

TWIN SPRINGS WATER QUALITY PROJECT



Final Report

WPF-0961-3.00

2000 - 2003

WINNESHIEK COUNTY SOIL AND WATER CONSERVATION DISTRICT

**Prepared by:
Ron Fairchild
Environmental Specialist 2
Division of Soil Conservation
Iowa Department of Agriculture and Land Stewardship**

Table of Contents

	Page
Background	3
Project Description	6
Project Results	7
Work Plan Goals Scheduled and Completion	7
BMP Implementations	9
Nutrient and Pest Management	11
Sediment Delivery	14
Information and Education	15
Notable Achievements/Problems	17
Water Quality Monitoring	20
Conclusion	21
Recommendations	23
Project Funding and Budget Summary	24
Appendices	25
A) Financial	
B) Sediment reduction	
C) Maps	
D) Pictures	
E) Publications	

Background

Twin Springs is a coldwater stream designated by the Iowa Department of Natural Resources (IDNR), as a class "B" (c)HQ water. Twin Springs has been classified as one of the top twenty-five priority coldwater streams in the state. Twin Springs originates from two large springs that bubble out of the limestone just a few feet apart from each other. The water temperature at the springs is close to 47 degrees Fahrenheit year-round. The total length of Twin Springs from the springs to the mouth of the creek is about 3,900 feet. The stream ranges in width from 5 to 17 feet. In the State of Iowa's Unified Watershed Assessment, the Twin Springs watershed is located in hydrologic unit 7060002. This hydrologic unit is considered a high priority watershed needing restoration to support its designated use.

The watershed for Twin Springs is approximately 6,762 acres in size and is located within the Paleozoic Plateau landform also known as the driftless area of Iowa. Deep valleys, high bluffs, rock outcrops, and sinkholes characterize this area. The watershed has narrow ridges and wide spring-fed valleys. The upland soils are primarily silt loam formed from loess (wind deposited). These light-colored soils are considered to be well drained. The soil depth over the underlying fractured limestone bedrock varies from several inches to several feet. The relatively shallow soil depth to rock allows for rapid movement of surface water into the groundwater. This condition presents a constant threat of contamination. Other soils found along the floodplain are alluvial (stream deposited). Some of the tributary streams in the watershed lose water to the underground aquifer or disappear entirely through sinkholes and crevices.

The frequency, duration, and amount of precipitation influences surface and groundwater quality and quantity, soil moisture content, run-off characteristics, and the physical condition of the watershed. The Twin Springs watershed mean annual precipitation for the region is about 32 inches of rain and melted snow. Most runoff occurs in February, March, and April when the land is frozen and soil moisture is high.

Twin Springs is stocked with about 8,520 trout twice a week from April through November each year. This fishery is managed as a put-and-take stream. The IDNR Fishery Management Section biologist for this region has stated that this stream ranks 16th of 58 for the number of angler trips to catchable trout streams. Siltation was identified as the major cause of impairment with a rating of high. The elevation of sediment deposits that do occur can damage the entire aquatic community by reduction of oxygen produced, or reduced photosynthesis by the algae and vascular plants in the stream. Stream bottoms that become silted cannot support the benthic animals used as a food source for trout. Sediment is also harmful because it clogs the trout gills which result in oxygen stress; it introduces disease into silt damaged gill tissues; and it limits the visibility of the sight-feeding trout. Nutrients and pesticides impairments each rate slight. Ammonia, nitrates, and nitrogen gas found in the stream can exceed desirable levels that in turn can have a negative impact on the fish. Agriculture is rated as high for the sources of this non-point pollution.

There is also a tremendous amount of public contact with this stream for recreational use. Located along Twin Springs is a city owned campground, about 10 acres in size, and Twin

Springs Park, with an area of 38.1 acres. This area adjoins 6.3 acres of land owned by the IDNR. The city park manager estimates that the campground has on an annual basis 56,000 camper nights. A camper night is a one person stay per night. There is partial body contact associated with this stream through camper access in a recreational fashion. The park manager has confirmed that at least 55 - 60 % of the people that stay at the campground come into contact with the stream through recreational use.

Past records show the surface water quality of Twin Springs has been impaired for a period of time. In 1974, a report submitted to the Army Corps of Engineers by James Eckblad, Assistant Professor of Biology, Luther College, Decorah, Iowa, stated that the water quality of Twin Springs was impacted. Water sample results showed fecal coliform levels exceeded the EPA standard recommended level of 200 organisms per 100 ml for human contact. The samples ranged from 230 to 10,000 fecal coliforms per 100 ml. Ammonia levels were also elevated indicating the presence of current pollution.

