WATERSHED PROJECT FINAL REPORT

SECTION 319
NONPOINT SOURCE POLLUTION CONTROL PROGRAM

DEUEL COUNTY LAKES
WATERSHED IMPROVEMENT PROJECT

BY

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DECEMBER, 2009

This Project was conducted in cooperation with the South Dakota Department of Environment and Natural Resources and the United States Environmental Protection Agency, Region VIII.

EPA 319 Grant Numbers: C9998185-03, 04, 05, 06, 07

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EXECUTIVE SUMMARY

PROJECT TITLE: Deuel County Lakes Watershed Improvement Project

SECTION GRANT NUMBERS: C9998185-03, 04, 05, 06, 07

PROJECT START DATE: 4/14/2005 **PROJECT COMPLETION DATE:** 12/31/2009

FUNDING:	TOTAL BUDGET	$1,454,813
	EPA GRANT	621,572
	TOTAL EPA FUNDS SPENT	620,078
	TOTAL SECTION 319 MATCH	413,593
	TOTAL EXPENDITURES	1,182,131

SUMMARY OF ACCOMPLISHMENTS

The project goal of the Deuel County Lakes Watershed Improvement Project, located in Deuel County, South Dakota (Figure 1) was to reduce the phosphorus loading to Fish Lake, reduce shoreline erosion of Fish Lake and Lake Alice, attain the TMDL for Fish Lake, maintain the current TSI at Lake Alice, and reduce the runoff from the Bullhead, School and Round Lake watersheds by 74%. Wigdale Lake has a TSI of 80. Reclassification as a pool or wetland is being considered for Wigdale Lake.

The Deuel County Lakes Improvement Project targeted the reduction of phosphorus loadings to Fish Lake, stabilized the lake levels, and reduced the shoreline erosion at Fish Lake through the construction of an outlet structure. In the watersheds for all of the lakes included, the project implemented best management practices (BMP's) to reduce the agricultural runoff. The BMP's incorporated included: animal waste management systems, grazing management, upland habitat improvement, crop rotation/residue management, grassed waterways, alternate watering systems and wetland restoration.

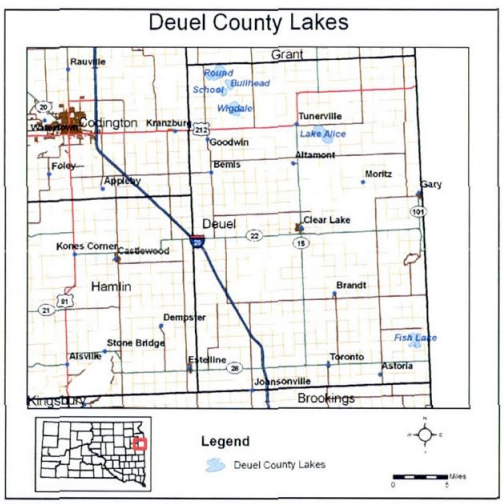

Figure 1. Deuel County Lakes Watershed Project Location, Deuel County, South Dakota.

INTRODUCTION

FISH LAKE

Fish Lake is a 738 acre natural lake located in southeastern Deuel County (Figure 2), in the Prairie Cocteau region of northeastern South Dakota. The lake was derived from glacial activity and has a contributing watershed of approximately 25,000 acres. The current average water depth of Fish Lake is 5.2 feet. The largest deposits of silt and sediment are located in the northern portion of the lake at its outlet.

The major surface water connection with the lake is unnamed tributaries draining into the lake from the south, west, and north.

The natural outlet of the lake is located on the northeast side and delivers water into an unnamed creek which enters the Lac Qui Parle River.

Land use in the Fish Lake Watershed is predominantly agriculture consisting of cropland and grazing. The assessment determined that the tributaries entering the lake, as well as the lake, are nutrient enriched and are also impacted by sedimentation. The lake has a high occurrence of algae blooms during the summer months. Heavy sedimentation over the years has reduced the lake to an average depth of 5.2 feet. Sources of sediment and nutrients include: degraded pasture conditions, livestock use of riparian areas, a lack of buffers in crop ground, nutrient loading as a result of drained crop ground, and animal feeding operations.

Through a comprehensive plan, this project will target sources of nonpoint source pollution found in the Fish Lake watershed. This holistic plan will target best management practices (BMPs) for agricultural runoff, including nutrient management. The proposed project includes a public relations and information component.

