

**WATERSHED PROJECT FINAL REPORT**

**SECTION 319**

**NONPOINT SOURCE POLLUTION CONTROL PROGRAM**

**CLEAR LAKE WATERSHED RESTORATION PROJECT**

**BY**

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**This Project was conducted in cooperation with the South Dakota Department of Environment and Natural Resources and the United States Environmental Protection Agency, Region V111.**

**Grant # C-9998185-96; Grant # C-9998185-00**

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## **EXECUTIVE SUMMARY**

PROJECT TITLE **Clear Lake Watershed Restoration Project**

SECTION GRANT NUMBER(S) 9998185-96 / 9998185-00

PROJECT START DATE **07/01/00** PROJECT COMPETITION DATE **06/13/05**

FUNDING:	TOTAL BUDGET	<b><u>1,993,717.00</u></b>
	EPA GRANT (9998185-96)	<b><u>43,384.00</u></b>
	EPA GRANT (9998185-00)	<b><u>684,554.00</u></b>
	TOTAL EPA GRANT	<b><u>727,938.00</u></b>
	TOTAL EXPENDITURES OF EPA FUNDS	<b><u>727,938.00</u></b>
	TOTAL SECTION 319 MATCH ACCRUED	<b><u>810,459.00</u></b>
	TOTAL EXPENDITURES	<b><u>1,781,548.00</u></b>

### **SUMMARY OF ACCOMPLISHMENTS**

The project goal was:

“Improve water quality by reducing nutrient and sediment loading of the streams and lake.”

The goal was to be attained by:

- implementing BMPs that reduce agricultural crop runoff,
- reducing NPS pollution from the City of Clear Lake, and
- sediment removal from the lake.

The first objective of the Clear Lake Watershed Restoration Project was to reduce phosphorus loading by 20 percent in the watershed by using Best Management Practices (BMPs). BMPs installed to reach the objectives included: Crop rotation / residue management, Grassed waterways, Animal waste management systems, Grazing management / alternate watering systems, wetland restoration / upland habitat restoration, and Riparian / bank stabilization.

Objective two, reduce nutrients of urban runoff from the city storm sewer system, was reached using volunteer activities such as storm drain stenciling and zero phosphorus fertilizer use.

The third objective, remove approximately one-third of the sediment from the lake, was accomplished by dredging selected portions of the lake.

Information and education activities for the rural and urban landowners, objective 4, included surveys, tours, meetings, project signs and news articles focusing on how water quality is affected by what activities in the watershed area.

The project goal was attained even though it was necessary to modify or discontinue some project implementation plan activities during the course of the project.

## INTRODUCTION

Clear Lake is a 532 acre lake located on the edge of the City of Clear Lake. The lake and city are located in central Deuel County which is in the Prairie Coteau region of northeastern South Dakota (Figure 1). The watershed is defined by the drainage area from the headwaters of the main northwestern tributary to the outlet of Clear Lake located directly east of the City of Clear Lake (Figure 1).

The lake, formed by glacial activity, has an average depth of 4.5 feet. The major surface water connection to the lake is an unnamed tributary which drains into the lake from the northwest. The importance of this tributary increased substantially during the early 1900s when a diversion channel was dug to create a direct surface water connection to the lake. Prior to construction of the diversion, water from the tributary entered the lake through a natural wetland complex only during heavy floods. Since that time, Clear Lake has experienced loss of depth and declining water quality and other related problems due to activities that are usually associated with agricultural watersheds.

In the past, Clear Lake had good water quality. The lake was used for immersion recreation activities such as swimming, boating and fishing. At present, the main uses of the lake are fishing and occasional boating.

Efforts to restore Clear Lake began during the 1980s when community leaders began discussing the need to clean up the lake. Representatives from the community met with the SD Department of Environment and Natural Resources (DENR) to discuss the possibility of a lake restoration project. This meeting established the groundwork for the first public meeting about the project which was held in Clear Lake during 1994. During the meeting with Deuel County Lakes and Streams, Deuel County Conservation District, and other community leaders, DENR proposed completing a diagnostic/feasibility study to determine lake water quality, identify sources of pollutants causing impairments and develop possible restoration alternatives. DENR informed the group that Clear Lake was a priority for the state, and that the lake was slated for development of a TMDL (total maximum daily load). The Deuel County Conservation District agreed to sponsor the study, and submitted a grant request to DENR. The grant was approved during 1996. The study and final report were completed during 1998 and 1999 respectively.

The watershed assessment included intake water quality monitoring and algae sampling, tributary monitoring, storm sewer monitoring, groundwater monitoring, and a land use assessment. Water quality information was collected at nine tributary, two intakes, and three storm sewer monitoring sites. To further evaluate water quality in the watershed, land use and geo-technical information was also compiled. This information was used to run the Agricultural Nonpoint Source model (AGNPS) to determine:

1. Nonpoint source (NPS) yields from each subwatershed and the net loading at the outlet of Clear Lake,
2. Critical cells within each subwatershed (identified by elevated sediment, nitrogen, phosphorus), and
3. A priority ranking and quantification of nutrient loading for each animal feeding area.

Based on the assessment, an implementation grant application was submitted to DENR during 2000 by the Deuel County Conservation District. After the application was approved, the Clear Lake Restoration Corporation (CLR) was formed to provide an organization to raise local cash and in-kind match.

Sediment removal from the lake by dredge was a major component of the project workplan. Prairie Partners designed the sediment holding areas. Large hay bales were used to form dikes that functioned as holding areas to trap sediment pumped from the lake. This design allowed the local community to help construct the sediment receiving areas. The sediment holding area was located on a field which is enrolled in the Conservation Reserve Program (CRP). Special permission to use the field was granted by the USDA Farm Service Agency. South Dakota Lakes and Streams was contracted to do the actual dredging. Best management practices (BMPs) were installed in the 27,360 acre watershed to reduce nutrient and sediment loads entering the lake.

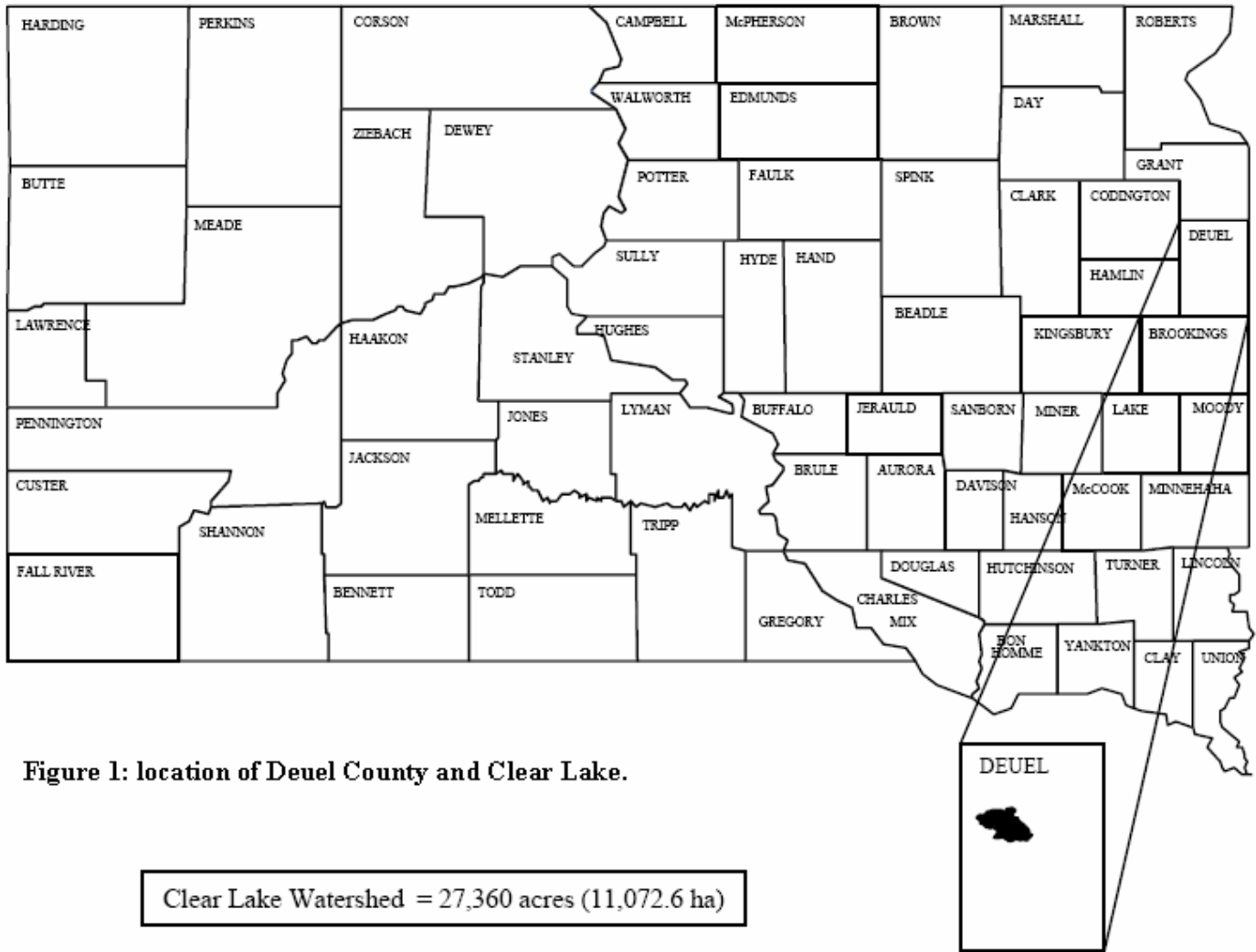


Figure 1: location of Deuel County and Clear Lake.

Clear Lake Watershed = 27,360 acres (11,072.6 ha)

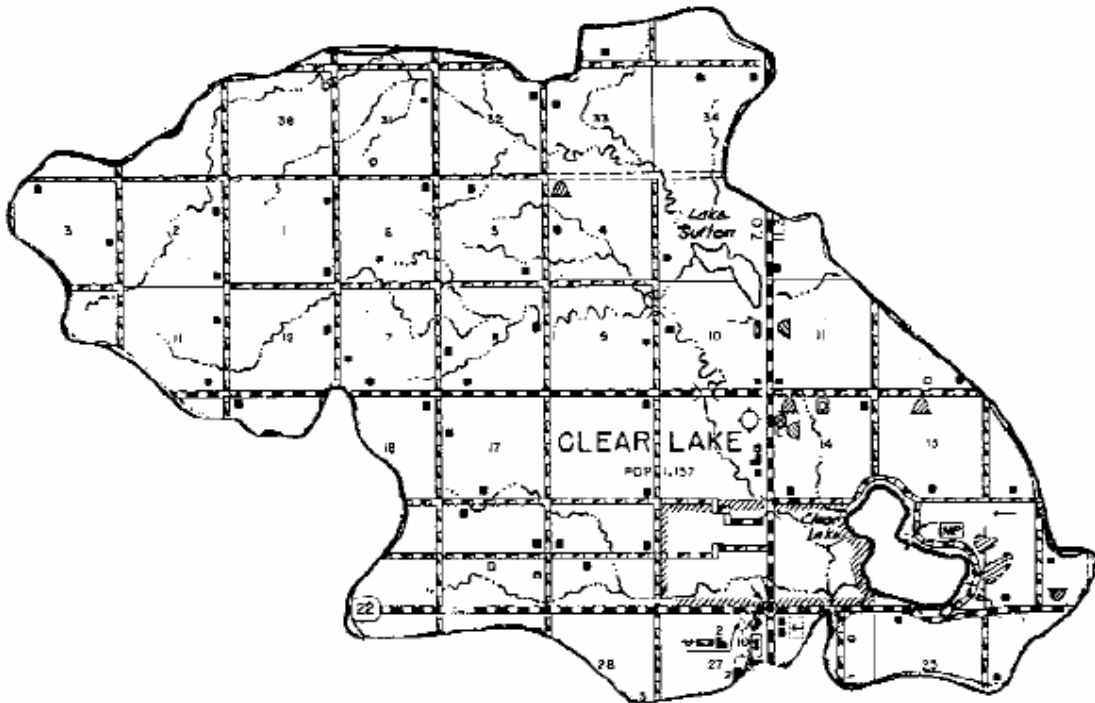


Figure 2: Clear Lake Watershed Map.

## PROJECT ACTIVITIES

### Goals & Objectives

The goals and objectives of the Clear Lake project were developed to address nutrient and sediment loads originating from rural and urban lands in the watershed. The overall project goal was:

“Improve the water quality by reducing nutrient and sediment loading of the streams and lake.”

By reducing nonpoint pollutants from the watershed, water quality for downstream drinking water users will be improved, the risk of contaminating the aquifer and wells in the area will be reduced, the habitat for upland and aquatic species will be improved and the recreational uses of Clear Lake will be restored and protected.

The project goal was broken into four objectives:

1. Implement Best Management Practices (BMPs) to reduce runoff of nutrients and sediments from agricultural lands. Activities planned to attain the sub-goal included educating producers about the benefits of implementing crop rotation and residue management practices near and along tributaries in the watershed. The BMPs and educational activities were designed to reduce phosphorus loading by 20 percent and sediment loading from sheet/rill erosion by 10 percent from agricultural lands.
2. Reduce NPS pollution entering tributaries from the City of Clear Lake. The City of Clear Lake’s storm sewer system drains into the tributary upstream of Clear Lake. The assessment indicated high quantities of nutrients and sediments originated from the streets during run off periods.
3. Reduce the amount of in-lake phosphorus. Clear Lake continually receives phosphorus from the watershed. The shallow nature of the lake allows the phosphorus to be reused as sediment is re-suspended. To reduce the amount of the intake phosphorus, sediment removal from the lake by dredging was determined to be the most feasible alternative.
4. Conduct an information and education program for the urban and rural population in the watershed.



## PROJECT GOALS, OBJECTIVES AND ACCOMPLISHMENTS

**Objective 1**—Introduce Best Management Practices.

**Task 1**—Crop Rotation and Residue Management.

**Milestone:** Implement crop rotation and residue management practices on 3,000 acres during 2000 – 2003.

**Accomplishment:** Crop rotation and residue management practices were implemented on 9,655 acres during 2001 – 2002.

Installation of the BMP was successful. Most of the landowners were found to be genuinely concerned about water quality, and wanted to do their part to clean up the lake. In the past, there were no cost-share programs for the installation of these practices. The cost-share offered through the project provided an incentive to install the BMPs.

