Technical Assistance:

South Dakota Department of Environment and Natural Resources

Total Cost: \$ 6,000.00

319 Funds: \$ 6,000.00

Task 6: Reports

Reports that will be completed include:

- Semiannual, annual reports and a final report shall be submitted electronically to fulfill GRTS reporting requirements to the U.S. Environmental Protection Agency.

- Produce loading calculations based on water quality sampling and hydrologic measurements. Summarize the results of the AGNPS and AnnAGNPS model for each watershed and report locations of critical areas.
- Currently, based on data collected, the hydrology of Rosette Lake is being evaluated for chemical, biological, and physical condition of the streams.
- Produce a summary report of all QA/QC activities conducted during the project and include in each of the final project reports.
- Write a description of feasible restoration recommendations and a TMDL for each watershed for use in planning watershed non-point source implementation.

Products:

- Semi-Annual and Annual GRTS Reports - Coordinator
- Rosette Lake Final Report and TMDL Implementation Recommendation - DENR
- Phase 2 Annual Report - Coordinator
- Cumulative Final Report - Coordinator

Milestone: Complete Reports as Scheduled

Responsible Agencies:

Technical Assistance Coordination:

Dakota Central Resource Conservation and Development (RC&D) Steering Committee
 North Central RC&D Coordinator
 Project Coordinator

Task Implementation:

South Dakota Department of Environment and Natural Resources
 Project Coordinator
 Dakota Central RC&D

Financial Assistance:

Water Quality 319 Projects

Design and Technical Assistance:

South Dakota Department of Environment and Natural Resources

3.3 A BMP Milestone Table (Table 6) is included at the end of the application. All required permits will be obtained for the installation of BMPs during this proposed project. It is anticipated 401 and 404 permits will be required.

3.4 The Dakota Central RC&D is the project sponsor. Mina Lake, Loyaltan Dam, and Cresbard Lake and Snake Creek lie in McPherson, Edmunds, Faulk, Spink and Brown counties, and the Conservation Districts have a working relationship with both landowners and community organizations and citizens. The Dakota Central RC&D is also experienced in project leadership and administration, having

sponsored three watershed projects which include the Mina Lake, Loyalton Dam, and Cresbard Lake/Snake Creek Watershed Assessments.

3.5 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 BMPs will be maintained for the terms agreed upon in the contract. The Dakota Central RC&D 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 The lead sponsor for this project is the Dakota Central RC&D. The Dakota Central RC&D will document cash and in-kind match to this project and is responsible for completion of this project's goal, objectives, and tasks.

Several other partners have been involved in previous Mina Lake, Loyalton Dam, and Cresbard Lake/Snake Creek projects. Their assistance will be requested as appropriate to each project activity. Organizations expected to participate and support the project requested include:

- North Central RC&D- Technical assistance for project management.
- Natural Resources Conservation Service - Technical assistance and cost-share funds to landowners for BMP installation (CRP/buffer strips/grass waterways/etc).
- South Dakota Department of Environment and Natural Resources - Technical assistance for water quality issues, sampling, and project management. Funds managed by DENR that will be requested include: 1. Consolidated Facilities Construction Funds for ag. system work and alum treatments.
- South Dakota Game, Fish & Parks: Cost-share funds for grassland/wetland BMPs as funds are available.
- South Dakota Department of Agriculture/Conservation Commission – technical assistance for BMPs and animal waste facilities.
- USDA Farm Service Agency - cost-share and program support for continuous and regular CRP.
- McPherson Conservation District, Edmunds Conservation District, Faulk Conservation District, Spink Conservation District, Brown Conservation District.

4.2 Mina Lake, Loyalton Dam, and Cresbard Lake and Snake Creek are important economic and social assets to the communities in the project area as well as rural residents and landowners. The Dakota Central RC&D and the Conservation Districts have provided leadership for this project.

Community efforts to improve Mina Lake, Loyalton Dam, and Cresbard Lake began during the 1980s with a 208 Clean Water project, and have been ongoing through recreation area improvements, dam structural repair, and watershed conservation practice implementation projects. Through community support the Mina Lake,

Loyalton Dam, and Cresbard Lake/Snake Creek Watershed Assessment project was initiated during 2001 and completed during 2003. During the assessment process, the conservation district staff visited with key landowners in the watershed to inform them of the project and discuss implementation of potential BMPs. This EPA 319 project proposal was developed using local representatives of the Dakota Central RC&D, Natural Resources Conservation Service and DENR meeting as a project work group. The Upper Snake Creek Watershed Project will be implemented using a local work group to help the RC&D coordinate and manage the project.