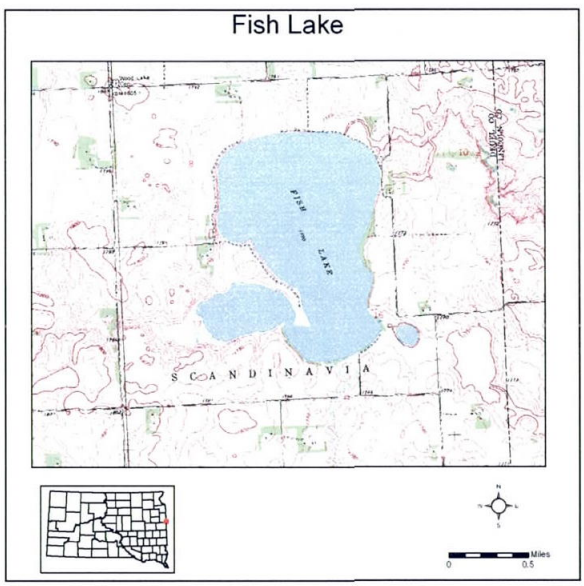

Figure 2. Fish Lake, located in southeastern Deuel County, South Dakota.

LAKE ALICE

Lake Alice is a 974 acre glacial lake located in north central Deuel County (Figures 3 and 4). It has an average depth of 12 feet and over 9.5 miles of shoreline. The lake has a maximum depth of 15 feet, and holds 4,286 acre-feet of water at pool elevation. The recommended ordinary high water mark (OHWM) for Lake Alice was established at 1691.8 feet above mean sea level (MSL). The ordinary low water mark (OLWM) was established at 1687.2 feet above sea level, by the Department of Environment and Natural Resources, Division of Water Rights. The outlet to Lake Alice, located on the northwest corner of the lake, drains into Conner Slough which eventually drains to the Minnesota River. The outlet elevation is set at 1691.3 feet MSL.

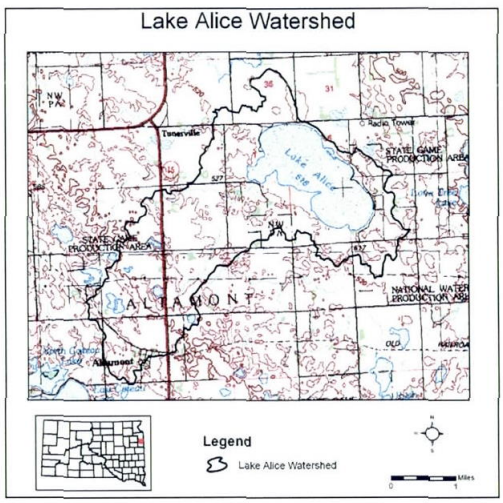

Figure 3. Lake Alice watershed, north central Deuel County, South Dakota.

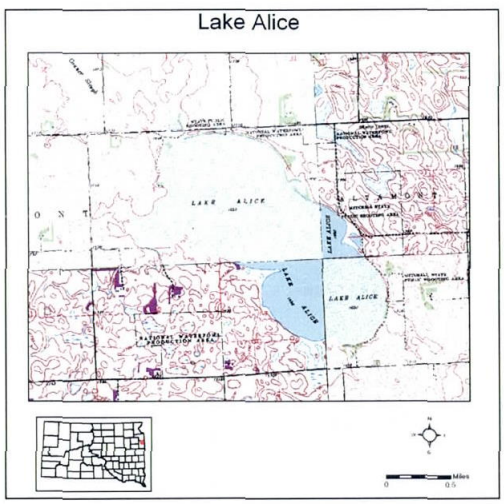

Figure 4. Lake Alice, north central Deuel County, South Dakota.

SCHOOL LAKE

School Lake, in northwestern Deuel County (Figure 5), covers 571 acres. The 3,892 acre watershed (Figure 6) consists of rolling areas in pastureland (44 percent), while the flatter areas are tilled for agricultural crops (46 percent).

BULLHEAD LAKE

Bullhead Lake, northwestern Deuel County (Figure 5), covers 571 acres. The 3,374 acre watershed (Figure 6) consists of rolling terrain and drift plains. Much of the rolling areas are in pastureland (25 percent), while the flatter areas are in cropland (22 percent).