Based on NRCS calculations, the estimated loss of phosphorus before crop rotation and residue management practices were installed on 9,655 acres was 5.7 tons. The BMPs reduced phosphorus loss to 3.82 tons (=33 percent or a 1.88 ton reduction).

**Task 2**—Grassed Waterways.

**Milestone:** Reestablish vegetative ground cover (grassed waterways) on 200 acres of agricultural fields to reduce potential nutrient runoff and stop erosion during 2000 – 2002.

**Accomplishment:** Protected 150 acres of cropland by installing 4,360 linear feet of grassed waterways during 2001.

According to NRCS calculations, estimated loss of phosphorus before the grassed waterways were installed was 0.38 tons. This activity reduced the phosphorus loss by 56 percent to 0.21 tons (=0.17 ton reduction).

**Task 3**—Animal Waste Management Systems (AWMS).

**Milestone:** Reduce the amount of dissolved phosphorus and nitrogen load entering Clear Lake by installing ten AWMS during 2000 – 2002.

**Accomplishment:** Seven AWMS were installed during 2001 – 2004. An eighth producer went out of business.

The installation of AWMS was delayed because of design assistance limitations. Also, the landowners needed to take some time to make a commitment decision. The SD Agricultural Nutrient Management Team designed six of the systems; a private engineer one. The project installed only seven systems instead of the planned ten because two of the producers did not want to follow the engineers' recommendations, and one of the producers

went out of business because of health reasons. The closed system brought the total number of AFOs addressed to eight.

The following table summarizes the seven systems constructed and loads reduced.

**Table 1: A WMS Installed With Load Reductions.**

Type of Operation	#Animal Units	Load Reduction	
		P	N
Beef	340	.07 ton	.38 ton
Beef	950	.19 ton	1.09 ton
Beef	900	.18 ton	1.05 ton
Beef	500	.10 ton	.57 ton
Beef	300	.06 ton	.33 ton
Beef	950	.19 ton	1.09 ton
Dairy	225	.04 ton	.24 ton
<b>Total</b>	<b>4165</b>	<b>.83 ton</b>	<b>4.75 ton</b>

**Task 4—Grazing Management.**

**Milestone:** Implement grazing systems on 2,500 acres of pasture within the watershed during 2000 – 2003.

**Accomplishment:** A total of 780 acres of pasture were improved during 2002 – 2004 by installing cross fencing to allow pasture rotation, and five dugouts to provide alternative watering sources.

The estimated 2,500 acres of grazing management in the original Project Implementation Plan (PIP) was too high in proportion to the amount of pastureland in the watershed. The size of most of the pastures was too small to warrant cross fencing. The 780 acres implemented were on larger acreage pastures.

**Task 5—Wetland, Riparian and Upland Habitat Restoration.**

**Milestone:** Restore and improve 300 acres of wetlands and/or upland habitat that are along or have a natural outlet to tributaries during 2000 - 2002.

**Accomplishment:** A total of 106 acres of wetlands were restored and 71 acres seeded to permanent cover during 2001 – 2003 using a seven year contract with the producers.

There were fewer acres implemented than planned because high crop yields and prices discouraged landowners from taking land out of production during the project years.

According to NRCS calculations, there was a reduction of 0.1 tons (200 lbs.) of sediment loading realized from the installation of this practice.

**Task 6**—Riparian, Bank and Lake Shoreline Stabilization.

**Milestone:** Restore 721 feet of eroded banks at the lake inlet, lakeshore line and selected tributary segments during 2001.

**Accomplishment:** A total of 1,500 feet of eroded streambanks were restored during 2002.

The eroded bank was reshaped, landscape fabric was installed, and the area rip-rapped with rock. There was no lakeshore restoration completed.

**Objective 2** – Urban Best Management Practices.

**Task 7**—Zero Phosphorus for Lawns.

**Milestone:** Sponsor a lawn testing program to quantify and determine the amount of over fertilization, and provide a rebate or low-cost purchase program to 250 Clear Lake residents during 2000 – 2003.

**Accomplishment:** Two hundred fifty Clear Lake residents received education about over-fertilization of lawns and received cost-share to further encourage the use of zero phosphorus lawn food. The promotion and education campaign was conducted during 2000 – 2003.

According to a local supplier, residents are continuing to purchase zero phosphorus lawn food on their own after the cost-share program expired.

**Task 8**—Urban Sediment Trap.

**Milestone:** Locate and install sediment traps at the storm sewer outlet for the City during 2001.

**Accomplishment:** The task was discontinued because the landowner would not voluntarily sell, lease, or donate land in the area needed to install the sediment traps. Funds budgeted for the activity were moved to Task 6, Bank Stabilization.

**Task 9**—Urban Sediment Retention/Detention Pond and Clean Water Diversions.

**Milestone:** Construct a clean water retention/detention structure to hold runoff for a period of time before it enters the storm water system, and slow water velocity in the natural drainage above the creek entering Clear Lake during 2002.

**Accomplishment:** The task was discontinued. Land needed for the structures and the funds to pay construction costs were not available. Funds budgeted for the activity were moved to Task 6, Bank Stabilization.

### **Objective 3 – Reduce In-Lake Nutrients and Sediment.**

#### **Task 10—Sediment Removal.**

**Milestone:** Remove a minimum of 300,000 cubic yards of in-lake sediment from Clear Lake using a hydraulic dredge during 2000 – 2002.

**Accomplishment:** A total of 230,427 cubic yards of sediment, an average of 76,809 cubic yards per year, was removed from the lake during 2000 - 2002. Pond reclamation was completed during 2005.

Instead of the traditional method of creating a pond to store the sediment, the sediment was settled out using large bales as dikes to hold the sediment in place while allowing the water to drain back into the lake. This type of sediment holding area allowed community involvement. Local residents obtained, hauled and placed the bales in the system in contrast to hiring a contractor to build a sediment basin. The milestone of 300,000 cubic yards was not reached due to fund availability. The 319 and consolidated grants and the local cash raised were expended. No improvement in the clarity of the lake or a decrease in the presence of algae has been observed. However, over time an improvement may be seen in the presence of algae. In general, more fishing has been observed both during the summer and winter, but especially ice fishing in the winter. It has been reported that more fish are congregating in the areas that were dredged to a depth of twelve feet.

### **Objective 4—Information and Education.**

#### **Task 11—News Articles.**

**Milestone:** Write and place 15 articles in local weekly paper during 1999 – 2003.

**Accomplishment:** Seventy-five news articles were written and placed during 2000 – 2003.

Article topics were selected to highlight project activities, and keep the public aware of the project. The project was featured on the front page of the Sioux Falls Argus Leader, the Watertown Public Opinion and the Clear Lake Courier. South Dakota Lakes and Streams also ran stories in the association's newsletter. Most of the interest was in the unique bale system used to hold the sediment during dredging. Selected news articles are included in the appendix to this report.

#### **Task 12—Project Tours.**

**Milestone:** Four public tours of the project during 2000 – 2003.

**Accomplishment:** Ten public tours were conducted during 2000 – 2004.

A tour of the animal waste systems installed during the project was sponsored to show the public how the money was spent, and how the systems prevented runoff from entering the

streams and eventually the lake. About fifty people participated in the tour. The other tours were sponsored upon request because people were very interested in the pond system and dredging. Representatives from the State of Minnesota and the State of North Dakota toured the project. The Clear Lake High School Science class and Augustana College students also toured the project. Other lake project coordinators requested tours to view how the Clear Lake project was implemented. During an all-class reunion held in Clear Lake, five bus loads of people were driven around the project area. East Dakota Water Development, the SD Board of Water and Natural Resources, and Conservation Commission board members toured project area to observe how the funds awarded were being spent.

**Task 13**—Project Awareness Signs.

**Milestone:** Place four large signs on the highway to identify the project in 2000.

**Accomplishment:** Four large signs were installed at highly visible locations around the lake and roads leading to the lake in 2001. The signs will remain indefinitely to keep the public aware of the lake restoration efforts completed.

Several individuals who had read the signs reported that the signs made them more aware of the project and the sponsors.

**Task 14**—Conduct Interviews with Project Participants.

**Milestone:** Conduct interviews of targeted project participants regarding project needs, scope and impact 2000 – 2003.

**Accomplishment:** A city-wide survey was conducted to gain input regarding the project, and rural land owners in the watershed were individually interviewed during 2001 – 2004.

The survey was mailed to 600 households in the Clear Lake Watershed. Survey questions asked included: How do you use the lake in its present condition? What is your opinion on the priority problems of the lake? What is your opinion on the sources of the pollution? If you are a rural landowner, which of the BMPs would you be most interested in? What is your opinion on residential and commercial development around the lake? There was a 16% return of the surveys, or about 96 returned. In general, the replies indicated a positive attitude toward the project, a willingness to work with the BMPs, and possible future development.

**Task 15**—Storm Sewer Stenciling.

**Milestone:** Enlist Girl Scouts, 4-H clubs and the Biology Class to mark drain inlets every spring 2000 – 2003.

**Accomplishment:** The Girl Scouts adopted the stenciling project during 2000, and have continued the activity every spring since.

Thirty-six storm sewer inlets have been stenciled.

**Objective 5**—Evaluation and Monitoring.

**Task 16**—Water Quality Monitoring – Sampling and Analysis Plan.

**Milestone:** Monitor water quality at prescribed locations for specific purposes during 2000 – 2003.

**Accomplishment:** While no scientific conclusions have been made using sample data, fishing has improved because areas of the lake created by dredging improved habitat. The aesthetics of the lake have improved as a result of the work completed by the project.

Section 5 of the Project Implementation Plan outlines evaluation and monitoring after project completion. At the time this final report was prepared, sampling has not been completed.

Load reductions by BMPs are summarized in Table 2.

**Table 2: Load Reductions Achieved through Installed BMPs.**

BMP	Amount	Load Reduction	
		Phosphorus	Sediment
Crop Rotation & Residue Management	9,655 acres	5.7 tons	
Grassed Waterways	200 acres	0.17 tons	
Animal Waste Management Systems	7 systems	.83 tons	
Wetland, Riparian & Upland Habitat Restoration	177 acres		0.1 tons
Sediment Removal			311,000 tons
	<b>Total</b>	6.7 tons	311,000.1 tons

## COORDINATION EFFORTS

The Deuel County Conservation District served as the project sponsor. District staff included the project coordinator and district manager supervised by the District Board of Supervisors. The district coordinated project activities, reported on progress, vouched 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.

SD Department of Water and Natural Resources Assistance Program funding through a Clean Water Act Section 319 Grant and the Consolidated Water Facilities Construction Program. The “consolidated fund” grant was used for ag waste system construction, the streambank restoration, and sediment removal.

The South Dakota National Guard assisted with construction of the sediment holding area.

#### USDA

USDA Natural Resource Conservation Service (NRCS) technical assistance for the design and construction of ag waste systems.

USDA Farm Service Agency (FSA) financial assistance for the construction of ag waste systems through the Environmental Quality Incentive Program (EQIP).

Design assistance was provided by the SD Nutrient Management Team funded by a 319 grant through DENR, NRCS and South Dakota Association of Conservation Districts (SDACD).

#### OTHER FEDERAL

US Environmental Protection Agency Clean Water Act Section 319 grants awarded through DENR for personnel needed to carry out the project, sediment removal and watershed BMPs installation.

US Fish & Wildlife financial and technical assistance for the grazing management practices implemented during the project.

#### OTHER

Clear Lake Restoration Corporation (CLRC) originally a committee formed by the Deuel County Lakes & Streams Association (DCLSA), CLRC was incorporated to provide an avenue to raise tax exempt cash and in-kind matching funds needed to match the federal funds.

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

Deuel County and the City of Clear Lake financial assistance and in-kind services for the sediment removal portion of the project.

Landowners installed watershed BMPs and contributed in-kind and cash match to leverage the other funding sources used to construct the BMPs.

Prairie Partners developed the use of large bales for the sediment holding area, and designed the bale placement pattern used to filter sediment.

## **PROJECT BUDGET AND EXPENDITURES**

Less than one percent of the grant funds awarded (\$14,000) were not expended. Total expenditures were \$1,781,548. The unexpended grant funds were State Consolidated funds earmarked for AWMS. At the end of the project there were no other grant funds left to match that amount. There was one AWMS left that possibly could have been constructed if enough funds from other sources were available.

As project expenditures exceeded \$300,000 one year, Deuel County Conservation District was required to have a professional audit conducted. The audit found that all grant funds were accounted for and spent properly. (See auditors report in the appendix)

Several adjustments were made within the budget throughout the project to meet the needs of the various budget line items. All adjustments were made with prior approval of the granting agency.

Revisions to the original 319 budget totaled \$104,584. This included the following:

- February 2003 \$61,200 for animal waste systems
- March 2004 \$43,384 for personnel (\$40,000) and audit (\$3,384)

Consolidated fund revisions totaled \$54,440 of the original budget. This included the following:

- February 2003 \$40,800 for animal waste systems
- February 2002 \$13,640 for streambank restoration

See Table 3 for original budget and Table 4 for revised budget and actual expenditures for each task.