Groundwater also appears to be impacted by the karst topography and how water moves through the system. Private wells that have been sampled under the IDNR Grants to County Program indicate the need to improve water quality. Results of these samples indicate 18% of the wells have an unsafe bacteria level, 5% have an unsafe level of nitrates for infants under 6 months of age, and 8% have both unsafe bacteria and nitrate levels.

The majority of the 6,762 acres in the Twin Springs watershed is under private ownership. The current land use is as follows:

<u>Landuse</u>	<u>Acres</u>	<u>Percent of Total</u>
Cropland	5,002	74%
Timber	907	14%
Pasture	478	7%
Other	375	6%
Total	6,762	100%

Agriculture practices comprise 95% of the land use within the watershed. Almost all of the farming operations are owner-operator, with family ownership. The average farm size is approximately 299 acres.

Nonpoint sources of pollutants most commonly found in the watershed include:

- * Polluted runoff from barnyards and feedlots.
- * Sediments from cropland erosion.
- * Sediment from eroding streambanks and gullies.
- * Nutrient and pesticides from cropland runoff.

Normal farming practices found in the watershed consist of terraces, conservation tillage, and cropping rotations with two years of corn followed by oats and three years of hay. Contouring and strip cropping practices have been implemented to address sheet and rill erosion in the past. There is a trend in the area for less livestock, which in turn reduces the need for hay and results

in more of a corn-soybean rotation cycle. Organic farming within this watershed is also occurring, which encourages multiple tillage passes to achieve desired weed control results.

Croplands are considered to be the source of about 90 percent of the sediment delivered to surface waters from uplands through sheet and rill erosion. Estimates of sources of soil loss are as follows:

ESTIMATED SUMMARY OF AVERAGE ANNUAL EROSION AND SEDIMENT DELIVERY FOR TWIN SPRINGS

<u>Item</u>	<u>Area</u> (unit)	<u>Erosion</u> <u>Rate</u> (tons)	<u>Sediment</u> <u>Delivered</u> <u>to Stream</u> (tons)	<u>Delivery</u> <u>Ratio</u> (percent)
Cropland	5,002 ac	40,147	13,650	34
Pasture	478 ac	3,776	1,284	34
Woodland	907 ac	6,246	2,123	34
Ephemeral	92,950 ft	2,091	1,882	90
Classic gully	8,712 ft	118	112	95
Streambank	220,400 ft	2,068	2,068	100
	Total	54,446	21,119	

There are seventeen livestock producers within the watershed. Information gathered from a livestock survey and a meeting with a watershed advisor indicated 646 head of beef, 900 head of hogs, 370 head of dairy, 121,000 head of poultry, 15 horses, and 20 sheep. Annually these operations generate over 20,000 tons of waste products. Most operations do not have any waste storage structures, therefore, a common practice in the area is to scrape and haul manure to the field throughout the year. Nutrient credit for manure application seems to range from little to satisfactory. Run-off from improper or over application has the potential to enter surface water areas within the watershed. There was little evidence of any pasture management practices being implemented. All most all of the pastures are being heavily grazed. Livestock have unlimited access to streams which has resulted in trampled streambanks.

Project Description

The Twin Springs Watershed Project began in March of 2001 with the Winneshiek County Soil and Water Conservation District being the sponsoring agency. The district had applied for funding for project through a grant application to the Iowa Department of Agriculture and Land Stewardship (IDALS), Division of Soil Conservation. The project was funded through the EPA Section 3129 program (Section 319 of the Clean Water Act), which is administered by the Iowa Department of Natural Resources-Environmental Protection Division (DNR/EPD) and the state of Iowa's Water Protection Fund and Watershed Protection fund, which is administered by the Iowa Department of Agriculture and Land Stewardship-Division of Soil Conservation (IDALS/DSC). A full time coordinator was hired to manage the project.

The goals established for the Twin Springs Water Quality Project is as follows:

- a) *Improve water quality by reducing sediment loading to the stream by 30% or 7,000 tons per year.*
- b) *Reduce by 25% the delivery of manure, which has harmful substances such as ammonia, phosphorus, and bacteria, to surface water.*
- c) *Develop and implement a comprehensive information and education program targeting the local community to create an awareness about nonpoint pollution.*
- d) *Provide landowners with financial incentives for reducing sediment and nutrient loading.*

The goals of this project addressed the following objectives of Work Element #3, "Establish Additional Non-point Control Projects" of Iowa's NPSMP:

"To develop, obtain funding for, and initiate additional non-point pollution control project".