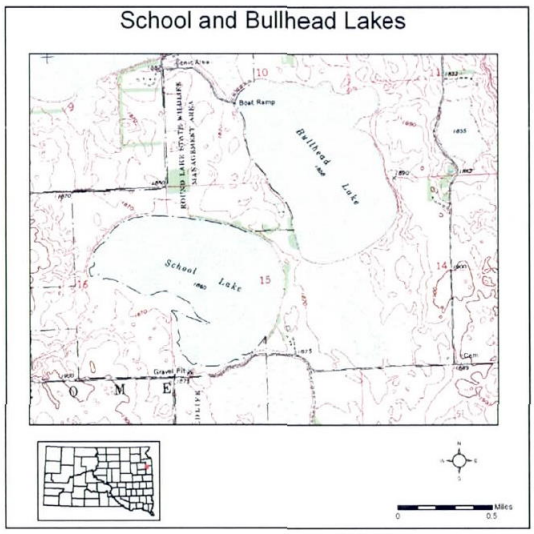

Figure 5. School and Bullhead Lakes, northwestern Deuel County, South Dakota.

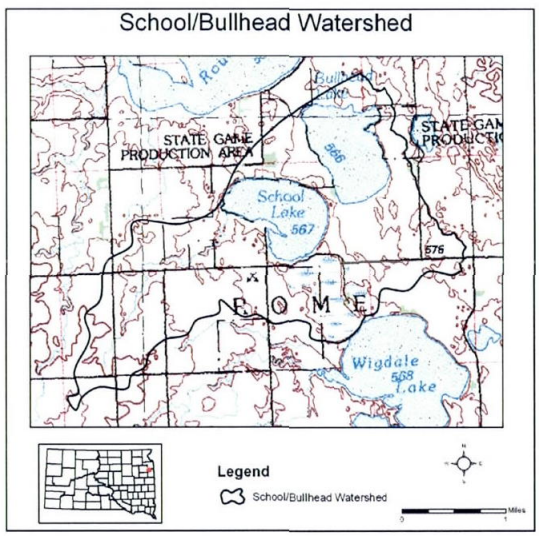

Figure 6. School and Bullhead Lakes watershed area, Deuel County, South Dakota.

ROUND LAKE

Round Lake, located in northwestern Deuel County (Figure 7), covers 1,161 acres. The 4,903 acre watershed for Round Lake consists of rolling terrain in pastureland (38 percent) and drift plains in cropland (32 percent).

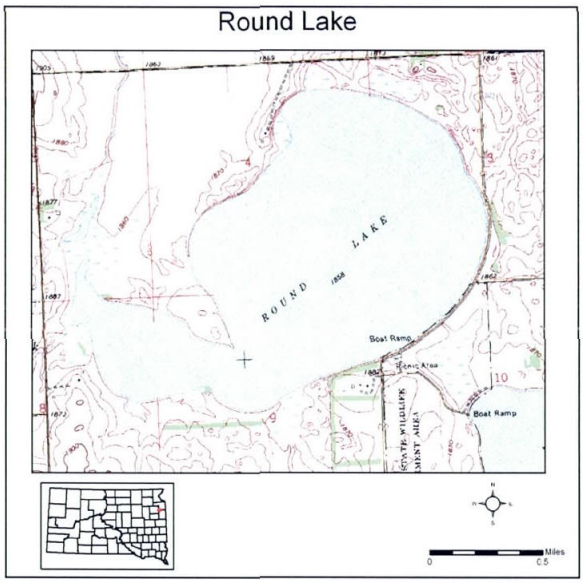

Figure 7. Round Lake, in northwestern Deuel County, South Dakota.

WIGDALE LAKE

Wigdale Lake, in northwestern Deuel County (Figure 8), covers 713 acres. The 9,983 acre watershed consists of rolling areas in pastureland (27 percent) and flatter areas which are tilled for agricultural crops (64 percent).

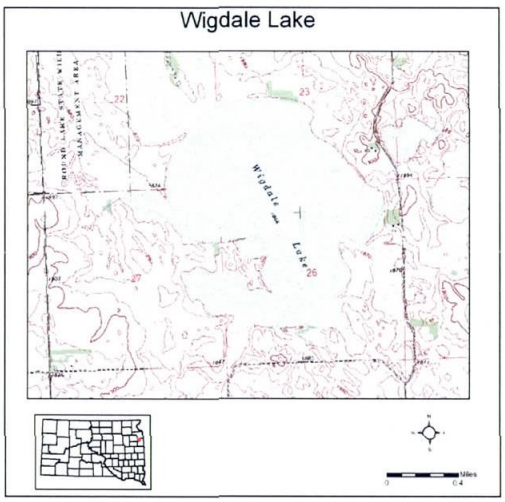

Figure 8. Wigdale Lake, northwestern Deuel County, South Dakota.