4.3 The Upper Snake Creek Watershed Project will be coordinated by a steering committee made up of available 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:

1. Annual 319 project coordinators training workshops.
2. Technical assistance for grassland management through the Grassland Management and Planning Project.
3. Technical and administrative training provided by the SD Association of Conservation Districts, SD DENR, and NRCS.
4. Technical assistance from the Ag Nutrient Management Team for Nutrient Management System planning and implementation for livestock wastes.
5. Technical assistance from the SD Lakes and Streams Association.

4.4 This project will be implemented through coordination with and in partnerships with other organization programs to create complementary activities. Key activities by programs that are similar for this project are as follows:

- BMP implementation: The installation of BMPs on cropland and grassland are supported in this proposal by 319 and CRP funds, and wildlife habitat programs. The implementation of BMPs in the watershed is proposed to be cost-shared by 319 funds (with the exception noted below) in order to provide their timely planning, design, and implementation under current funding expectations for other funding options. Exception to 319 BMP funding - the establishment of riparian buffers which may include tree planting, grass seeding, managed grazing and/or fencing and alternative water development provide greater cost-share and land rental payments to landowners through CRP 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 and ANMT 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 and evaluation efforts will involve:

1. Monitoring all project proposed tasks relative to meeting project milestones.

2. Evaluating quality and effectiveness of BMPs installed utilizing available tools (such as AnnAGNPS).
3. In-lake sampling as needed in Rosette Lake.

The Dakota Central RC&D, with technical support from the SD Department of Environment and Natural Resources, will develop a project-specific sampling and analysis plan (SAP) for this project utilizing existing state standard operating procedures.

Sampling and Analysis Plan For Mina Lake, Loyalton Dam, Cresbard Lake Implementations and Rosette Lake Assessments.

The Standard Operating Procedures Manual for Field Samplers developed by the State of South Dakota Department of Environment and Natural Resources; Water Resource Assistance Program will be used to guide all sampling and analysis conducted during the Upper Snake Creek Restoration Project. A copy of this document will be provided to the project coordinator. Training to assure competence in carrying out the procedures set forth in this document that pertain to this project will be provided to the coordinator and any other involved personnel prior to the start of the project.

Table 3. Location of Sampling and Analysis Procedures for each applicable task involved with the Rosette Lake.

| Task Number | Task Description | Activity | Reference: in SDWRA-2003 Vol. I or II SOP |
|--------------------|--|--|--|
| Task 4 | In-lake sampling at 1 site for Nutrient and Solids Parameters (Table 2). An estimated 20 samples are to be collected. Macrophyte Survey to be conducted. | Inlake Sampling D.O. and Temp. Profiles. Fecal, E.coli and Chl- <i>a</i> sampling, macrophyte survey | Volume I Section 14.0 pages 1-21 |
| | | | Volume II Section 2.0 pages 1-6 |
| Task 5 | Use of the AGNPS computer model | Watershed Modeling | Volume I Section 13.0 pages 1-2 |
| Section 5.0 | Evaluation of Loyalton Dam-pre and post alum treatment monitoring | In-lake Sampling | Volume I Section 14.0 pages 1-21 |

5.2 The Dakota Central RC&D 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. Assessment of feedlots for loading (before and after).
2. Sheet, rill, and gully erosion formulas for soil loss and transport.
3. Buffer and riparian vegetation establishment reductions in sediment and nutrient loading.
4. AnnAGNPS model for changes in loadings due to BMP installation.
5. STEPL model are used for load reductions on site.

In-lake sampling will be conducted as needed in Mina Lake, Loyalton Dam, and Cresbard Lake.

Local support and partner contributions is being tracked through records of landowner time and financial contributions, and through attendance records at annual tours, informational meetings, and project coordinator presentations and contacts.

5.3 The Dakota Central RC&D 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 assist the RC&D set-up the appropriate record systems and computer software for project data collected. Data collected through the in-lake and stream water sampling will be forwarded to South Dakota DENR for entry into the STORET database.

5.4 The Dakota Central RC&D will utilize the South Dakota DENR for technical assistance and training on which models to use and how to use them. It is anticipated that the AnnAGNPS model will be used to evaluate the impact of BMP installation in the watershed.