Individual project may be designed to accomplish one or more of the following:

- Control non-point pollution of priority streams, lakes, or wetlands
- Evaluate effectiveness of individual BMPs or BMP combination
- Assess feasibility and effectiveness of alternative approaches to accomplish non-point control

A pre-project farm inventory survey (see appendices page 25) was sent to 61 landowners to assist the project with identifying areas of landowners' strengths, weaknesses, and practices they may be willing to adapt. There were nineteen responses to the survey. From the information gathered, conservation practices were selected that would address soil loss concerns along with be viewed as acceptable practices the landowners would acclimate to. To encourage landowners to participate in the project, cost share was provided at a 75% rate for the following practices:

- Nutrient management
- Animal waste storage systems
- Water and sediment basin
- Grade stabilization
- Grass waterways
- Livestock crossing
- Of-site watering system

- Terraces
- Rotational grazing
- Paddock fencing
- Woodland management
- Corridor fencing
- Streambank stabilization

The Natural Resource Conservation Service (NRCS) provided technical assistance. Other project partners included: Farm Service Agency (FSA), U.S. Fish and Wildlife Service, Winneshiek County Supervisors and Public Health, University Hygienic Lab, and the local landowners.

All programs and services of the Winneshiek County Soil and Water Conservation District and the Natural Resource Conservation Service were offered on a nondiscriminatory basis without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

The project was promoted through the use of an information and education program. This included newsletters, direct mailings, tours, field days, and one-to-one contacts. Program updates would keep the project partners, the local community, and landowners up-to-date on activities, practices installed, and accomplishments of the project.

A local advisory Board was developed to provide local input to needs success, and direction of the project development. The board was comprised of three landowners, the county sanitarian, and the local IDNR Fishery Management Biologist.

Project Results

Work Plan Objectives and Goals Scheduled and Completion

Once the Twin Springs Project was approved, a Plan of Operation (POO) was developed to establish specific goals, objectives, and a timetable for completion. The following is the list of these activities and associated action items.

Objective 1. Administer Project and Implement all Activities and Objectives in the Twin Springs Water Quality Project.

Goals:

- A. Prepare monthly, quarterly, annual and final project reports.
- B. Assure Equal Opportunity for All in Delivery of Services and in Membership on Committees.
- C. Manage the project to maintain quality control and to maximize communication with, and involvement of, local advisors and state and local staff of participating agencies.
- D. Develop budget and plan of operations for each year of the project
- E. Obtain needed training for project coordinator and cooperators in the project.

Objective 2. Assist with the application of best management practices (BMP's) that effectively reduce sediment, nutrients, pesticides, and animal waste delivery to Twin Springs.

Goals:

- A. Reduce the amount of livestock manure reaching the stream, sinkholes and groundwater by 25%.
- B. Reduce sediment delivered to the stream by 30%.

Objective 3. Continue conducting a comprehensive information and education campaign promoting economically and environmentally sound farming methods.

Goals:

- A. Continue to expand local ongoing education and information campaign to ensure public awareness and interest is stimulated.
- B. Expand education and information boundaries to all of Winneshiek County.

Objective 4. Continue to expand the assessment of land use, the sources causing deterioration of water quality, and the quantity of measures needed to significantly improve the condition of Twin Springs.

Goals:

- A. Develop a rating system to prioritize manure management and sediment reduction practices.
- B. Conduct a monitoring program to document water quality improvements in the watershed.

Objective 5. Create an awareness of the amount of fertilizer and pesticides presently being used within the watershed and to implement prudent use of these nutrients and pesticides

Goals:

- A. Assist producers with the transition to ICM through planning, development, and implementation of economically and environmentally sound management decisions.
- B. Identify additional agronomy educational opportunities for producers.

Objective 6. Provide financial assistance

Goal:

- A. Provide landowners with financial incentives for reducing sediment and nutrient load by installing Best Management Practices

Goals for the implementation of Best Management Practices were established to achieve the desired reduction of sediment, nutrients, and pesticides. Table 1 reflects the accomplishment of the project in reaching those goals.

Table 1

<u>BMP</u>	<u>Original Goal</u>	<u>Amount Reported</u>	<u>%of Goal</u>
Nut./Pest Mgt*	2,000 acres	898 acres	45%
Animal Waste System**	3	4	133%
Water & Sediment Basin	4	1	25%
Terraces	4,000 ft	36,065 ft	902%
Grade Stabilization	2	4	200%
Grass Waterway	4,000 ft	5,655 ft	141%
Livestock Crossing	2	0	0%
Rotation Grazing	50 acres	139.5 acres	258%
Streambank Stabilization	600 ft	800 ft	133%
Corridor Fencing	1,500 ft	2,228 ft	110%
Livestock Watering System	0	1	100%
Woodland Management	240 acres	247 acres	103%
Plans			
NICC/Farmer Program	8	0	0%
Review/Develop Conservation	2,100 acres	1,649 acres	79%
Plans			
Farmer to Farmer Meeting	4	4	100%
Pre-project Survey	1	1	100%

*cost share was not provided on plan for 200 acres

**one system was completed without cost share money

Structural Practices

Structure Objective: Reduce the amount of sediment, nutrients, animal manure, and pesticides entering water supplies by helping watershed landowners and farmers implementing soil conservation and water quality practices.