PROJECT ACTIVITIES

Deuel County Conservation District has worked on the project implementation with the major project goal in mind; that is, to reduce the phosphorus loading to Fish Lake, reduce shoreline erosion of Fish Lake, Lake Alice, School Lake, Bullhead Lake, and Round Lake.

An outlet structure was completed on Fish Lake to reduce shoreline erosion. Best Management Practices were implemented to reduce agricultural runoff on all the lakes involved in the project. The BMP's implemented include: animal waste management systems, grazing management, upland habitat improvement, crop rotation/residue management, grassed waterways, alternate watering systems and wetland restoration.

PROJECT GOALS, OBJECTIVES AND ACCOMPLISHMENTS

Objective 1: Reduce the nutrient and sediment loading of tributaries to Fish Lake, Bullhead, School and Round Lake. The project will use a combination of BMPs to reduce inputs from agricultural lands to achieve a 25 percent reduction of phosphorus loadings from the tributaries to Fish Lake and 74 percent to School, Bullhead, Round and Wigdale Lakes.

Task 1: Reduce phosphorus and sediment loading from the watershed by installing BMPs.

Product 1: Grassed Waterways:
Vegetative ground cover will be reestablished on 150 acres of agricultural fields using grassed waterways. The grassed waterways will reduce potential nutrient runoff and stop erosion. A total of 150 acres of grassed waterways will be installed at selected sites in the southern part of the Fish Lake watershed and also the watersheds of School, Bullhead, Round and Wigdale lakes. The sites will be selected based on an on-site inspection of severity of erosion, potential to contribute loads, and proximity to tributaries. The reduction of erosion will be site dependent based on the severity of current conditions. Grassed waterways will also intercept nutrients. A number of these sites may include minor earthwork or shaping.

Milestone: 150 acres of grassed waterways.

Accomplishments: One completed waterway is 2,630 feet long, 34 acres. There are no other waterways being planned at this time. Project funds were transferred to another BMP within the project.

Product 2: Animal Nutrient Management Systems
Nine animal feeding operations were identified as priorities in the watershed assessment. One of the operations is no longer stocking livestock. Eight animal waste management systems will be installed as identified in the assessment report. These animal feeding operations had AGNPS ratings of 48, 63, 78, 67, 61, 59 and 53. Two of the animal nutrient management systems will be designed by the NRCS Nutrient Management Team. A private firm will be hired to design the remaining 6 systems. This activity will reduce the amount of dissolved phosphorus and nitrogen load entering Fish, School, Bullhead, Round and Wigdale Lakes.

Milestone: 8 Ag Waste Systems installed.

Accomplishments: A total of ten AWS's have been considered and analyzed for this project. Out of the ten, eight have been cancelled due to cost. Two AWS's have been completed.

Product 3: Grazing Management:
A total of 2,700 acres of pasture within the watershed will involve improved management which will include cross fencing and alternate watering systems. Alternate watering systems will consist of nose pumps, tanks and dugouts. These alternate watering systems will make livestock less dependent on drinking out of the tributaries. Assistance and consultation will be obtained from US Fish & Wildlife Service and NRCS / Grassland Management and Planning Assistance Team to design grazing management systems.

Milestone: 2,700 acres of grazing management.

Accomplishments: 1907 acres have been covered incorporating grazing management.

A total of 1,154 acres has been enrolled. South Dakota Game Fish & Parks has fenced out 753 acres to keep livestock out of Bull and School Lakes. Formerly, this land has been grazed every three years and the cattle drank out of the lakes. Since we have the Lake Project going on, SDGFP has agreed to fence off the lakes with an alternative watering source for the cattle

Product 4: Wetland, Riparian and Upland Habitat Restoration:
A total of 400 acres of wetlands and/or upland habitat that are along or have natural outlets to tributaries will be restored and improved. Wetlands will be reestablished on formerly cropped land or idle land within the watershed. Activities will include plugs and seeding or plugs of plant materials. These activities will be closely coordinated with USFW and Ducks Unlimited for funding and technical assistance. Applications for the NRCS Wetland Reserve Program will also be investigated. The incentive payment to defer use will cover a minimum of seven years, and will be paid in three increments over a period of three years. This practice will provide long term cover. The operations and management will be tracked for seven years, and payment will be refunded if necessary. The land is not eligible for the Continuous CRP program.

Milestone: 400 acres of wetlands will be restored and improved.

Accomplishments: 506 acres have been restored.

Objective 2: Permanent outlets will be installed on Fish Lake and Lake Alice to reduce erosion and maintain the TSI on Lake Alice.