5.5 The major activities of this project will involve a contract (to include US Fish and Wildlife Service, Wildlife Extension Agreements) with landowners for operation and maintenance of BMPs to include contracts for the proposed in-lake restoration actions. The operation and maintenance section of these contracts will specify the BMPs life span for maintenance and who is responsible for maintenance and operation.

The Dakota Central RC&D is responsible to ensure O&M agreements are implemented. Conservation Districts, Lake Associations, and Counties will continue to lead efforts to identify, fund, and implement needed O&M, as well as other additional improvements needed for the lakes and watershed beyond this proposal's grant period.

6.0 BUDGET

Table 4. Upper Snake Creek Budget

Yearly Funding Source Expenditures

| Funding Sources | Year 1 | Year 2 | TOTAL | Percentage of Project |
|-------------------------------|---------------|---------------|---------------|------------------------------|
| 319 EPA | \$ 114,890 | \$ 173,280 | \$ 288,170 | 48.2% |
| SD Conservation Commission | \$ 21,202 | \$ 33,333 | \$ 54,535 | 9.1% |
| Local Funds | \$ 50,257 | \$ 106,883.50 | \$ 157,140.50 | 26.3% |
| Consolidated | \$ 0 | \$ 50,000 | \$ 50,000 | 8.4% |
| Other Federal (EQIP,WHIP,CRP) | \$ 18,198 | \$ 29,337.50 | \$ 47,535.50 | 8% |

7.0 PUBLIC INVOLVEMENT

7.1 A local work group will meet at least quarterly and provide input for project management and coordination of resources to the Dakota Central RC&D, and will consist of representatives from local, state, and federal stakeholder organizations.

The Dakota Central RC&D, through completion of Objective 2 (Information and Education) of this proposal, will provide information to the public through progress reports, a watershed newsletter, annual tours, news releases, and an annual informational meeting.

8.0 THREATENED AND ENDANGERED SPECIES

There are no threatened or endangered species documented in the Upper Snake Creek watershed. The U.S. Fish and Wildlife Service lists the whooping crane, bald eagle, and western prairie fringed orchid as species that could potentially be found in the area. None of these species were encountered during the Upper Snake Creek Assessment Project; however, care should be taken when implementing best management practices in the Upper Snake Creek watershed.

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 precautions that will be taken with respect to threatened and endangered species that could potentially be found in the area are as follows.

1. Whooping Crane

Whooping cranes are known to migrate through South Dakota. If a whooping crane(s) is observed at any project work site, all mechanical activities at the site will be suspended until the bird(s) leaves the site under its own volition. Spring and fall migrations of the species through the state occur during mid to late April and mid to late October.

2. Bald Eagle

The bald eagle can be found near water, primarily on river systems, large lakes, reservoirs, and coastal areas. Bald eagles typically prefer large trees for perching and roosting. As there is no confirmed documentation of bald eagles within the Upper Snake Creek watershed, little or no impact to the species should occur. Best management practices should avoid the destruction of large trees that may be used as bald eagle perches, particularly if an eagle is observed using a tree as a perch or roost. No project activities are planned that will disturb possible nesting sites or reduce food sources. If any actions become necessary during the project that might impact bald eagles that are in or visit the area, the sponsor or its agent will contact DENR for approval to complete the action before proceeding. If a bald eagle(s) is observed at any project work site, all mechanical activities at the site will be suspended until the bird(s) leaves the site under its own volition.

3. 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 tallgrass 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 tallgrass prairie to other land uses. If an orchid is observed at any project work 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.