**Table 3: Clear Lake Watershed Project - Original Budget**

**Funding Sources**

	Total Costs	EPA 319	EQIP NRCS	CWFCP	Cons. Comm.	Deuel County	Deuel CD	City of Clear Lake	EDWDD	Clear Lake Restoration	Land Owners
<b>Personnel/Administration</b>											
Salary	\$ 92,050.00	\$ 92,050.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Travel	\$ 3,552.00	\$ 3,552.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Supplies & Materials	\$ 1,050.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,050.00	\$ -	\$ -	\$ -	\$ -
Office	\$ 10,500.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 10,500.00	\$ -	\$ -	\$ -	\$ -
Administration	\$ 6,860.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,000.00	\$ -	\$ -	\$ 2,860.00	\$ -
<b>Subtotal</b>	<b>\$ 114,012.00</b>	<b>\$ 95,602.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 15,550.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 2,860.00</b>	<b>\$ -</b>

**Objective/Item**

**Objective 1-Best Management Practices**

Crop Rotation/Residue Management	\$ 81,000.00	\$ 28,035.00	\$ 24,030.00	\$ -	\$ 16,020.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 12,915.00
Grassed Waterways	\$ 20,900.00	\$ 7,315.00	\$ 6,270.00	\$ -	\$ 4,180.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,135.00
Animal Waste Management System	\$ 350,000.00	\$ 191,000.00	\$ 69,742.00	\$ -	\$ 50,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 39,258.00
Grazing Management and Alternate Watering Systems	\$ 55,830.00	\$ 16,957.00	\$ 20,108.00	\$ -	\$ 7,405.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 11,360.00
Wetland Restoration and Upland Habitat Restoration	\$ 78,350.00	\$ 27,825.00	\$ 23,850.00	\$ -	\$ 14,750.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 11,925.00
Riparian/Bank and Lake Shoreline Stabilization	\$ 130,000.00	\$ 53,000.00	\$ 30,000.00	\$ -	\$ 20,000.00	\$ -	\$ -	\$ -	\$ -	\$ 12,000.00	\$ 15,000.00
<b>Objective Subtotal</b>	<b>\$ 716,080.00</b>	<b>\$ 324,132.00</b>	<b>\$ 174,000.00</b>	<b>\$ -</b>	<b>\$ 112,355.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 12,000.00</b>	<b>\$ 93,593.00</b>

**Objective 2-Urban Best Management Practices**

Zero Phosphorus/Lawn Testing	\$ 5,000.00	\$ 2,500.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,500.00	\$ -	\$ -
Alternate Lawn Care Education	\$ 500.00	\$ 250.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 250.00	\$ -	\$ -
Urban Sediment Trap	\$ 52,300.00	\$ 31,380.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,920.00	\$ -
<b>Objective Subtotal</b>	<b>\$ 57,800.00</b>	<b>\$ 34,130.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 2,750.00</b>	<b>\$ 20,920.00</b>	<b>\$ -</b>

**Objective 3-Reduce In-Lake Nutrients and Sediment**

Aquatic Harvesting	\$ 75,000.00	\$ 42,000.00	\$ -	\$ 8,640.00	\$ 15,000.00	\$ 4,500.00	\$ -	\$ 4,500.00	\$ -	\$ 360.00	\$ -
Land Rental	\$ 15,900.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 900.00
Sediment Removal	\$ 615,000.00	\$ 133,620.00	\$ -	\$ 171,410.00	\$ 35,000.00	\$ 80,000.00	\$ -	\$ 80,000.00	\$ -	\$ 104,970.00	\$ 10,000.00
Construction of Ponds	\$ 255,500.00	\$ 70,220.00	\$ -	\$ 100,060.00	\$ -	\$ 5,110.00	\$ -	\$ 5,110.00	\$ -	\$ 75,000.00	\$ -
Design	\$ 30,000.00	\$ 12,900.00	\$ -	\$ 12,900.00	\$ -	\$ 600.00	\$ -	\$ 600.00	\$ -	\$ 3,000.00	\$ -
Cultural Resources	\$ 5,000.00	\$ -	\$ -	\$ 2,500.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,500.00	\$ -
Lake Survey	\$ 7,500.00	\$ 2,500.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,000.00	\$ -
Reclamation	\$ 11,225.00	\$ -	\$ -	\$ 4,490.00	\$ 2,245.00	\$ -	\$ -	\$ -	\$ 2,245.00	\$ 2,245.00	\$ -
<b>Objective Subtotal</b>	<b>\$ 1,015,125.00</b>	<b>\$ 261,240.00</b>	<b>\$ -</b>	<b>\$ 300,000.00</b>	<b>\$ 52,245.00</b>	<b>\$ 90,210.00</b>	<b>\$ -</b>	<b>\$ 90,210.00</b>	<b>\$ 2,245.00</b>	<b>\$ 208,075.00</b>	<b>\$ 10,900.00</b>

**Table 3: Clear Lake Watershed Project - Original Budget Continued**

**Funding Sources**

	<b>Total Costs</b>	<b>EPA 319</b>	<b>NRCS</b>	<b>CWFCP</b>	<b>Cons. Comm.</b>	<b>Deuel County</b>	<b>Deuel CD</b>	<b>City of Clear Lake</b>	<b>EDWDD</b>	<b>Clear Lake Restoration</b>	<b>Land Owners</b>
<b>Objective 4-Information &amp; Education</b>											
News Articles	\$ 400.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 400.00	\$ -
Tours of Project	\$ 800.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 400.00	\$ -	\$ -	\$ 400.00	\$ -
Project Awareness Signs	\$ 1,500.00	\$ 750.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 750.00	\$ -	\$ -
Conduct Public Interviews with Project Participants	\$ 500.00	\$ 250.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 250.00	\$ -	\$ -
Storm Drain Stencilling	\$ 1,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 250.00	\$ 750.00	\$ -
<b>Objective Subtotal</b>	<b>\$ 4,200.00</b>	<b>\$ 1,000.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 400.00</b>	<b>\$ -</b>	<b>\$ 1,250.00</b>	<b>\$ 1,550.00</b>	<b>\$ -</b>
<b>Objective 5-Evaluation &amp; Monitoring</b>											
Water Quality Monitoring	\$ 8,500.00	\$ 2,250.00	\$ -	\$ -	\$ 2,000.00	\$ -	\$ -	\$ -	\$ 4,250.00	\$ -	\$ -
<b>Objective Subtotal</b>	<b>\$ 8,500.00</b>	<b>\$ 2,250.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 2,000.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 4,250.00</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Project Total</b>	<b>\$ 1,915,717.00</b>	<b>\$ 718,354.00</b>	<b>\$ 174,000.00</b>	<b>\$ 300,000.00</b>	<b>\$ 166,600.00</b>	<b>\$ 90,210.00</b>	<b>\$ 15,950.00</b>	<b>\$ 90,210.00</b>	<b>\$ 10,495.00</b>	<b>\$ 245,405.00</b>	<b>\$ 104,493.00</b>
EPA 319 Funds	\$ 718,354.00	37%									
Other Federal Funds	\$ 174,000.00	9%									
Match	\$ 1,023,363.00	53%									
Total	\$ 1,915,717.00	100%									

**Table 4: Clear Lake - Revised Budget With Actual Expenditures.**

		TOTAL	EPA	COMM.	LO	DIST	EQIP	USFW	CONSOL	CLR	NRCS	EDWD	COUNTY	CITY	GUARD
Personnel	Budget	\$166,053	\$138,951			\$24,242				\$2,860					
	Expended	\$151,196	\$138,951			\$12,245				\$0					
BMP'S Crop Rot.	Budget	\$55,876	\$31,688	\$11,272	\$12,916										
	Expended	\$46,496	\$31,688	\$11,272	\$3,536										
Waterway	Budget	\$13,089	\$8,667	\$2,667	\$1,755										
	Expended	\$13,334	\$8,667	\$2,667	\$2,000										
AWS	Budget	\$630,302	\$239,087	\$57,843	\$58,407	\$0	\$234,165		\$40,800	\$0	\$0				
	Expended	\$616,300	\$239,087	\$57,843	\$59,351	\$50	\$232,141		\$26,122	\$1,056	\$650				
Grzg.Mgt.	Budget	\$43,604	\$20,629	\$7,767	\$15,208			\$0							
	Expended	\$47,456	\$20,629	\$7,767	\$6,464			\$12,596							
Wetl.Rest	Budget	\$72,112	\$44,042	\$16,144	\$11,926										
	Expended	\$62,882	\$44,042	\$16,144	\$2,696										
Riparian	Budget	\$58,640	\$30,000		\$15,000				\$13,640	\$0					
	Expended	\$47,976	\$30,000		\$2,900				\$13,640	\$1,436					
<b>BMP Sub-total</b>	Budget	\$873,623	\$374,113	\$95,687	\$115,212	\$0	\$234,165	\$0	\$54,440	\$0	\$0				
	Expended	\$834,444	\$374,113	\$95,687	\$76,947	\$50	\$232,141	\$12,596	\$39,762	\$2,492	\$650				
Urban	Budget	\$5,500								\$2,750		\$2,750			
	Expended	\$680								\$0		\$680			
Sed Rem.	Budget	\$940,091	\$214,347	\$2,245	\$10,900	\$0			\$291,360	\$237,574		\$2,245	\$85,710	\$85,710	\$10,000
	Expended	\$793,507	\$214,347	\$2,245	\$0	\$333			\$291,434	\$167,684		\$694	\$77,386	\$41,626	\$0
Info.Educ.	Budget	\$4,200	\$527			\$400				\$2,023		\$1,250			
	Expended	\$1,721	\$527			\$195				\$387		\$612			
Wat.Qual.	Budget	\$4,250										\$4,250			
	Expended	\$0										\$0			
<b>TOTAL</b>	Budget	\$1,993,717	\$727,938	\$97,932	\$126,112	\$24,642	\$234,165	\$0	\$345,800	\$245,207	\$0	\$10,495	\$85,710	\$85,710	\$10,000
	Expended	\$1,781,542	\$727,938	\$97,932	\$76,947	\$12,823	\$232,141	\$12,596	\$331,196	\$170,563	\$650	\$1,986	\$77,386	\$41,626	\$0

## **SUMMARY OF PUBLIC PARTICIPATION**

Public participation was greater than expected. Constructing sediment holding areas using large bales as dikes versus the traditional holding ponds to retain the sediment allowed the community to become more involved than if a contractor were hired to complete the task. Groups of individuals and organizations helped haul and place the bales. Area farmers donated many of the bales. The value of the donated labor and the bales was used as in-kind match.

CLRC raised cash match through various fund-raising events. These events also created an awareness of the lake restoration, which in turn prompted several donations from individuals. The events and donations raised a total of \$170,563.

Fund-raising activities sponsored by CLR included:

- Annual and semi annual community auctions.
- Lake appreciation day held once a year during project implementation period  
Included ski show and pork supper among other events.
- Sponsored several sports events, such as KELO All-Stars, bowling tournaments, golf tournaments and volley ball tournaments.
- Provided many lunches at private auctions.
- Sponsored special dining/dancing events.
- Hosted many tours of the dredging, the ag waste systems and other conservation work.
- Tractor pulls.
- Fishing tournaments.
- Football books.
- T-Shirt sales.

Pictures and news articles about the fund raising events are included in the appendix to this report.

## **ASPECTS OF THE PROJECT THAT DID NOT WORK WELL**

Because of the well organized coordination by the Deuel County Conservation District staff, support from the Board of Supervisors, the work of Clear Lake Restoration Corp., and timely DENR support, major problems were not encountered implementing the project.

A disagreement between a contractor and a private engineer over design specifications of an AWMS was resolved using formal mediation. The few design issues encountered during the construction of some of the ag waste systems were addressed to the satisfaction of the landowners. For example, one of the systems included a dike which was originally designed and constructed so that water backed up into the barn. A drainage ditch was installed to resolve the problem. The producer was concerned that his livestock would fall into the ditch and be injured; this was not acceptable to the producer. The dike was moved to the producer's satisfaction.

One project activity that did not work as anticipated was the urban and rural BMPs public education meetings. Participation was disappointing. To overcome the challenge, the coordinators began going to other organization's meetings to provide information about the project. This method was more effective in reaching the urban public. Rural landowners were contacted individually. As word spread, the producers came into the office of their own volition to learn what the project had to offer.

Other activities that did not turn out as planned were installation of the urban storm water BMPs (task 8 and 9).

When the owner of the land located at the outlet of the storm water drain (sewer) was not willing to sell, lease, or donate land for installation of sediment traps, this activity was discontinued because there no other feasible location to install the practice.

Constructing a clean water retention/detention structure was not completed because the City of Clear Lake had an unforeseen budget crisis and did not have funds available to install the BMP. The city may install the BMP at a later date.

It was a plus to have two local people serve as coordinators, and have both stay with the project through its entire duration. This continuity was a key ingredient to the project's success.

As good as community support was, it probably would have been better if the agricultural economy in Deuel County had been better. Just like many other small towns in rural South Dakota, many main street businesses were struggling financially, making it difficult for them to offer financial support.

## **RESULTS AND FUTURE ACTIVITY RECOMMENDATIONS**

The overall project goal “improve the water quality of Clear Lake by reducing nutrient and sediment loading of the streams and lake” has been achieved. The conclusion is based on the BMP practices installed and being maintained in the watershed.

As a result of the project, the public became more aware of the benefits of having a lake near the city. It appears that the ground work has been completed for another phase of lake restoration-development.

Prairie Partners (no longer in business) prepared a preliminary plan for developing the lake. The plan called for home development, a resort, hiking trails and biking trails. The present road would have to be relocated. This would have to be worked out with the City, County and Township boards. Additional dredging has been discussed; including the idea of the community buying and operating their own dredge. The challenge with more dredging is cost. The sponsor applied for several private foundation grants. The foundation that expressed interested in the project was the Turner Foundation. The foundation did not award a grant because the foundation’s funds were depleted during the stock market downturn. The Clear Lake Restoration Corporation continues to look for funding.

Conservation work will continue in the Clear Lake watershed using funds offered through USDA NRCS and FSA cost share programs. There is currently considerable interest in the Marginal Pastureland and other CRP programs.

## **APPENDIX A**



Attending the meeting last Wednesday when the announcement was made that the grant funds were approved for the study of the Clear Lake watershed were Alan Wittmuss, left, the scientist project from Sioux Falls; Bill Stewart, center, from the SD Department of Energy and Natural Resources at Pierre; and Elois Redlin, right, the Deuel Conservation District manager.

*April 24 1996*

## Grant Funds Approved For Study Of Lake

By Henry Wells

The dreams of John Corothers, Jerry Dumke and many others came to their fruition at a meeting last Wednesday morning, April 17th, held at the Lakewood Inn.

At that meeting, Bill Stewart, program scientist for the Division of Water Resources Management, announced to the 20 people in attendance that the grant funds for the study of the lake of Clear Lake had been received. The grant was in the amount of \$60,000.00, although at this time the Denver office was making only 75 percent of the funds available. Stewart stated that he had no doubts about the entire amount being released as it was needed.

The study could begin as early as mid-year and would last two years

followed by a six month compilation of the information. Stewart enthusiastically assured the group he would speed up the project whenever possible and stay with it until its completion. The survey will be concerned with the drainage area northwest of Clear Lake with the goal being to clean up as much as possible the water draining into Clear Lake.

The study will also suggest changes in agricultural procedures now present in the affected area. These changes that are accepted by willing landowners will be eligible to receive 60 percent of the cost of such changes.

This program is being sponsored by the Deuel County Conservation District. A coordinator to aid in the survey will be employed locally. Alan Wittmuss from Sioux Falls will be the project scientist.