Task 2: Outlets will be designed and constructed. Design of the outlets will be done in consultation with the SD DENR Water Rights Program and SD Game Fish & Parks.

Product 5: Outlet on Fish Lake:
An outlet on Fish Lake will create a stable water level, and a stable release of water, which will in turn reduce bank erosion of the outlet channel and sediment loads entering the Lac Qui Parle River. The outlet on Fish Lake affects the water quality in the Lac Qui Parle watershed in Minnesota, and the State of Minnesota is willing to contribute funding for the Fish Lake outlet. Funding for the engineering and design will come from SD Game Fish & Parks.

Milestone: Outlet on Fish Lake constructed.

Accomplishments: The outlet for Fish Lake has been completed.

Product 6: Outlet on Lake Alice:
An outlet on Lake Alice will maintain the TMDL which has been achieved. Construction and maintenance of the outlet will prevent bank erosion from rising water levels and provide limited flushing of phosphorus from the lake. Funding for the engineering and design will come from SD Game Fish & Parks.

Milestone: Outlet on Lake Alice constructed.

Accomplishments: The design for the outlet on Lake Alice was completed by SDGFP. The design was reviewed by South Dakota Water Rights, and their opinion was that the design of the outlet was too small for the size of the lake. The Lake Alice outlet project will not be done. Part of the designated funding for this project was used to complete the Fish Lake outlet ($10,479.42) and the unused portion of the designated funding ($11,920.58) went back into the State's Consolidated Fund.

Objective 3: Complete an Information & Education program in the project area to inform the public about the Deuel County Lakes Project.

Task 3: Complete an Information and Education program that will be implemented to inform the public about the project purpose, goals, objectives and progress.

Product 7: News Articles:
News articles will be developed to provide water quality and watershed management information to the people who live in the watershed. News articles will be placed in the local newspaper regarding the project goals, objectives and status.

Milestone: 15 news articles published and one project pamphlet developed.

Accomplishments: Public notices and news articles have been printed concerning this project.

Product 8: Project Tours:
Project tours of practices implemented in the watershed will be conducted semi-annually to inform the public about water quality and project activities.

Milestone: 5 project tours

Accomplishments: A project tour was conducted for an official from EPA and officials from DENR. They were shown the outlet at Fish Lake, the sediment ponds at Lake Cochrane, a marginal pasture land project at Wigdale Lake and a modern dairy system. Two local tours have been conducted.

Product 9: Project Awareness Signs:
Six 4' x 8' project awareness signs will be installed at highly visible locations around the lakes.

Milestone: 6 project signs installed.

Accomplishments: The signs have been installed; two by Fish Lake, one by Lake Alice and three in the northwest watershed.

Objective 4: Develop and submit reports to comply with grant conditions:

Task 4: Develop and submit project progress and final reports electronically to DENR to fulfill GRTS reporting requirements of the U.S. Environmental Protection Agency. The annual report will include load reduction data.

Product 10: Mid-Year and Annual GRTS Reports:

Milestone: Complete Mid-Year and Annual Reports.

Accomplishments: All required reporting has been submitted.

Table 1. LOAD REDUCTIONS

Please select the pollutant, and then enter the numerical amount, units, and whether it is a TMDL related pollutant. Click in gray areas for dropdown list.
NOTE: If Nitrogen and/or Phosphorus are chosen, units must be lbs/yr. If Sedimentation is chosen, units must be in tons/yr.

Pollutant Type *	Pollutant Reduction Target	Current Year Pollutant Reduction	Cumulative Pollutant Reduction Achieved (Numerical)	Units	TMDL yes/no
POLLUTANTS:					
PHOSPHORUS		65	455	Pounds per year(LBS/yr)	
NITROGEN		1,421	9,948	Pounds per year(LBS/yr)	
ADDITIONAL POLLUTANTS:					
SEDIMENTATION-SILTATION		1,507	10,555	Tons	NO

Wetlands/Streambanks/Shorelines
Please select the appropriate item as it relates to the project or task. For this reporting period there should be an actual (when available) positive numerical value for each selection

- ☐ Wetlands Restored
- ☐ *Wetlands Created*
- ☐ Streambank and Shoreline Protection
- ☐ Stream Channel Stabilization

Description	Current Year	Cumulative Total	Units
Wetlands Restored	0	506	Acres
Wetlands Created			Acres
Streambank and Shoreline Protection			Feet
Stream Cannel Stabilization			Feet

COORDINATION EFFORTS

The Deuel County Conservation District served as the project sponsor. District staff included the project coordinator and the district manager supervised by the District Board of Supervisors. The district coordinated project activities, reported on progress, vouchered for grant funds and provided record keeping services. Coordination efforts with other agencies are described below.