TABLE 5. Budget for Upper Snake Creek Watershed Project

| Objective & Task | YEAR1 | YEAR2 | Quantity | FUNDING | | | | | |
|---|----------|----------|-----------|---------------|---------------|--------------|--------------|---------------|--------------|
| | | | | TOTAL \$ | 319 EPA | SD Comm | Consolidated | Landowner | Other Fed |
| Personnel Support | | | | | | | | | |
| Project Coordinator Salary & Benefits | | | | \$ 80,000.00 | \$ 80,000.00 | | | | |
| Administrative Support/Technical Assistance | | | | \$ 19,165.00 | \$ 19,165.00 | | | | |
| Equipment and Supplies | | | | \$ 2,000.00 | \$ 2,000.00 | | | | |
| Travel: Vehicle/Insurance/Mileage/Lodging | | | | \$ 12,000.00 | \$ 12,000.00 | | | | |
| | | | | \$ - | | | | | |
| OBJECTIVE 1: BMPs | | | | | | | | | |
| | | | | \$ - | | | | | |
| Task 1: Grassland/Cropland Management | | | | | | | | | |
| Grazing Systems @ \$0/ac | 3000 ac | 4500 ac | 7,500 ac | \$ - | | | | | |
| Fencing @ \$.93/LF | 15000 LF | 22500 LF | 37,500 LF | \$ 34,875.00 | | \$ 10,462.50 | | \$ 10,462.50 | \$ 13,950.00 |
| Grass Seeding @ \$ 100/ac | 36 ac | 54 ac | 90 ac | \$ 9,000.00 | | | | \$ 4,500.00 | \$ 4,500.00 |
| Riparian Buffers / Exclusion Fence @ \$.93/LF | 8000 LF | 12000 LF | 20,000 LF | \$ 18,600.00 | \$ 9,300.00 | | | \$ 9,300.00 | |
| Streambank & Shoreline Plantings \$66.50/ac | 2 ac | 2 ac | 4 ac | \$ 266.00 | \$ 133.00 | | | \$ 133.00 | |
| Tree Planting (riparian buffer) @ \$ 2,062.50/ac | 8 ac | 12 ac | 20 ac | \$ 41,250.00 | \$ 20,625.00 | \$ 4,125.00 | | \$ 16,500.00 | |
| Streambank & Shoreline Stabilization @ \$ 80/LF | 320 LF | 480 LF | 800 LF | \$ 64,000.00 | \$ 32,000.00 | | | \$ 32,000.00 | |
| | | | | \$ - | | | | | |
| Pipelines @ \$ 2.39/LF | 21000 LF | 31500 LF | 52500 LF | \$ 125,475.00 | \$ 47,053.00 | \$ 25,095.00 | | \$ 37,642.50 | \$ 15,684.50 |
| Tanks @ \$ 1,862/ea | 6 | 9 | 15 | \$ 27,930.00 | \$ 10,474.00 | \$ 6,982.50 | | \$ 6,982.50 | \$ 3,491.00 |
| Ponds/Dugouts/Cleanouts @ \$ 2,000/ea | 1 | 2 | 3 | \$ 6,000.00 | | \$ 1,800.00 | | \$ 1,800.00 | \$ 2,400.00 |
| Wells @ \$ 4,800/ea | 1 | 2 | 3 | \$ 14,400.00 | | \$ 4,320.00 | | \$ 4,320.00 | \$ 5,760.00 |
| Buffer Strips/Grassed Waterways @ \$ 1.00/lf | 2800 LF | 4200 LF | 7,000 LF | \$ 7,000.00 | | \$ 1,750.00 | | \$ 3,500.00 | \$ 1,750.00 |
| | | | | \$ - | | | | | |
| | | | | \$ - | | | | | |
| Task 2: Livestock Nutrient Management | | | | | | | | | |
| | | | | \$ - | | | | | |
| Ag Waste Systems & Nutrient Mgt Plans @ \$ 120,000/ea | | 1 | 1 | \$ 120,000.00 | \$ 40,000.00 | | \$ 50,000.00 | \$ 30,000.00 | |
| | | | | \$ - | | | | | |
| | | | | \$ - | | | | | |
| | | | | \$ - | | | | | |
| OBJECTIVE 2: INFORMATION and EDUCATION | | | | | | | | | |
| | | | | \$ - | | | | | \$ - |
| Task 3: Progress Reports/Distribution | | | | | | | | | \$ - |
| | | | | \$ - | | | | | \$ - |
| News Releases, News Articles, Newsletters @ \$ 105/ea | 12 | 12 | 24 | \$ 2,520.00 | \$ 2,520.00 | | | | |
| Informational Meetings & Workshops @ \$ 175/ea | 4 | 4 | 8 | \$ 1,400.00 | \$ 1,400.00 | | | | |
| Mailings = as needed | | | | \$ - | | | | | \$ - |
| Compilation of Documents & Developmnt of I&E Prod. = 1 ea | | 1 | 1 | \$ 1,500.00 | \$ 1,500.00 | | | | |
| Reports / Audits = 1 ea | | 1 | 1 | \$ 4,000.00 | \$ 4,000.00 | | | | |
| | | | | \$ - | | | | | |
| OBJECTIVE 3: Rosette Lake Assessment | | | | | | | | | |
| | | | | \$ - | | | | | \$ - |
| Task 4: In-Lake Sampling (voluntary) @ \$ 150/ea | 10 | 10 | 20 | \$ 3,000.00 | \$ 3,000.00 | | | | |
| Task 5: AnnAGNPS Modeling as needed | | | | \$ - | | | | | |
| Task 6: QA/QC Reports as needed | | | | \$ - | | | | | \$ - |
| Task 7: Tributary Sampling (voluntary) @ \$ 150/ea | 10 | 10 | 20 | \$ 3,000.00 | \$ 3,000.00 | | | | |
| TOTALS | | | | \$ 597,381.00 | \$ 288,170.00 | \$ 54,535.00 | \$ 50,000.00 | \$ 157,140.50 | \$ 47,535.50 |
| PERCENTAGE of OVERALL PROJECT | | | | \$ 597,381.00 | 48.2% | 9.1% | 8.4% | 26.3% | 8.0% |