Following the acceptance of the survey, application will be made for a grant that will be used, for among other things, the dredging of the lake. It would seem getting this grant would be a more or less automatic proposition, assuming there are no major economic changes in the government.

At a meeting of the Clear Lake Restoration committee, held last Wednesday evening, it was decided to ask area residents to honor their pledges to the lake project. In order to keep the project moving it is necessary to have the matching funds. Donations can be turned into Darwin Anderson at the Deuel County National Bank.

The approval of the grant funds sets into operation a project began several years ago by Corothers, Dumke and others interested in the preservation of the lake and returning it to somewhere near its original state. The project will need the support of local residents and businesses, but once the project is complete, the lake will once again be suitable for boating, fishing, etc.





Potluck lunch helpers, Elois Redlin, Lori Stee and Cheryl Stohr, stand with the lunch stand provided by Jimmy's Cafe.

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PAGE THREE

**Clear Lake Courier**

Wednesday, June 12, 1996

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This old Ulven Beach Recreation Area sign was found during the clean up at the lake. Holding it where the future beach area will be are Jerry Dumke, on the left, and Jack Corothers, on the right.

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Waterbury PO 8-17-96

# Algae bloom plagues Clear Lake

By WAYNE SPECHT  
P.O. Staff Writer

**CLEAR LAKE** — Clear Lake isn't clear anymore. Waters along the eastern shoreline of the 600-acre lake this week glistened a brilliant green and turquoise blue from explosive algae bloom.

Kids don't head to the lake in the hazy days of summer to cool off like in past years, and many anglers who try their luck from the shoreline say fishing for walleye and northerns isn't as good as in years past.

Average depth of the lake in better days was about six feet. Now it is about four feet, but is just several inches deep in some areas due to a sediment layer four and one-half feet deep.

"The lake is hypereutrophic," says Alan Wittmuss, an environmental scientist with the S.D. Department of Environment and Natural Resources. "It is nutrient-rich and oxygen starved. It is as bad as it can get."

Clear Lake has seen better days says Elois Redlin, district manager for the Deuel County Conservation District.

"About 15 or 20 years ago, it was so clear you could see the bottom. A lot has happened to the lake since then," Redlin says.

**CLEAR LAKE'S PROBLEMS** might have their origin as far back as the 1930s when the great drought ravaged the upper plains states.

Farmers planted potatoes in the dry lakebed and probably used some fertilizers that remained there when the lake began refilling as drought conditions relented.

Phosphorus and nitrogen runoff from farms in the 50,000 to 60,000-acre watershed in Deuel County, and poor wetlands management may be other factors that have contributed to the lake's water quality problems in the last several decades, Wittmuss

SAYS



**IT WORKS LIKE THIS** — Alan Wittmuss, left, environmental protection scientist with the S.D. Department of Environment and Natural Resources, explains the operation of a water stage monitor and laptop computer to David Kringen, Clear Lake Restoration project coordinator, Elois Redlin, district manager for the Deuel County Conservation District, and Bev Anderson, chairperson of the restoration project. (Public Opinion photo by Wayne Specht)

A \$60,000 grant from the Environmental Protection Agency's 319 Non-Point Source Fund could be the first step in restoring Clear Lake to its pristine condition.

That grant, along with strong support from area residents, has given life to the Clear Lake Restoration project endorsed by the Deuel County Lakes and Stream Association, and sponsored by the Deuel County Conservation District.

"Phase one consists of a two-year assessment phase to determine if there are problems within the watershed that need to be corrected," explains David Kringen who has been hired as the project coordinator. The first phase of the restoration effort will cost an estimated \$105,000 with matching funds coming from local sources.

This week, Kringen and Wittmuss placed the first of nine water stage monitors on watershed tributaries that will gauge inflow to the lake. Phase one is expected to run through July, 1998.

"It may show there isn't a real problem within the watershed," Wittmuss says. "We may learn problems could be corrected by better management of grass waterways in watershed areas."

**A LONG-TERM OPTION** is to dredge portions of the lake, a costly prospect that could cost as much as \$200,000 annually that would remove 100,000 cubic yards of silt from the lake annually.

A similar project at Punished

Woman's Lake at South Shore that ended two years ago saw an estimated 380,000 cubic yards of sediment pumped from the lake to nearby settling ponds.

"To secure more federal dollars for the restoration effort, results of the Phase 1 study must show the extent of problems plaguing the Clear Lake," says restoration chairperson Bev Anderson. "Then we can seek implementation dollars through the EPA."

Earlier this year, a lake clean-up by 60 volunteers netted 11 truckloads of debris, mostly dead trees, from lake waters and shorelines.

Anderson characterizes community support for the project as "tremendous, simply wonderful."

**TO RAISE ADDITIONAL** funding, a consignment auction is set for tomorrow (Sunday) at 2 p.m. at Jerry Dumke's bulk plant with commissions earmarked to the restoration project.

Timeline for complete restoration of Clear Lake could be a lengthy one. Wittmuss says it wouldn't be until Phase 2, three to four years down the road, before appreciable improvements in water conditions can be seen. The entire project could run as long as six to 10 years.

Redlin says she hopes by the time Phase 2 begins, area farmers will have voluntary conservation efforts in place, a program that could be accelerated with some type of cost-sharing incentives.

Ultimate winners for the project would be users of the lake that gave the town its name.

"We took the lake for granted for years," Anderson says. "Now its time we gave the lake back to the people."

Wtn.  
P.O.P.  
8/17/96

Courier

Oct. 7, 1998

Clear Lake

# Clear Lake Restoration Corporation Formed

On Thursday, September 17, at 7:30 p.m. at the USDA building in Clear Lake, representatives from Deuel County Lakes & Streams, the City of Clear Lake, the Development Corporation, the County Commissioners, Deuel County Conservation District and Clear Lake Township met to form the Clear Lake Restoration Corporation.

The reason for the corporation is so that a legal entity is in place for applying for grants, and for tax exempt status. In the past, the restoration project has been handled by the Lake Restoration Committee, which was an informal committee formed from the Deuel County Lakes & Streams. Bev Anderson has been serving as chairperson of the Restoration Committee.

New officers were elected on September 17 and include:

- President, . . . . . Jerry Dumke
- Vice President . . . . . LeRoy Stohr
- Secretary . . . . . Cheryl Stohr
- Treasurer . . . . . Darwin Anderson

Also at the organizational meeting, the Articles of Incorporation and By-Laws were approved, and the

Seal of Corporation was adopted.

The Clear Lake Restoration Corporation will meet on the third Wednesday of each month, and the public is welcome to attend. Watch the Courier for times and places of the monthly meetings.

Fund raising activities will continue to raise money to match state and federal funds for the implementation phase (Phase II) of the lake restoration project.

Phase I was recently completed, which consisted of water sampling and entering information into a computer program which includes land-use information on the watershed.

All of the information gathered by David Kringen, Phase I Coordinator, has been sent to the Department of Environment and Natural Resources in Pierre, where they are working on a final report which will be completed by January 1, 1999.

The final report information will be used to apply for grants for the Phase II portion of the project, which will include dredging and voluntary cost-shared conservation practices on the watershed.

# Silt-filtering project may be a first-of-a-kind

By WAYNE HAMMOND  
P.O. Staff Writer

**CLEAR LAKE**—Those of you driving throughout South Dakota this or any summer may have noticed that the state contains a large amount of big bales of hay.

So did Richard Wiebe, an engineer from Brookings-based Prairie Partners, Inc. Now, in conjunction with the Clear Lake Restoration (CLR) project and Deuel County Conservation District, Wiebe is putting 1,500 pound ales of hay to work filtering the silt out of Clear Lake in what is thought to be a first-of-its-kind project.

**"The real beauty** of it (the project) is that it is going to save a lot of me and money," he said. "The large amount of donated time and volunteer labor will reduce the amount of ash they (CLR) have to raise."

Elois Redlin of the Deuel County Conservation district agrees.

"There will be a significant cost savings," she said. "We will be able to use local help."

Funding for the project, which has been in the works for about two years, has come from various local, state and national entities. In addition, donations have been received from all around the Clear Lake area, including Watertown residents.



**LAKE RESTORATION** — LeRoy Stohr, left, Elois Redlin, center, and Jerry Dumke, right, have put in countless hours working on the Clear Lake Restoration (CLR) project. In part, the project is designed to filter the silt out of Clear Lake using a pioneering process of running it through sets of hay bales such as those pictured. When the 70-acre plot of land is completed, the bales will be held in place by two wooden posts a piece, but the cable that is shown connecting the posts now will be removed. Stohr and Dumke represent the CLR project and Redlin is with the Deuel County Conservation District. (Public Opinion photo by Wayne Hammond)

**Last month** a field test was conducted on a portion of the land to determine the ability of the bales to resist the water pressure required as a terrace levee and to quantify the seep/leak rate. The bales withstood the pressure generated by water, that got to be between three and four feet high and, after the three-hour point, the leakage was approximately equal to the pump inflow.

This all means that the project is a full-scale go. Thanks to the superb early fall weather, bailing continues to take place and CLR vice-president LeRoy Stohr says it will continue next spring.

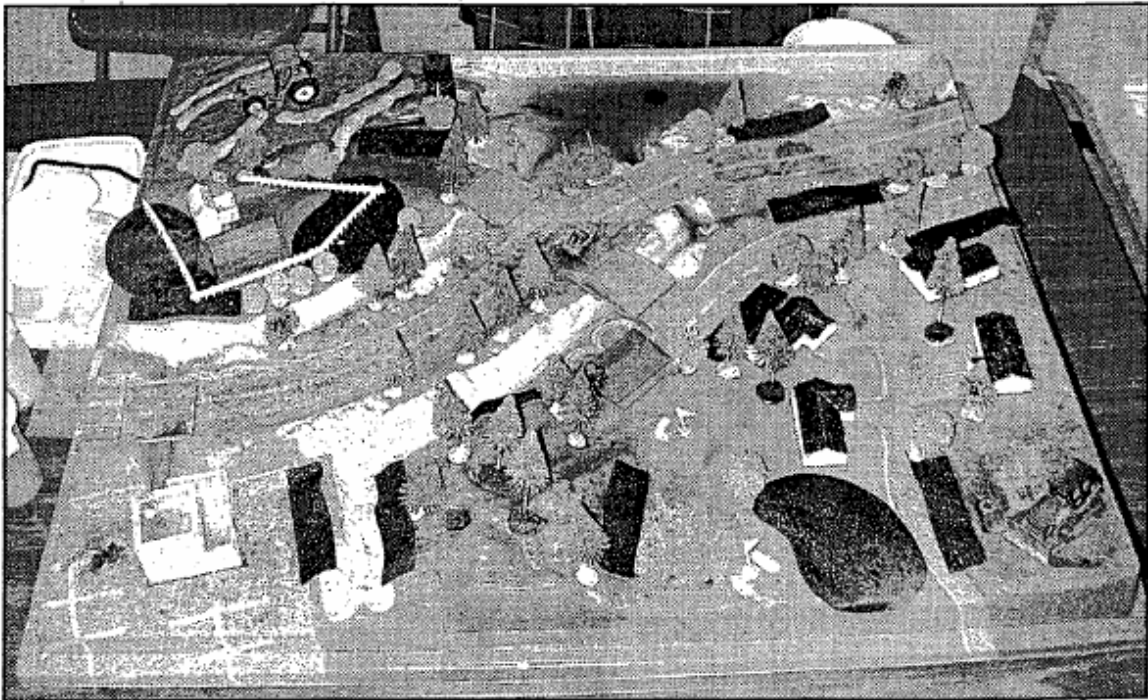
**When completed,** over 3,000 bales with 4-by-4-by-8 dimensions will be used on a 70-acre plot of land north of Clear Lake. The bales will be held in place by two wooden posts per bale. Water will be pumped from the lake, it will make its way through

more than a half dozen "walls" of bales which will filter out the silt, and it will reenter the lake.

"This is a tremendous opportunity," Wiebe said. "We were really blessed with a good site."

NOV. 19 1999  
Wtn. P.O.P.

9/29/99 Courier



**Health Fair  
Held . . .**





## National Guard Assists In Hauling Bales For Lake Restoration Project

*12-15-99 Courier*

Six tractor trailers and one palletized load system from the South Dakota National Guard 740th Transportation Company out of Brookings are busy this week hauling large square bales for the Lake Restoration project on Clear Lake. The bales, over 2700 of them, will be hauled and placed at the sediment pond site which is located just east of the lake. The National Guard trailers will haul 20 bales at one time, which are loaded and then strapped. After arriving at the sediment pond site, the bales are pushed off the flatbeds and then hauled and stacked by local individuals along the area where the pond sediment walls will be built. The seven National Guard trucks are under the supervision of Captain Greg Stoltenburg of Clear Lake, the officer in charge of the entire operation. Bales were hauled and placed right at the site, and are also being hauled from an area south and west of the Brandt Interchange on I-29, and two other fields in the Brandt area. The bales will be placed end to end along the pathway cut into the fields, as can be seen in the picture to the right, and will form the walls of the sediment ponds. Above, one of the National Guard trucks is being unloaded, while two smaller tractors stack the bales.



7/26/00 Courier



**EDWDD Board Tours Lake Project . . .**

7/26/00 Courier

Members of the East Dakota Water Development District board of directors held a monthly meeting in Clear Lake on Thursday, July 20th, and following their meeting, toured the sediment holding area that will be used for filtering out the silt from the water. The site is located just to the east of the lake. EDWDD promotes conservation, development and management of resources, and serves as a clearinghouse for water quality and supply projects. The group had give preliminary approval so that the grant application would be considered for state and federal funding. Members of the board include, from the left: Jay Gilbertson, manager; G. A. Redman, Art DeWit, Lois Brown, Curt Eggers, LeRoy Stohr (project coordinator), John Johnson, Elois Redlin (Deuel County Conservation District manager), Bill Dempsey, Hobert Storer, Doug Peten and Earl Acheson, chairman.

7/26/00

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## Clear Lake Restoration Seeks Bids Lake Dredging Project

Sealed bids for the dredging of the lake will be received at the Conservation District Office in Clear Lake until Monday, August 7th until 2:00 p.m. when the bids will be opened and read.

Bids are being accepted in accordance with the general conditions and specifications prepared by Prairie Partners, Inc., of Brookings. A copy of the plans and specifications are available for inspection only at the Conservation Office in Clear Lake.

Each bidder must deposit a bid security with the bid, and shall be based on the amount of the base bid.