STATE AGENCIES:

SD Department of Agriculture, Division of Resource Conservation & Forestry - Soil and Water Conservation grant through the SD Conservation Commission to cost-share conservation activities on land in the watershed.

South Dakota Game Fish & Parks - Provided technical and financial assistance to complete the outlet on Fish Lake.

SD Department of Environment and Natural Resources - Funding through EPA Clean Water Act Section 319 grants and a DENR Consolidated Water Facilities Construction Program grant. The "consolidated fund" grant was used for ag waste system designs and for construction of the outlet on Fish Lake.

USDA:

USDA Natural Resources Conservation Service (NRCS) - Financial assistance for the construction of the ag waste systems through the Environmental Quality Incentives Program (EQIP).

USDA Farm Service Agency (FSA) - Financial assistance for the Marginal Pastureland (MPL) Program through Conservation Reserve Program (CRP) cost-share.

OTHER FEDERAL:

US Environmental Protection Agency - Clean Water Act Section 319 grants awarded through SD DENR for personnel needed to carry out the project and for installation of watershed BMP's.

OTHER:

East Dakota Water Development District (EDWDD) - Financial and technical assistance for the information and education portion of the project.

Landowners - Installed watershed BMP's and contributed in-kind and cash match to leverage the other funding sources used to construct the BMP's.

State of Minnesota - Provided funding to assist with the construction of the Fish Lake outlet.

Table 2. Deuel County Lakes Original Budget

Budget for Deuel County Lakes Watershed Improvement Project

Funding sources	Total Costs	EPA 319	EQIP NRCS	CWFCP	Cons. Comm	Deuel CD	Minnesota	GF&P	EDWD	Land Owners
Personnel/Administration										
Coordinator Salary and Payroll Expenses	$77,910.00	$77,910.00								
Additional Coordinator Salary and Payroll Expenses	$40,229.59	$40,229.59								
Revised Total Coordinator Salary and Payroll Expenses	$118,139.59	$118,139.59								
Adminstrator Salary and Payroll Expenses	$22,390.00	$22,390.00								
Additional Administrator Salary and Payroll Expenses	$12,655.00	$12,655.00								
Revised Total Adminstrator Salary and Payroll Expenses	$35,045.00	$35,045.00								
Supplies and Materials	$2,000.00					$2,000.00				
Additional Supplies and Materials	$600.00					$600.00				
Revised Total Supplies and Materials	$2,600.00					$2,600.00				
District Shop, Equipment	$10,000.00					$10,000.00				
Additional District Shop, Equipment	$3,300.00					$3,300.00				
Revised Total District Shop, Equipment	$13,300.00					$13,300.00				
Travel	$5,223.03	$5,223.03								
Additional Travel	$1,000.00	$1,000.00								
Revised Total Travel	$6,223.03	$6,223.03								
Objective Subtotal	$117,523.03	$105,523.03				$12,000.00				
Additional Objective Subtotal	$57,784.59	$53,884.59				$3,900.00				
Revised Total Objective Subtotal	$175,307.62	$159,407.62				$15,900.00				
Objective/Item										
Objective 1 - Best Management Practices										
Grassed Waterways	$10,790.82	$5,165.82								$5,625.00
Animal Waste Systems Design	$20,000.00	$15,000.00								$5,000.00
Additional Animal Waste Systems Design	$95,000.00	$38,750.00		$37,500.00						$18,750.00
Revised Total Animal Waste Systems Design	$115,000.00	$53,750.00		$37,500.00						$23,750.00
Animal Waste Systems Construction	$288,200.00	$71,100.00	$145,000.00							$72,100.00
Additional Animal Waste Systems Construction	$602,184.69	$210,623.92	$250,000.00							$141,560.77
Revised Total Animal Waste Systems Construction	$890,384.69	$281,723.92	$395,000.00							$213,660.77
Grazing Management	$31,054.64	$15,324.64			$5,900.00					$9,830.00
Wetland Restoration and Upland Habitat Restoration	$91,000.00	$54,600.00			$13,650.00					$22,750.00
Additional Wetland & Upland Habitat Restoration	$89,375.00	$51,600.00			$16,275.00					$21,500.00
Revised Total Wetland & Upland Habitat Restoration	$180,375.00	$106,200.00			$29,925.00					$44,250.00
Objective Subtotal	$441,045.46	$161,190.46	$145,000.00		$19,550.00					$115,305.00
Additional Objective Subtotal	$786,559.69	$300,973.92	$250,000.00	$37,500.00	$16,275.00					$181,810.77
Revised Total Objective Subtotal	$1,227,605.15	$462,164.38	$395,000.00	$37,500.00	$35,825.00					$297,115.77
Objective 2 - Outlet Construction										
Fish Lake Design & Eng.	$3,000.00							$3,000.00		
Fish Lake Construction	$20,000.00			$12,000.00			$8,000.00			
Lake Alice Design & Eng.	$3,000.00							$3,000.00		