BMP Milestone Table

Table 6.

| OBJECTIVE 1: BMPs | Year 1 | Year 2 | Total |
|---|----------|----------|-----------|
| Task 1: Grassland/Cropland Management | | | |
| Grazing Systems @ \$0/ac | 3000 ac | 4500 ac | 7,500 ac |
| Fencing @ \$.93/LF | 15000 LF | 22500 LF | 37,500 LF |
| Grass Seeding @ \$ 100/ac | 36 ac | 54 ac | 90 ac |
| Riparian Buffers / Exclusion Fence @ \$.93/LF | 8000 LF | 12000 LF | 20,000 LF |
| Streambank & Shoreline Plantings \$66.50/ac | 2 ac | 2 ac | 4 ac |
| Tree Planting (riparian buffer) @ \$ 2,062.50/ac | 8 ac | 12 ac | 20 ac |
| Streambank & Shoreline Stabilization @ \$ 80/LF | 320 LF | 480 LF | 800 LF |
| | | | |
| Pipelines @ \$ 2.39/LF | 21000 LF | 31500 LF | 52500 LF |
| Tanks @ \$ 1,862/ea | 6 | 9 | 15 |
| Ponds/Dugouts/Cleanouts @ \$ 2,000/ea | 1 | 2 | 3 |
| Wells @ \$ 4,800/ea | 1 | 2 | 3 |
| Buffer Strips/Grassed Waterways @ \$ 1.00/lf | 2800 LF | 4200 LF | 7,000 LF |
| | | | |
| Task 2: Livestock Nutrient Management | | | |
| | | | |
| Ag Waste Systems & Nutrient Mgt Plans @ \$ 120,000/ea | | 1 | 1 |
| | | | |
| | | | |
| OBJECTIVE 2: INFORMATION and EDUCATION | | | |
| | | | |
| Task 3: Progress Reports/Distribution | | | |
| News Releases, News Articles, Newsletters @ \$ 105/ea | 12 | 12 | 24 |
| Informational Meetings & Workshops @ \$ 175/ea | 4 | 4 | 8 |
| Mailings = as needed | | | |
| Compilation of Documents & Developmnt of I&E Prod. = 1 ea | | 1 | 1 |
| Reports / Audits = 1 ea | | 1 | 1 |
| | | | |
| OBJECTIVE 3: Rosette Lake Assessment | | | |
| | | | |
| Task 4: In-Lake Sampling (voluntary) @ \$ 150/ea | 10 | 10 | 20 |
| Task 5: AnnAGNPS Modeling as needed | | | |
| Task 6: QA/QC Reports as needed | | | |
| Task 7: Tributary Sampling (voluntary) @ \$ 150/ea | 10 | 10 | 20 |

**SOUTH DAKOTA NONPOINT SOURCE PROGRAM
QUALITY ASSURANCE PROJECT PLAN**

SUBMITTED BY:

**SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND NATURAL
RESOURCES
DIVISION OF FINANCIAL AND TECHNICAL ASSISTANCE
WATER RESOURCES ASSISTANCE PROGRAM**

Project Title: Upper Snake Creek Watershed Project

APPROVED BY:

South Dakota Watershed Protection Program
Environmental Senior Scientist, Assessment Section

Date

South Dakota Watershed Protection Program
Project Officer

Date

South Dakota Watershed Protection Program
Quality Assurance Officer

Date

South Dakota Watershed Protection Program
DENR Quality Assurance Coordinator

Date