It is expected that once a bid is approved, work on the dredging will begin soon after. Dredging will continue until the lake freezes up later in the fall, and begin again next spring when the ice melts.



Council

9/20/00



### Donations Made To Museum, Restoration

Norval Anderson, shown on the left, representing the Clear Lake/Deuel all school reunion that was held the first part of July, presented checks to Gerry Koenecke of the Clear Lake Museum, in the center, and to Jerry Dumke, on the right, of the Clear Lake Restoration. The checks, each in the amount slightly more than \$2700.00, were funds remaining from the reunion and activities.



### CL Restoration Receives Donation . . .

Lewis Shelsta, president of the Clear Lake Kiwanis Club, presents a check in the amount of \$1000.00 to LeRoy Stohr for use by the Clear Lake Restoration on the dredging project at the lake. The lake project is expected to get underway within a few weeks.

5-17-00





## Holding Ponds Being Readied . . .

*7/26/00 Courier*

Construction work continues on the sediment holding ponds which will be used when the dredging of Clear Lake begins. Large bales have been placed creating the ponds and burlap has been attached to the inside of these bales which will assist in the filtering of the silt when water mixed with silt is pumped from the lake. Bales have also been placed around the entire project and lined with plastic to assist in keeping the water contained and headed back into the lake. Jamie Hintz, is shown operating the county maintainer and pushing dirt up against the burlap to keep it in place. LeRoy Stohr states that work continues at the site and assistance is needed to complete the placing of the bales and attaching the burlap to the bales. If you can help, contact the Conservation District Office in Clear Lake at 874-8225 Extension 3. Bids will be opened for the dredging project on Monday, August 7th and work is expected to get underway shortly thereafter.

8/30/00 Courier



### **Dredging Of Clear Lake Begins . . .**

*The long-awaited day finally arrived Monday, August 28th when the dredge started pumping sediment out of Clear Lake. The above picture shows Paul Clinton of Prairie Parnters and Elois Redlin of Deuel Conservation District observing the outlet pipe spewing sediment mixed with water from the lake into the bale system sediment holding area east of the lake. "This is an exciting day for us", said Elois Redlin. "A group of determined people with a love for the environment and the community started working on this dream 20 years ago and it came true when a public meeting was held in 1992 and DENR offered their assistance to start a formal lake project." The dredging will continue until fall freeze-up, then start up again early in 2001 through 2003.*

9/6/00



### **Donates To Lake Restoration Project**

*George Cook, Clear Lake businessman, has pledged \$10,000.00 to the Clear Lake Restoration Project. The above picture shows George presenting the first installment of the pledge, a check for \$5,000.00 to LeRoy Stohr who is the Project Coordinator. The other \$5,000.00 will be paid in the year 2001. The \$10,000.00 donation is earmarked specifically to be spent on diesel fuel to run the dredge. The fuel has been contracted with Deuel County Cenex in Clear Lake. "It is support like this that has made our project a reality", said LeRoy Stohr. Fund raising activities and pledge drives will continue throughout the project. "The more money we raise, the more improvements can be done for the lake", said Stohr. George Cook said "A project such as this one is a great asset to our community. The Clear Lake Restoration group is to be commended for their tenacity in working on this very worthwhile project."*





Chuck Cecil / For the Argus Leader

Sediment from Clear Lake is being collected in this unique 70-acre enclave, a series of cells surrounded by large hay-bales lined with burlap. The sediment from the Deuel County lake is dredged and sent through a 10-inch pipe to a cell until it's filled to about 4 feet. Water filters out through the haybales and is returned, clean, to the lake. In this picture, the cell with a shiny appearance is the first being filled at the rate of 3,000 gallons of sludge and water per minute.

## Hay and straw dikes filter out mud, clean water

By **CHUCK CECIL**

For the Argus Leader

**CLEAR LAKE** - A mechanical bottom feeder is pigging out on the mud and muck of once-pristine Clear Lake and a field nearby is making history.

How the rich, black mud is treated once pumped onto land could add to the world's dredging knowledge.

Officials working on the lake restoration are using a series of straw and hay-bale dikes to filter the water before it flows back into the 500-acre lake in Deuel County.

"This hasn't ever been tried before anywhere," says LeRoy Stohr, coordinator of the Clear Lake Restoration Project. "But it couldn't be working any better."

The Clear Lake project is saving about \$100,000 using the technique.

Those saved dollars are allowing for more silt to be



Chuck Cecil / For the Argus Leader

LeRoy Stohr (left), coordinator of the Clear Lake Restoration Project, and Elois Redlin, manager of the Deuel County Conservation District who works closely with Stohr, pull up sludge with a 2-by-4 board to check its depth in the first cell being filled with lake sediment.

dredged up than if a traditional settling pond system was used, says Elois Redlin, manager of the Deuel County Conservation District.

Redlin works closely with Stohr on the long-awaited restoration project now under way.

The idea was envisioned



and developed by Richard Wiebe, a landscape architect and civil engineer who is president of Prairie Partners, Inc. of Brookings.

The project uses mostly locally produced materials, volunteer labor and minimal heavy machinery.

The concept is an example of "green" technology in that it adds to rather than detracts

Clear Lake / See 3B

# Floating dredge can pump 3,000 gallons per minute

By **CHUCK CECIL**  
For the Argus Leader

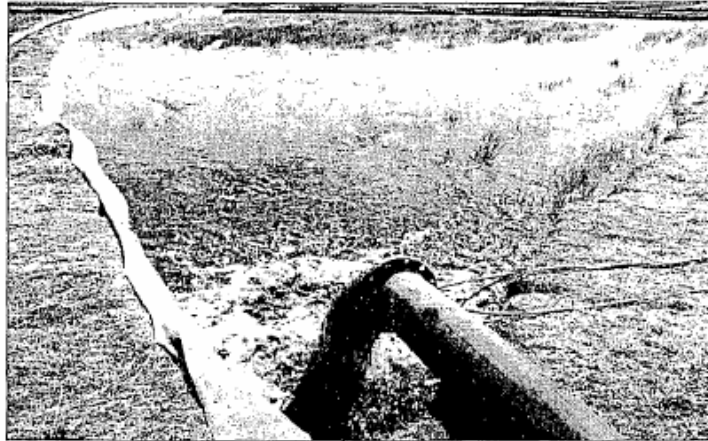
The floating dredge in Clear Lake spewing the mud on to the unique hay bale dam system is provided by the South Dakota Lakes and Streams Association.

Working at top proficiency, it can send 3,000 gallons of mud and water a minute to the targeted shore. By pumping comparison, the city of Clear Lake pumps between 100 and 200 gallons of drinking water per minute from its wells.

Each gallon the powerful dredge sucks off the bottom of the lake is about 70 percent water. The remaining 30 percent is mud, a few clam shells and rocks.

The dredge will be operating ten hours a day, five to six days a week until cold weather in late fall. It will return again next spring and dredge for two more summers.

At 3,000 gallons per minute, about 900 gallons of it is mud slapping on to the Prairie Partners-designed holding area. In a 10-



Argus 9/7/00

Chuck Cecil / For the Argus Leader

Up to 3,000 gallons of Clear Lake sludge spills out of the 10-inch pipe each minute in a new system of dealing with bottom sediment. Hay and strawbales in small cells hold back the sediment and filter the water as it trickles back into the lake. For each 3,000 gallons brought to the cell, about 30 percent is mud, the rest water.

hour day, that's 9,000 gallons of mud removed. Over the three-year dredging plan, Prairie Partners,

Inc. calculates that about 280,000 cubic yards of mud will be removed.

## Clear Lake: A lease on life for less money

Continued from 1B

from the lake and surrounding area's ecology, Wiebe said.

Dredging operations started Aug. 28. If all goes as well as it has during the first several days, the new concept Wiebe and his staff developed for reclaiming lake sediment could give other badly silted lakes another lease on life for less money.

In a nutshell, Wiebe's new procedure uses small, stair-stepped layers of large hay- or straw-bale dams. The dikes form approximately half-acre enclaves on about 70 acres east of the lake.

Each enclave, starting at the uppermost level, receives the mud piped from the dredging machine. As an enclave is filled, another comes online. The bale dams are about 4-feet high and lined with degradable burlap, holding back the mud but acting as filters allowing much cleaner water to gurgle down through the maze of 18 dams and back into the lake.

Wiebe said that as one of the "cells" is filled with mud, the debris hose is moved to the next cell.

After the project is completed in 2002, the bales and the burlap gradually deteriorate and revert back to

nature, settling in on the field as stubble with the new-found, dried out topsoil from the lake.

The most common way of dealing with dredged silt from lake restorations programs is for a contractor to dig one or more large settling basins in which the waterborne muck and mud is deposited.

"But it's expensive to build the basin, and the water is either slowly evaporated away, or it takes years for the mud to settle out," Wiebe explains.

So Wiebe and his staff, after considering alternatives for the local, state and federally funded matching program, came up with the idea.

Stohr and Redlin praised Clear Lake and area residents who were more than helpful in preparing the site. "The National Guard helped us move some of the 4,000 hay bales," Redlin said.

A \$1.7 million grant helped develop the system. Organizers were able to use donated labor to help meet the local 50 percent match for the grant. Deuel County and the city of Clear Lake contributed heavy machinery and operators to clear areas for the bale dams and to pound in nontreated wooden posts to hold the dikes against the pressure of mud and water in each cell.

Many other individuals pitched in to help put the bales in proper alignment and in other ways.

In concert with the dredging efforts was an educational program initiated by the conservation district and others. Girl Scouts helped in one of those "awareness" efforts.

They marked and then stenciled a fish logo on each of Clear Lake's storm sewer drains. The intent was to impress upon residents that runoff that leaves their streets and lawns and disappears down the city's storm sewers eventually shows up in Clear Lake.

Redlin explained that the lake restoration is just part of the creation of a 25,000-acre watershed management area above and around Clear Lake.

Redlin said the siltation problem in Clear Lake probably began long ago, but accelerated beginning in the 1950s. With the depth of the lake decreasing, winter kill of fish became more prevalent and in 1992 the state Department of Environment and Natural Resources said it would assist in finding solutions to the siltation and water quality in the area.

Included in this large effort will be funding to help farmers and others initiate conservation measures.

## CLEAR LAKE RESTORATION PROJECT

CLEAR LAKE - This project was started in August after waiting for the results of the Endangered Species Report. The exciting new technology of this project is their holding ponds. It is constructed of 4,000 bales on 70 acres of CRP land. There are 8,000 post that hold the bales in place and make up the 13 cells. The bales are covered with 11,000 feet of burlap to help strain the silt as it is pumped into the ponds. It took the National Guard 3 days with the use of 4 semi-trucks to haul the bales in. This work went to In-

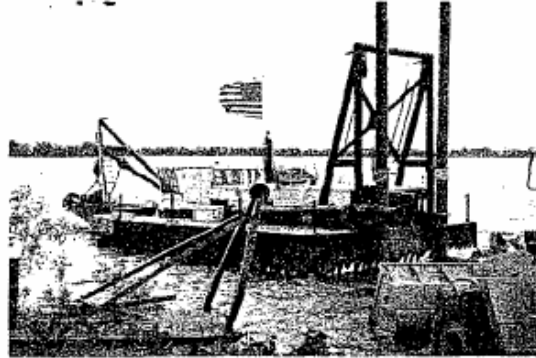


The cell of the holding ponds with water and silt in it. You can see how the bales are covered with burlap.

Kind match.

There is 4,000 feet of pipe fused together to reach across the 525 acre lake and on the bales. This project is a 3 years project estimated to remove 280,000 cubic yards.

This project has been very successful because of the community's joint effort to work together and their determination. This is a great example of what great things can happen with team work.



The launching of the dredge in August.

## TOUR OF THE CLEAR RESTORATION PROJECT

CLEAR LAKE - Members of SDL&SA who attended the monthly meeting held on September 13, 2000, were able to tour the project with Randy Bouvette, Operations Manager, and Jeff Vorseth. This tour was very informative.

After the meeting, members went out to the holding ponds where information about how the holding ponds were intended to work and obstacles

they were forced to deal with. Questions were answered by Randy Bouvette and LeRoy Stohr, Deuel County Conservation Office.

Next, the group was given a ride out to the dredge where they were explained how the dredge was operated and how often it was moved. The dredge on this project is a swinging dredge. Jeff Vorseth was operating the dredge at the time of the tour and was able to answer questions.



Randy Bouvette answering questions on the tour.



Morrell Spencer on the tour of the dredge with Jeff Vorseth operating the dredge.



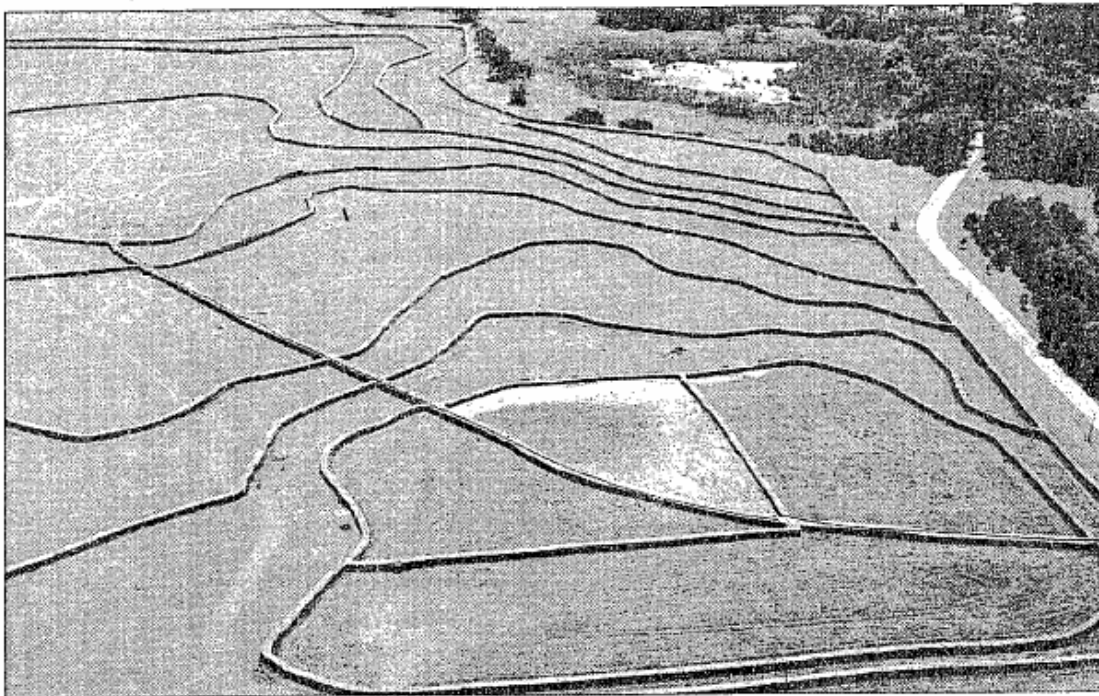


Photo by Chuck Cecil

**Sediment from** Clear Lake is being collected in this unique 70-acre enclave, a series of cells surrounded by large hay bales lined with burlap. The lake sedi-

ment is dredged and sent through a 10-inch pipe to a cell until it is filtered and the clean water returned to the lake.