Table 2. Deuel County Lakes Original Budget

Budget for Deuel County Lakes Watershed Improvement Project-Continued

Funding Sources	Total Costs	EPA 319	EQIP NRCS	CWFCP	Cons. Comm	Deuel CD	Minnesota	GF&P	EDWD	Land Owners
Lake Alice Construction	$22,400.00			$22,400.00						
Objective Subtotal	$48,400.00			$34,400.00			$8,000.00	$6,000.00		
Objective 3 - Information and Education										
News Articles	$400.00					$400.00				
Additional News Articles	$600.00					$100.00			$500.00	
Revised Total News Articles	$1,000.00					$500.00			$500.00	
Tours of Project	$800.00					$600.00			$200.00	
Additional Tours of Project	$200.00					$200.00				
Revised Total Tours of Project	$1,000.00					$800.00			$200.00	
Project Awareness Signs	$1,500.00								$1,500.00	
Objective Subtotal	$2,700.00					$1,000.00			$1,700.00	
Additional Objective Subtotal	$800.00					$300.00			$500.00	
Revised Total Objective Subtotal	$3,500.00					$1,300.00			$2,200.00	
	$609,668.49	$266,713.49	$145,000.00	$34,400.00	$19,550.00	$13,000.00	$8,000.00	$6,000.00	$1,700.00	$115,305.00
Additional Project Total	$845,144.28	$354,858.51	$250,000.00	$37,500.00	$16,275.00	$4,200.00			$500.00	$181,810.77
Revised Total Project Total	$1,454,812.77	$621,572.00	$395,000.00	$71,900.00	$35,825.00	$17,200.00	$8,000.00	$6,000.00	$2,200.00	$297,115.77
	$266,713.49									
Additional EPA 319 Funds	$354,858.51									
Revised Total EPA 319 Funds	$621,572.00									
	$145,000.00									
Additional Other Federal Funds	$250,000.00									
Revised Total Other Federal Funds	$395,000.00									
	$197,955.00									
Additional Match	$240,285.77									
Revised Total Match	$438,240.77									
	$609,668.49									
Additional Total	$845,144.28									
Revised Total	$1,454,812.77									

Table 3. Deuel County Lakes Actual Budget											
ITEM	**TOTAL**	**EPA**	**EQIP**	**CWFCP**	**C.COMM.**	**C.DIST.**	**MINN.**	**GFP**	**EDWD**	**LO**	**OTHER**
PERSONNEL											
Coordinator											
Budget	118,140	118,140									
Actual	118,140	118,140									
Administrator											
Budget	35,045	35,045									
Actual	35,045	35,045									
Supplies & Material											
Budget	2,600					2,600					
Actual	14,223					14,223					
Dist. Shop & Equip.											
Budget	13,300					13,300					
Actual	16,667					16,667					
Travel											
Budget	6,223	6,223									
Actual	6,223	6,223									
BUDGET TOTAL	175,308	159,408				15,900					
ACTUAL TOTAL	190,298	159,408				30,890					
BMP'S											
Waterways											
Budget	10,791	5,166								5,625	
Actual	6,888	5,166								1,722	
AWS Design											
Budget	115,000	53,750		37,500						23,750	
Actual	125,757	53,675		37,500						34,582	
AWS Construction											
Budget	890,385	281,724	395,000							213,661	
Actual	571,198	280,305	148,460							142,433	
Grazing Mgt.											
Budget	31,055	15,324			5,900					9,830	
Actual	58,483	15,324			6,107					37,052	
Wetland Restored											
Budget	180,375	106,200			29,925					44,250	
Actual	185,394	106,200			29,770					49,424	
BUDGET TOTAL	1,227,606	462,164	395,000	37,500	35,825					297,116	