## Unique dredging project will bring new life to Clear Lake

■ Sediment is filtered out through hay bales.

BY WAYNE HAMMOND  
Public Opinion Staff Writer

**CLEAR LAKE** — A first-of-its-kind lake dredging project is under way at Clear Lake marking a new chapter in a two-decade effort to clean the lake.

"It was an exciting day for us," said Elois Redlin of the Deuel County Conservation District. "A group of determined people with a love for the environment and the community started working on this dream 20 years ago. It came true when a public meeting was held in 1992 and the Department of Environment and Natural Resources offered its assistance to start up a formal lake project."

**The brainchild** of Richard Wiebe, an engineer from Brookings-based Prairie Partners, Inc., the dredging project takes advantage of hay and straw dikes. Water is pumped out of the 500-acre lake at the rate of about 3,000 gallons per minute into a 70-acre field filled with the bales. The water is filtered by the bales and returned to the lake.

For each 1,000 gallons pumped out of the lake, 30 percent is mud, the rest water. Prairie Partners estimates that in all about 280,000 cubic yards of mud will be removed. After the project is completed, the leftover mud and bales will decompose and settle back into the field.

**It is believed** to be the first dredging system of its kind. Funding for the project has come from various local, state and national entities, as well as individual donations. It has been coordinated by the Clear Lake Restoration Project and the

Deuel County Conservation District.

**Savings on the** project are expected to be in the \$100,000 range thanks in part to a large amount of volunteer help. Last December, the S.D. National Guard helped transport about 2,700 of the 4,000 total bales to the site.

Dredging will continue until the water freezes over and is set to start again in early 2001, continuing until 2003.

According to Redlin, the silt problem in the lake — which was probably set in motion long ago — was accelerated 50 years ago. As the depth of the lake decreased, winter kill of fish became more prevalent prompting the 1992 DENR offer to help in finding solutions for the area. The lake restoration project is part of the creation of a 25,000 acre watershed management area around Clear Lake.

9/15/00 Public Opinion

## Dredging On Clear Lake Moves Steadily . . . but It's Slow

The dredging of Clear Lake has been in progress for about a month, and according to LeRoy Stohr, project coordinator, it's moving ahead pretty much on schedule . . . but the dredging is a slow process.

The big boat with the large bit with the mile or so of pipe attached moves ahead, taking six inches of silt at a time, and pushing that silt along with water through a ten inch pipe to the sediment holding areas. The dredge moves from side to side in almost a 60 degree angle, cutting a path in the silt 36 inches wide, six inches deep along an area that runs 90 feet wide. Back and forth, back and forth back and forth . . .

The ten inch pipe is attached to the rear of the dredge and the silt and water is forced through the pipe by means of a 400 hp motor which runs the pump. The pump pushes the silt and water through the pipe which lays on top of the water about a mile to the sediment areas. The 400 hp motor also drives the dredge and cutter.

Already the dredge has taken silt from the lake from an area approximately 900 feet long, 90 to 100 feet wide and six to eight feet deep. The silt already removed from the lake has nearly filled four of the sediment areas on the field just east of the lake to a depth of three feet. Two of the other sediment areas have about two feet of silt and two others are

just beginning to receive the water and remaining silt as it moves from one area to another.

In the area where the dredge has been, the depth of the water in the lake is now 11 to 12 feet.

The dredge removes about 700 to 900 cubic yards of actual silt each 12 hour day. Breakdowns will cause that total to go down, but the dredge has been operating all but a couple of days since it began about September 25th. The crews on the dredge have been working six and seven day weeks, trying to get as much done yet this fall before weather shuts them down for the winter.

The dredge remains stationary in an area by use of a "Spud", a large cylinder tube that pushes into the silt and acts as the "holder" of the dredge. Two cable lines are set out, each about 150 feet on either side of the dredge at a 15 degree angle to the boat, and are attached to an anchor pushed down into the mud and silt. Cables are attached to these anchors which allows the boat to turn from side to side. As one cable is pulled into the boat by a winch, the other side lets cable out. The winch is then reversed and the dredge turns the opposite way.

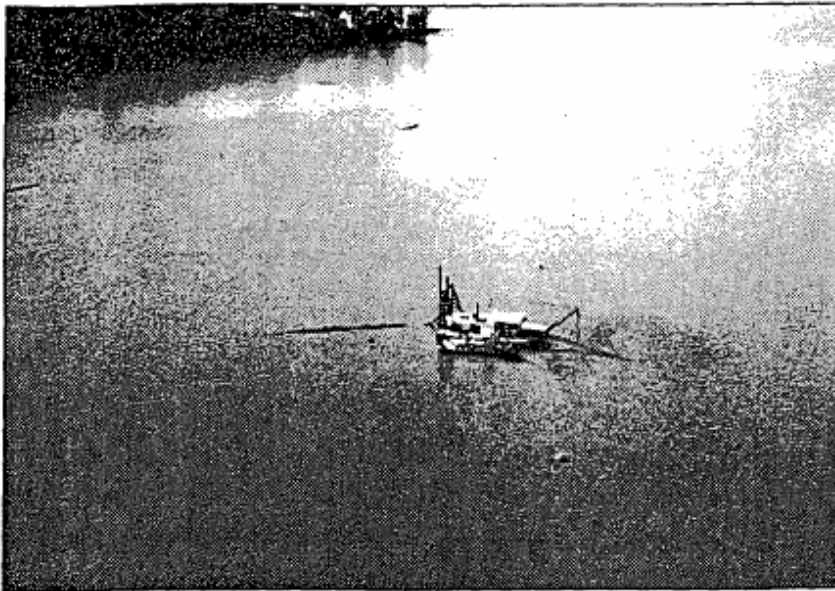
The "Spud" acts as the stationary turning point, holding the dredge from going forward

**See DREDGING Page 13**

10-25-00 Courier

## DREDGING

From Page 1



An aerial view of the dredge in operation. Note the two spots in the water on either side of the dredge. These are the anchors that allow the dredge to go back and forth.



This shows the beam which holds the cutter and cables while the cutter is below the water digging through the silt.

or backward. Each time the cutting blade goes back and fourth, silt from an area six inches deep by 36 inches wide is pulled from the lake and sent through the tube to the sediment area.

The cutter works back an forth taking six inches at a time until it reaches the bottom of the lake or the desired depth. The beam holding the cutter is then lowered allowing the cutter to move ahead and start a new path.

Brian Bouvette, of Clear Lake, who is in charge of the dredger here, stated that "in a good day we can go a distance of about 45 feet, taking a path 90 to 100 feet wide, and six to eight feet deep".

Much of the water that has been pumped from the lake into the sediment areas has soaked into the ground because of the dry conditions. Some residents have voiced some concern over this loss of water. Stohr stated that 50,000 cubic yards of sediment taken from the 525 acre lake will lower the lake one inch. "We'll never pump the lake dry with the dredging operation," he stated. To date, about 20,000 cubic yards of sediment has been removed from the lake.

Already one of the sediment collection areas on the land to the east has three feet of silt that is drying . . . with parts of the area dry enough to walk on. Stohr stated that by next year he expects that the silt from this pond and others could be removed.

The silt will need to be worked in with other soil. "The silt is very rich in nutrients", stated Stohr, "and could not be used as it is for raising crops." Stohr did state that he had seen crops grown on fields down by the Wall Lake area near Sioux Falls that had been mixed with silt taken from Wall Lake. "They were some very excellent crops", he commented.

The crews on the dredge will probably work into the first week in November and then will need to get the pipes out of the water because

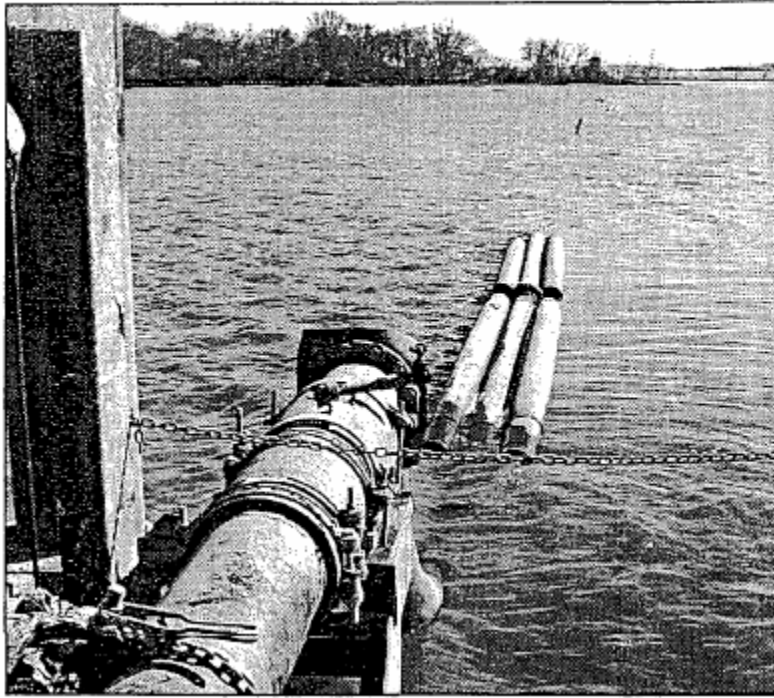


*This picture shows the different ponds that have been set up on the land just east of the lake. Already six or more of these ponds have been filled or partially filled with sediment. The water will eventually return to the lake at the top of the photo after going through a series of holding ponds where the sediment will sink to the bottom.*

of cold weather. The dredge itself will be removed from the lake and placed on shore. Work is expected to begin next year about the first part of May or possibly sooner, weather permitting.

Stohr stated that during the summer months of next year, Clear Lake Restoration is planning to hold a "Lake Appreciation Day", with residents invited to come out, take a trip to the dredge to watch it operate, tour the sediment areas, and view the area. The date and other details will be announced later.

Anyone wishing to make a donation to the lake project can contact Stohr in Clear Lake or call the Soil Conservation District in Clear Lake at 874-8225. At the present time there are funds for the dredge to remain on the lake through the 2002 season. Additional funds would allow the dredge to work even longer and remove even more silt.



*The discharge pipe, attached to the back of the dredge, sends the water and silt back to the ponds located on land, about a mile away.*



*LeRoy Stohr, project manager, points to the top eight inches of one of the sediment ponds. Stohr is standing on over three feet of silt, which has already hardened in this holding area.*





*A picture of the cutter, which cuts a path about six inches deep and 36 inches wide each time it passes over the sediment.*



*The discharge of 30% sediment and 70% water, as it runs out of the pipe attached to the dredge and into the holding ponds.*

# Slide Presentation Lake Dredging Project Shown At L&S Banquet

Deuel County Lakes and Streams held their annual banquet on Sunday evening, November 19, at Bonnie B's Country Inn. There were 55 people in attendance.

After the meal, an auction was held to sell rocks which came from the Clear Lake dredge sediment. The rocks were painted by Jeanette Harding and Cheryl Stohr to look like fish, turtles, frogs, seahorses and penguins. Each came with adoption papers. The rock painting project will be expanded to be used for fund raising for the lake dredging.

Richard Wiebe of Prairie Partners presented slides on how his firm engineered the bale system to hold the sediment. LeRoy Stohr showed slides which had been taken by Jeanette Harding and Elois Redlin. The slides showed how the bales were hauled in and set in place. Ken Madison from DENR gave a brief report, reminding the crowd about the importance of the watershed work along with the dredging.

Several door prizes were given away at the end of the evening.

Evening Set Monday, Nov. 13—

*11/8/82 Council*

## KELO Almost-Stars To Play Basketball Here

The KELO Almost-Stars, a basketball team composed of employees at KELO-TV in Sioux Falls, will play a local team of "Stars of Yesteryear" on Monday, November 13th in the school auditorium.

This game, plus other games and a spaghetti bake supper, are being sponsored by the Clear Lake Restoration and the Wood For Kids Foundation. All net proceeds will be divided between the two organizations.

The evening will get underway at 5:30 p.m. with a spaghetti bake supper, plus ice cream and a beverage, served at a cost of \$3.00 per person. Serving will continue until 7:30 p.m. Concessions will also be available during the evening.

At 5:30 p.m. the Deuel fifth and sixth grade girls basketball teams will play teams from Hamlin, and at 6:30 p.m., the Deuel seventh and eighth grade girls will play teams from Deubrook. The featured game between the Almost-Stars and the local team will begin at about 8:00 p.m.

Announcer for the evening will be David J. Law of KWAT radio in Watertown. During the evening, several door prizes and raffle prizes will be given away.

Tentative players for the local "Stars of Yesteryear" team will include Brian Tvedt, Amy Tvedt, Darryl Goodroad, John Pfitzer, Jayme Gross, Clark Toben, Gary Lindner, Dr. Mirosław Mazurczak, Kim Eggers, Don Cassels, Steve Benson, Tim Casper, Perry Schnaible and Mark Tetzlaff.

Admission for the evening's basketball games will be \$3.00 for adults and \$2.00 for students. Everyone is invited to an evening of fun and food.

## KELO All-Stars Coming To Clear Lake Monday, November 13

The KELO All-Stars are coming to Clear Lake on Monday, November 13th. The all-star team will play against a team of local residents, "stars" from days gone by.

Announcer for the evening will be David J. Law of KWAT radio in Watertown.

The Clear Lake Restoration and the Wood for Kids Foundation are joining together to provide this evening of fun and entertainment in an effort to raise funds for the lake restoration project and for the Deuel school gymnasium wood floor project.

The fun will begin at 5:30 p.m. with games featuring the Deuel fifth, sixth, seventh and eighth grade girls against area teams. Spaghetti supper will be served from 5:00 to 8:00 p.m. and concessions will be available throughout the evening. There will be door prizes given away during breaks.

The big game of the evening featuring the all-stars from KELO and the local "stars" will begin at about 8:00 p.m.

Additional details on the evening will be forthcoming next week.

4-25-2001 Courier



Elois Redlin displays two tanks of water showing what a watershed will do for Clear Lake. One tank held dirty water with a lot of debris while the other tank, the one on the left, was clear as lake water should be.



### Clear Lake Restoration Update -

The Clear Lake Restoration group has been busy with fund raising activities to fund the dredging of Clear Lake. The over-all watershed project has the federal and state funds in place, but these dollars must be matched with a required percentage of local funds.

Some of the activities that have taken place to raise these local match dollars include auction sales, suppers and a Kelo Almost Stars game. These community events will continue throughout the dredging period in an attempt to raise the necessary local money.

A Lake Appreciation Day is scheduled for Saturday, June 16, with a ski club show, hog roast and music planned, all to be held at Ulven Park.

The Clear Lake Restoration group would like to thank everyone who helps and participates in these events.

The following is a breakdown of funding requirements for 2001:

**Dredging cost for 2001**

150,370 cy @ 1.605 =	\$241,408
Launch & remove dredge =	\$ 14,586
Fuel for dredging, 24,000 gallons	
@ 1.012 =	\$ 24,288
(Fuel is forward contracted locally)	
Total Dredge cost for 2001	\$280,282
.24% Local cash match requirement	\$ 67,267
Clear Lake Restoration Funds on hand	\$ 34,614
 Local Cash Funds Needed	 \$ 32,652

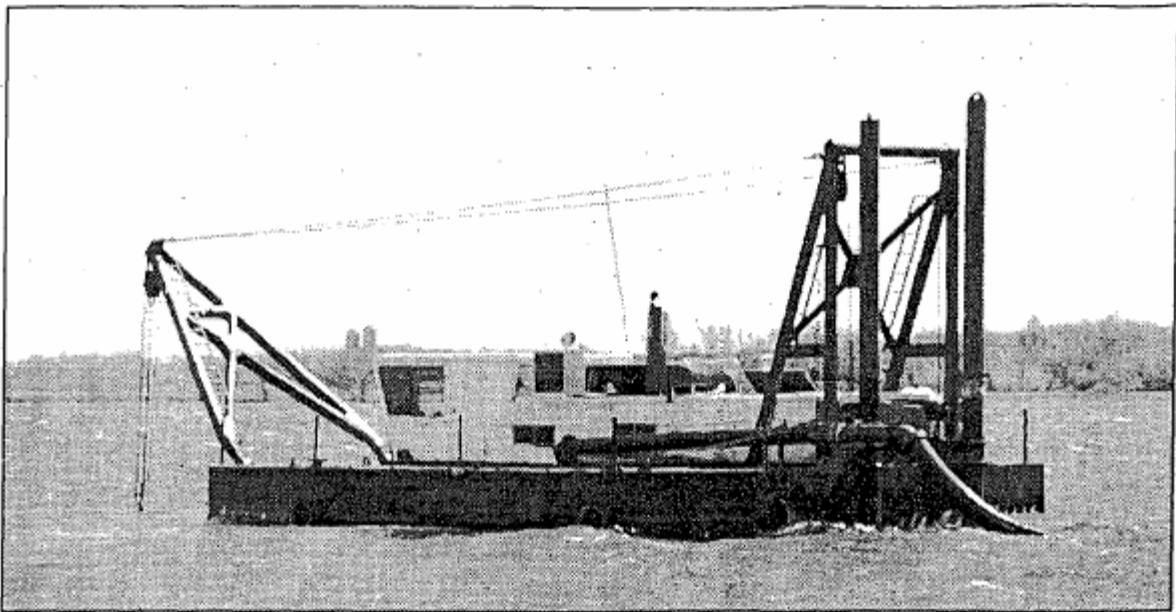
If anyone would like to make a contribution to the project which is tax deductible, it would be greatly appreciated. If you can't make a cash donation, please consider participating in the community events. The Clear Lake Restoration Committee is open to any ideas you may have for fund raising events.

Second to the question concerning funding for the project, the next question a lot of people are asking now is "What about the fish kill which occurred during the winter?"

Yes, fish died in Clear Lake due to lack of oxygen. This was caused by a heavy blanket of snow, which did not allow sun light to enter the water. The sun light is needed to generate oxygen for the fish. As soon as the ice melts and the dead fish accumulate on shore, a clean up day will be scheduled to pick up and bury the fish.

Game, Fish & Parks plans to re-stock Clear Lake with small perch and northern this spring. When this clean up day is scheduled, help from the public will be needed to accomplish this unsavory task.

If you have any questions or comments regarding the Clear Lake Watershed Restoration Project, you may contact LeRoy Stohr, Elois Redlin or Jerry Dumke.



**Dredge Returns To Work . . .**

*5-9-01 Courier*

*After sitting idle for the past winter months, the dredge on Clear Lake returned to work last week, taking the silt from the lake and forcing it and the water into the settling ponds located just east of the lake. The dredge is working in the area that will be used for the Lake Appreciation Day ski show. The dredge will continue working the remainder of the year until freezing temperatures force it to retire to land in the Fall of the year.*

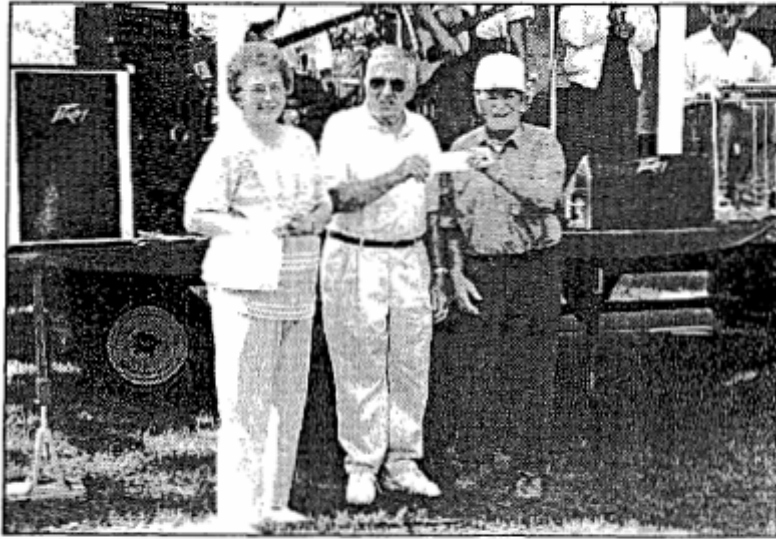


**CL Restoration, Golf Club Receive Funds . .**

*2001*

*Clear Lake Restoration and the Clear Lake Golf Club were the recipients of almost \$650.00 each following the recent Snolf Tournament held on Clear Lake. LeRoy Stohr of Clear Lake Restoration, is shown receiving a check from Brian Bouvette while Dave Bartling, on the right, a member of the golf club, receives a check from Bob Hayes. Hayes, Bouvette and Jerry Christopherson of The Lanes in Clear Lake, members of the Snolf Tournament committee, thank the golfers and the sponsors for making the tournament another huge success.*

7/18/01



## Donation To Lake Restoration

George and Merlene Cook, on the left, are pictured presenting a check in the amount of \$5,000.00 to pay for the fuel used for the dredging project at the lake. "This makes a total of \$10,000.00 received from the Cooks for fuel", said Jerry Dumke, chairman of Clear Lake Restoration and shown in the picture receiving the check. The check was presented at the Lake Appreciation Day held June 16 at the lake. "It is generous contributions such as this that are making our lake clean up a reality," said Dumke.



**Water Board Tours Dredging Site . . .**

2001

The State Water Board toured the Clear Lake Restoration Project on Thursday, October 11th. This board is given the authority to approve or reject the requests for state and federal funding for water projects administered out of the SD Department of Environment and Natural Resources (DENR) at Pierre. This board has looked upon the Clear Lake Restoration Project very favorably, having approved over \$1 million of state and federal funding for the local project. These are funds coming directly into the community with the largest share staying here to generate several other dollars expended in goods and services. Included in the picture with the board is Jerry Dumke, on the far left, the chairman of the Clear Lake Restoration Corporation and to his left is LeRoy Stohr, project coordinator.



**Restoration Receives Wal-Mart Grant . . .**

The Clear Lake Restoration was recently awarded a \$1000.00 grant from the Wal-Mart Corporation. The funds will go towards the dredging to match state and federal funds. Accepting the grant were LeRoy Stohr and Elois Redlin.

12-5-01

2-4-02 Public Opinion

# Project looks to final year of dredging

## ■ Clear Lake Restoration plans auction to raise funds.

By **WAYNE HAMMOND**  
Public Opinion Staff Writer

CLEAR LAKE — The 2002 fundraising season for the Clear Lake Restoration Project will continue Sunday, March 10, with a community auction at the Deuel School Auditorium.

The auction will focus on household, collector and antique items.

People with items for the auction sale are reminded that they can donate the items to Clear Lakes Restoration or the con-

signor will be allowed to receive the dollar amount for which the item sells, minus the commission which the auctioneers will donate to the lake dredging project.

**Also, if enough** interest is shown, a collector's show as an opportunity for people to bring in their collection for the show will be held along with the auction.

"For the past five or six years we have held a fall community auction," explained Deuel

County Conservation District manager Elois Redlin. "Last year we started a spring auction which was really well-received. The community enjoys these kinds of activities."

The project is using a unique silt filtration method to clean the Deuel County lake's water over the past two years. A series of straw and hay bale dikes is used to filter the water before it flows back into the 500-acre lake. The bales have been formed into a series of half-acre dams on a 70-acre plot east of the lake. Water is

pumped out of the lake, flowing through the series of dams and being filtered along the way.

**Officials estimate that** the technique, developed by Richard Wiebe, a landscape architect and civil engineer who is president of Prairie Partners, Inc. of Brookings, is saving about \$100,000 over the more traditional settling pond system.

Redlin said that through the first two of three years of dredging, the project is moving as

expected. Last year a fund raising goal of \$62,000 of the total \$566,403 cost of dredging was set. This year \$50,000 has been targeted as the goal, which started Saturday with an ice fishing derby.

Anyone with items to consign to the sale are encouraged to contact LeRoy Stohr at 874-2854, Jerry Dumke, 874-2605 or Norval Anderson at 874-2191. Those interested in the possible collector's show may call Redlin at 874-8263.

## Local Lake Dredging To Begin Soon; Additional Funds Needed

5/15/02 Courier

The dredging operation at Clear Lake will begin for the 2002 season after some maintenance is completed in the sediment holding area. This includes pulling posts, removing the top three strings off the bales, and diking to route water to the correction direction. The area has to be dry enough to allow equipment to perform these duties.

One dredge will operate during the 2002 season. The second dredge will operate only if the quota or goal cannot be met with one.

The Clear Lake Restoration Project still needs \$10,000.00 local funds to match the state and federal grants for the 2002 season. Fund raising efforts will continue during the season.

Searching continues for a source of funding for another season of dredging (2003) which would cost around \$200,000.00. This will have to be private money, since there is no chance of additional state or federal money.

The original three year plan, of which this is the last year using state, federal and local money. Will remove one-third of the silt in the lake.

The South Dakota Lakes and Streams dredge will remain in Clear Lake another year or more, as long as there are dollars to keep it operating.

10-9-02 Courier



Lutheran Brotherhood Branch 8493 recently presented a check in the amount of \$500.00 to the Clear Lake Restoration for the dredging project that continues on the lake. Presenting the check is Lisa Olerud, branch treasurer (third from the left) and accepting the check is Elois Redlin and LeRoy Stohr, of the Clear Lake Restoration shown on the right. On the far left are Lisa Lundberg and Verdelle Anderson, Branch Advisors.



*Streambank Riparian Area  
"Before"*



3/20/02 Courier

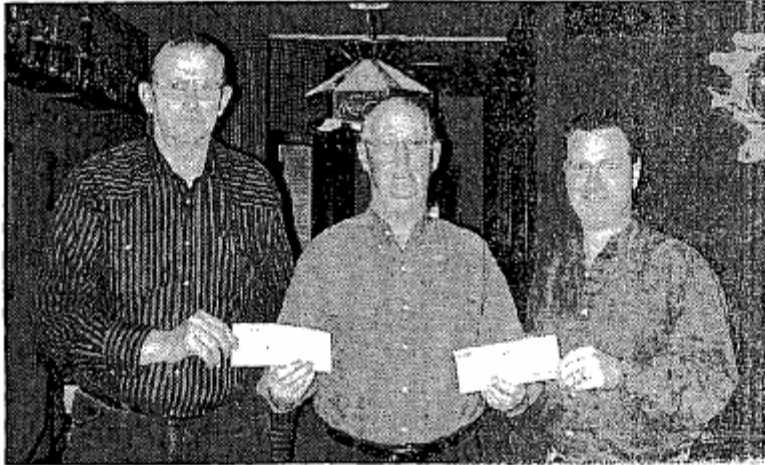


### **Kiwanis Club Donates To CL Restoration . .**

*The Clear Lake Kiwanis Club donated \$1000.00 to the Clear Lake Restoration this week, to be used for the continuation of the dredging project during the upcoming summer. Making the presentation were Kiwanis members Jane Evenson, on the left, the secretary-treasurer of the organization, and Shirley Krause, center, president of the club. Accepting the donation is LeRoy Stohr, coordinator of the lake restoration project.*



3-12-03 Courier



### **Snolf Checks Presented . . .**

*Jerry Christopherson, pictured in the center, presents checks in the amount of \$645.00 each to LeRoy Stohr, on the left, representing the Deuel Lakes & Streams, and Ren Preheim, on the right, of the Clear Lake Golf Club. The two organizations were the recipients of the net proceeds from the third annual Clear Lake Charity Snolf Tournament held in January at the Clear Lake Golf Course. Other sponsors of the tournament include: Engelbrecht Farms, Chuck Olson Carpet, Fritz Chevrolet-Olds, Clear Lake Courier, Wellis Fargo, Deuel County Pharmacy, DC National Bank, Exhaust Masters, Supreme Pork, Technical Ordnance, Rural Route Repair, Clear Lake Building Center, Anderson Agency, Crook's Collision, Ed Fawcett L.B.O., Empl, Larry's Tree Service, The Ivy Floral & Gifts, Clear Lake Vet Clinic, Kellen Egg Farm, The Lanes/Restaurant, Deuel County Lakes & Streams, Lundberg Electric, DCN Insurance, Otter Tail Power Company, Pronto Auto Parts, Margo's Hairport, Viessman Trucking, Doug's Fabrication, Crawford-Eng Funeral Home, Pieper Auctioneering, American Family Insurance, Cowboy Country Store, H-D Electric Co-op, Inc., Garst/AgriPro Seeds, Paul's Place, Bill's Country Repair, Crook's Painting, Maynard's Food Center, Gawierson, Evenson, Boyd, Knight & Stoltenburg, Hall's Machine Works, Marty Olsson DDS, Brandt Locker, Deuel County Cenex, Walter Johnson Realty, Stava Trucking, Swenson Ford Sales, Inc., Sodak Gardens, KO Auto Sales Conby, Jerry Dumke Construction, Budahl Construction, Legend Seeds, Rowie Steen Construction and Dean and Lana Motzer.*

# Report Given On Clear Lake

5-21-03 Courier

By Elois Redlin

Many people are asking if there will be any more dredging done this year on the lake. The answer is no, and the reason is that the initial grant funds are depleted. The initial grant funds were set up in the original budget to remove 1/3 c/y of the million c/y of silt determined to be in the lake. That goal was nearly reached after three years of dredging. The state and federal grants had to have local match, and \$176,912 cash was raised from county, city and individuals to meet the match requirements.