Table 3. Deuel County Lakes Actual Budget-continued											
ITEM	**TOTAL**	**EPA**	**EQIP**	**CWFCP**	**C.COMM.**	**C.DIST.**	**MINN.**	**GFP**	**EDWD**	**LO**
ACTUAL TOTAL	947,720	460,670	148,460	37,500	35,877					265,213
OUTLETS										
Budget	3,000						0	3,000		
Actual	3,600						600	3,000		
Fish Lake Construction										
Budget	20,000			12,000			8,000			
Actual	30,479			22,479			8,000			
Lake Alice Design										
Budget	3,000							3,000		
Actual	3,600							3,600		
Lake Alice Construction										
Budget	22,400			22,400						
Actual	0			0						
BUDGET TOTAL	48,400			34,400			8,000	6,000		
ACTUAL TOTAL	37,679			22,479			8,600	6,600		
INFO & EDUCATION										
News Articles										
Budget	1000					500			500	
Actual	278					278			0	
Tours										
Budget	1000					800			200	
Actual	684					500			184	
Signs										
Budget	1500					0			1500	
Actual	1872					40			1832	
District Meetings										
Budget	0					0				
Actual	3,600					3,600				
BUDGET TOTAL	3,500					1,300			2,200	
ACTUAL TOTAL	6,434					4,418			2,016	
PROJECT BUDGET	1,454,813	621,572	395,000	71,900	35,825	17,200	8,000	6,000	2,200	297,116
PROJECT ACTUAL	1,182,131	620,078	148,460	59,979	35,877	35,308	8,600	6,600	2,016	265,213

SUMMARY OF PUBLIC PARTICIPATION

Public participation varied from one end of the county to the other. The residents in the north end of the county seemed to be more interested in participating in the project BMP's. Several of them entered into the CRP Marginal Pastureland Program, wherein the Deuel County Lakes project cost-shared odd areas not covered by the CRP program.

The public was informed about the project through two workshops, one in the south end of the county and one in the north end of the county. All of the BMP's offered under the project were introduced and explained.

For those producers who did not attend the workshops, a direct mailing was sent out which explained the project and the cost-share practices covered. After this mailing, a large number of producers came into the office to sign up for the programs offered, especially the Marginal Pastureland (MPL) program. Before this pamphlet was mailed out, there was little or no interest expressed in the new MPL program.

The coordinator worked closely with those who were interested in constructing animal waste management systems. Several producers were very interested, but once they found out the funds they had to contribute, they felt it was too costly. Two producers installed systems on their farms. Both of them are in the north end of the county.

ASPECTS OF THE PROJECT THAT DID WORK WELL AND DID NOT WORK WELL

The highlight of all the best management practices installed under the project was in the category of grazing management. The exceptionally successful practice was part of the CRP marginal pastureland program. The Deuel County Lakes Project cost-shared corner areas not covered under the CRP, which allowed areas to be "squared off", making the fencing much easier. The project coordinator worked with the NRCS technician to GPS the areas for fencing.

The project coordinator and administrator visited the areas covered under this program after it had been implemented a year. It was phenomenal how the fenced-off areas had turned into native grasses and flowers after such a short time.

The pamphlet which was mailed out explaining project programs was highly successful, judging by the number of producers who phoned or stopped in after reviewing the pamphlet.

The one aspect of the project which created some problems was using a technical service provider for the animal waste system designs instead of using NRCS engineers. The reason the TSP had to be used was because the NRCS engineers did not have the ability to do the designs in time for construction to be completed by the project end date. Hiring the TSP cost the project an extra $156,736, and this cost would have been zero if NRCS engineers would have been able to provide the service.

One contractor who had the low bid on one of the animal waste systems proved to be incompetent, and caused more expense with necessary additional oversight, corrections and modifications. The contractor on the second animal waste system, however, was exceptionally competent and completed that system with hardly any problems.

The BMP Tracker program worked well, and is a very helpful tool to accurately keep track of all expenditures.

RESULTS AND FUTURE ACTIVITY RECOMMENDATIONS

The overall goal of the Deuel County Lakes Watershed Improvement Project, which was to reduce phosphorus loading, reduce shoreline erosion, attain TMDL's, maintain current TSI's and reduce runoff, has been achieved. This conclusion is based on the BMP practices installed and being maintained in the watershed.

As a result of this project, the public is more aware of the benefits of protecting our watersheds.

Conservation work will continue in the Deuel County watersheds using funds offered through USDA NRCS and FSA cost share programs. There is considerable continuing interest in the marginal pastureland program and other CRP programs.

The Deuel County Conservation District has worked in partnership with the SD DENR to maintain or improve all of the lakes and watersheds in the county. The Conservation District will continue to provide leadership by educating the public on the importance of water quality in the county.