Dredging is an expensive operation, costing approximately \$175,000 - \$200,000 per year. One-half of that amount must be local funds, amounting to \$88,000 - \$100,000 per year. In order to apply for more grants, that local amount would have to be in place.

Private foundation funds have been sought to use for local match, but so far this has not been successful. The reason is that many of the large pools of money are gone due to the stock market and the declining economy in general.

The next question people are

asking - why is the Clear Lake Restoration group raising money currently if there is not going to be more dredging? The answer is that the group will continue fund raising activities for further improvements and development of the lake, and to keep the community aware of the beautiful natural resource on our door step. Present fund-raising money will also be used as local matching dollars required for reclaiming and restoring the sediment holding area.

What is the one to five year plan for the lake and will there be development? Requests are coming in from people wanting to build houses at the lake. Ideas are being tossed around at the present time to see if this will be feasible during the next five years. Development at the lake would be a great benefit to main street Clear Lake and to Deuel County, but it must be carefully planned. There is also potential for commercial as well as residential development.

Was the water level at the lake affected by the past three years of dredging? One must keep in mind that from 1990 - 1999, average

annual precipitation was 29.0 inches. This is about 6.7 inches above the 22.3 inch average. For the 10 year period, about 67 more inches of precipitation fell, than average. This is why the lake was so full during those years. In 2002 however, the average precipitation was below average, so this is the reason the lake level is down now compared to the high precipitation years, not due to dredging. It has been observed that even the recent rains have raised the level over what it was earlier this spring.

What will become of the dirt in the sediment holding area? This is a natural product, some of which will be hauled out to use for fill dirt, and the rest will be spread out over the field. If the sediment material is used for gardens, it is recommended that it be mixed with other soil to give it a chance to regain its micro-organisms which are not present since the soil was underwater for a number of years.

What are the benefits of dredging? Are there any visible improvements to the lake as a result of the past three years of dredging? One

of the goals of the sediment removal project was to improve habitat, and the fact that there was no fish winter-kill during the winter of 2002-2003 proves the direct benefit of the deep dredged areas for fish to inhabit. Fishermen have reported seeing large amounts of fish congregated in the deep-cut areas, detecting them with their sonar-fish-finding equipment. Of course, the more dredging that's done, the more beneficial it would be for the fish habitat.

Several people have commented on the improved appearance around the lake, due to the Clear Lake Restoration group initiating the annual lake clean-up day for several years in a row. This will be continued as long as the community puts forth effort to participate. The clean-up day held this year on May 10th had a good crew of people, this year mainly working on cleaning up the sediment holding area. A group of youth also worked the day picking up old branches etc., along the lake shore.

Another important question that people ask about the Clear Lake Restoration Project is what is being

done to keep the sediment from re-entering the lake? This is where the watershed work incorporated into the project comes into play. Several conservation practices were built into the project to protect the lake from further pollution; such as no-till grassed waterways, animal waste management systems, grazing management, upland habitat restoration and bank stabilization. LeRoy Stohr, project coordinator, has been working diligently to get all of these practices incorporated to help protect the lake. All of the practices are strictly voluntary, with cost-share provided with project funds. The land owners have been extraordinarily cooperative, and this has made the watershed work very rewarding. The watershed work will continue through 2003 and into 2004. If anyone has any questions or comments concerning the watershed work, please contact LeRoy Stohr.

Questions or comments regarding funding or development may be directed to Elois Redlin, who is manager of Deuel County Conservation District, prime sponsor of the project.

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# Watertown PUBLIC OPINION

WEEKEND EDITION

Vol. 117, No. 194

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## Clear Lake stays progressive

■ Deuel County residents are willing to help where needed.



Public Opinion Photo by Wayne Hammond

Traffic moves northbound on S.D. Highway 15 — Clear Lake's Main Street — Thursday afternoon. Clear Lake has remained a progressive community in hard times for rural areas, especially in keeping its Main Street healthy.

with 8/16/03 P. Opinion

*(Editor's Note: Each month the Public Opinion presents "hometown," a look at the people and events that make communities in northeast South Dakota and west-central Minnesota special. This month's featured city is Clear Lake.)*

By WAYNE HAMMOND  
Public Opinion Staff Writer

CLEAR LAKE — Citizens in the Deuel County seat have shown their ability and willingness to respond when needed. The vision of Clear Lake's leaders in the areas of community development, water issues, education and health care has made the city one of the most active, progressive communities in northeast South Dakota.

In the past year alone, the community has moved forward with plans to build a new community center and fire hall and is in the preliminary stages of planning for a new high school. These projects have required a good deal of planning and input.

However, the city has also shown its ability to respond to an acute situation. Last December residential water customers noticed an odor coming from the water supply. The city responded initially by pumping from another city well, but when

it was not able to keep up with demand an emergency line was made to connect the city's main line with the Brookings-Deuel Rural Water System.

Water will always be a key issue with Clear Lake. Elois Redlin has worked closely with the Clear Lake Restoration Project during an important stretch that included dredging Clear Lake over the past three years.

"Like any project, we've always had our naysayers," Redlin said. "But we've also had people come up to us and say how much the fish habitat has been improved."

The restoration project is also an example of unique think-

ing among local leaders. The dredging was done with the help of a rare straw and hay-bale dike system that filtered the water before flowing back into the 500-acre lake. As opposed to the traditional settling pond system, officials estimate more than \$100,000 was saved.

With the dredging work done for the time being, the historic 70-acre enclave of cells of bales is in the midst of being removed. But this doesn't mark the end of watershed improvements in the area. Redlin explained that the

Please see CLEAR LAKE, Page 10A



## ■ CLEAR LAKE

Continued from Page 1A

Deuel County Conservation District is now looking at modifying watershed practices in the area to maintain the work that has already been done.

Redlin said that the restoration committee plans to continue fund raising with an eye to possible additional dredging in the future.

"If we can raise more local money, we can look to apply to several funding sources that haven't been giving money out with the recent economic climate," she said. "The people who have worked with us and supported us deserve a huge thank-you."

Alan Severson has been mayor of Clear Lake for six years. He says the accomplishments of the city — such as the lake restoration — and its residents have only served to beget more success.

"Clear Lake has seen some successes," he said. "When you drive out here and look at Empi, Gopher Sign, Tech Ord, you see success. You see the courthouse is still located here and we have three major co-op employers, you see success. We've seen successes. This is one of the things that lends the atmosphere to the peo-

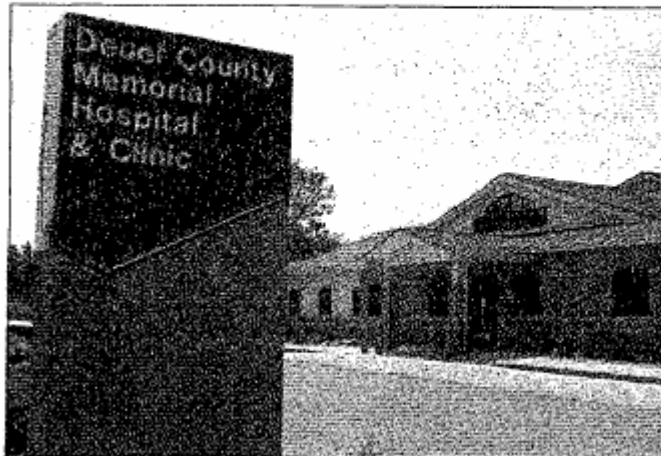
ple to keep moving forward."

And move forward the city has. After more than two years in the planning stages, work has begun on the new Clear Lake Community Center. The facility will be located on a healthy Main Street and will fill a hole left when the American Legion building was torn down in 2001.

**It is also designed** to fill a community need for a large gathering place. It was the intention of the city to have such a facility constructed after the city and Deuel School District agreed to let the school have full use of the city auditorium.

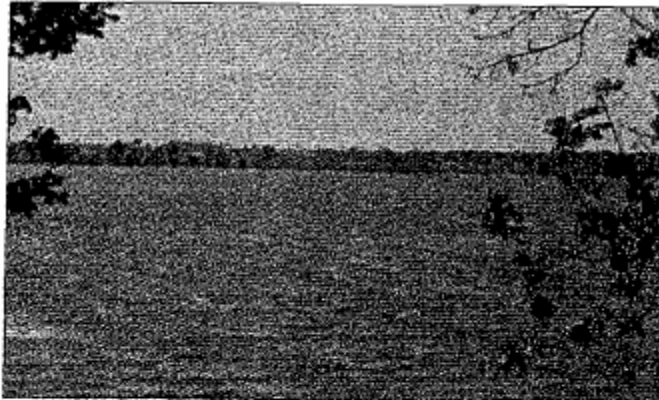
Plans for the building bogged down somewhat in the engineering process and when the new cost estimates came back they were higher than anticipated. Severson said the willingness of city residents to meet and talk about the need for a new facility impressed him.

"We had a very willing group of people come to those meetings who want to see it done and want to see it done right," he said. "It was a positive experience all the way through, which goes for the fire hall, too."



Public Opinion Photo by Wayne Hammond

**Deuel County Memorial Hospital and Clinic** augmented its services two years ago with a \$1.6 million expansion project.



Public Opinion Photo by Wayne Hammond

**Improving** the Clear Lake body of water has been a priority as a way to improve Clear Lake city. Local residents are even looking at developing the area as a way to augment the local housing and business industries.

**In the spirit** of being proactive, the Deuel School District is looking at replacing its high school. In May, the Deuel School Board selected a Yankton-based architecture firm to draw up plans for a steering committee formed to guide the district through the process. Tentative plans call for bids to be let in January.

Redlin is hoping for even more development to take place. She said the lake has enormous

potential for being an area the city can build around.

"We'd like to work on what it would take to start some kind of development there, similar to what has been done at Lake Poinsett," she explained.

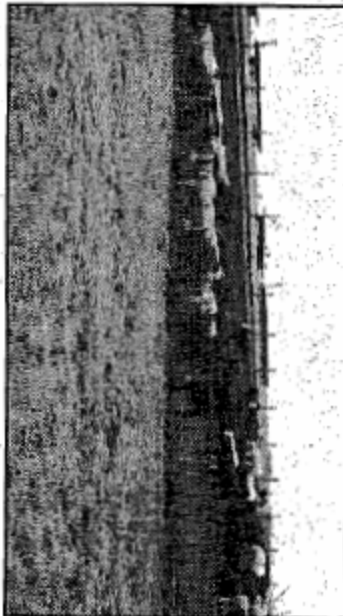
**With the lake's** proximity to the city, Redlin continued, it could be a potential boon to Clear Lake business.

"We've had quite a few people inquire about it," she said. "What's unique is that the lake is on the edge of town. It could really help the downtown."

Given Clear Lake's progressive track record, don't be surprised.

Wtn. P.O.P.  
8/16/03 Article  
Conclusion

# 2003 Annual Report Deuel County Conservation District



*Feedlot at the Lonnie and Gail Krause farm. This feedlot has an animal waste system completed under the Clear Lake Restoration Project.*



*Part of the group of people who took part in the tour held in September. The tour highlighted the animal waste systems installed in Deuel County as part of the Clear Lake Watershed Restoration Project. Deuel Conservation District sponsor.*

## **Lake Projects:**

The dredging portion of the Clear Lake Restoration Project ended in 2002, with approximately 1/3 of the total sediment removed from the lake. These deepened areas improved fish habitat. In order for additional dredging to be done in the future, more funding must be secured from state and federal sources, with a requirement of local match as was the case with the original grants. During 2003, the watershed portion of the project was concentrated on, with several animal waste systems being installed to help keep further pollution from entering the lake. Work was also done on Lake Cochrane/Lake Oliver as part of that implementation phase project.





EPA  
Project  
TOUR  
Participants



**TURNER  
FOUNDATION  
INC.**



October 25, 2002

Ms. Elois Redlin  
Director  
Clear Lake Restoration Corp.  
P.O. Box 348  
Clear Lake, SD 57226

Dear Ms. Redlin,

Thank you for your recent request for funding. Unfortunately, we are unable to fund your work. As a result of the downturn in the market, the Turner Foundation has been forced to suspend grantmaking.

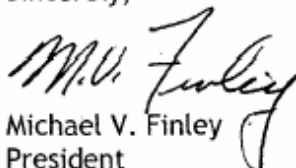
The Turner Foundation Board recently conducted the last board meeting of its 2002 grantmaking year, at which time it assessed the grantmaking capacity for the immediate future. Given the continued state of the stock market and the resulting decline in the Foundation's asset base, we will forgo all funding requests in 2003 and will plan to implement an invitation-only process in 2004. During this time, the Board remains committed to honoring all previously awarded multi-year grants.

Until further notice, we will not be accepting ANY proposals or inquiries.

All updates concerning these changes will be outlined on our newly designed webpage, [www.turnerfoundation.org](http://www.turnerfoundation.org). We invite you to visit our website periodically to stay abreast of our long-term plans as they develop.

On behalf of the Turner Foundation Board of Trustees, I want to extend every wish for your group's success.

Sincerely,

  
Michael V. Finley  
President

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