Structural practices were targeted to eroding gullies and fields that were being cropped in a corn – soybean rotation. Cropped fields that had “c”, “d”, and “e” slopes were considered to be the high priority areas. Typically these fields that have slopes of 5% or more make sheet and rill erosion more dramatic. Gully erosion has also been more prevalent as more fields are being cropped with a corn – soybean rotation. The reason is more water run-off occurs during a storm event from this type of a rotation versus hay or the use of buffer strips. Fields that were designated as critical areas were areas eroding above “T” and fields that exceeded 5% slope and were within 200 feet of intermittent or perennial streams. The desired sediment reduction practices that were installed include terraces, water impoundment structures, water and sediment control basins, and grass waterways.

Local staff overseeing the installation of the practice estimated the soil loss reductions by the use of RUSLE (Revised Universal Soil Loss Equation). Table 2 shows the owner, practices implemented completion date, and cost share provided during the course of the project.

Table 2
Cost Share Practices Completed From 2000 –2003

Name	Practice	Amount	Cost share	Date completed
Marlyn Knutson	Grade stabilization	1	\$23,427.14	9/19/2000
Dennis Knutson	AWS	1	\$16,035.19	11/7/2000
Bob Timp	Terraces	2,675 ft	\$7,555.02	11/21/2000
Hubert Lennon	Terraces	5,050 ft	\$12,647.18	11/21/2000
Jim Boeding	Terraces	850 ft	\$5,250.00	11/21/2000
Jim Boeding	Terraces	1,750 ft	\$6,024.93	11/21/2000
Jim Boeding	Water & sed basin	1	\$2,250.00	11/21/2000
James Wenthold	Terraces	2,000 ft	\$4,743.08	1/02/2001
James Wenthold	Terraces	2,950 ft	\$6,669.72	1/02/2001
James Wenthold	Terraces	3,500 ft	\$5,552.15	1/02/2001
Herb Kleve	Nutrient manage	140 ac	\$700.00	4/03/2001
Jim Boeding	Nutrient manage	291ac	\$1,250.00	5/22/2001
Tim Knutson	Waterway	3,080 ft	\$1,714.50	5/22/2001
James Wenthold	Terraces	750 ft	\$4,261.50	6/12/2001
Tim Knutson	Nutrient manage	51 ac	\$51.00	6/12/2001
Charles Humpal	Nutrient manage	120 ac	\$600.00	6/19/2001
Anthony Quandahl	Nutrient manage	95.4 ac	\$380.00	6/19/2001
Diane Grimstad	Watering	1	\$2,625.00	6/19/2001
Diane Grimstad	Fencing	2,228 ft	\$1,620.00	6/19/2001
Diane Grimstad	Timberstand improve	24 ac	\$1,695.00	6/19/2001
Jim Boeding	Timberstand improve	14 ac	\$900.00	6/24/2001
Anthony Quandahl	Timberstand improve	30 ac	\$2,250.00	6/25/2001
Diane Grimstad	Pasture planting	129 ac	\$5,298.69	6/25/2001
Diane Grimstad	Grade stabilize	1	\$2,760.00	6/29/2001
Gerald Bakken	Terraces	1,150 ft	\$3,375.00	9/18/2001
Jim Boeding	Strmbank stabilize	200 ft	\$1,712.11	9/18/2001
Huber Lennon	Terraces	1,300 ft	\$4,577.18	11/13/2001
Huber Lennon	Terraces	1,600 ft	\$3,619.25	11/13/2001
Jim Tollefson	Terraces	2,740 ft	\$9,664.65	11/13/2001
Dennis Knutson	AWS	1	\$12,400.44	12/07/2001
Jim Boeding	Strmbank Stabilize	400 ft	\$2,550.00	12/10/2001
Jim Boeding	Terraces	1,200 ft	\$3,947.18	12/10/2001
Jim Boeding	Terraces	900 ft	\$3,669.10	12/10/2001
Jim Wenthold	Terraces	1,400 ft	\$4,109.15	12/10/2001
James Wenthold	Terraces	2,650 ft	\$5,517.22	12/10/2001
Charles Humpal	Waterway	1,575 ft	\$2,481.75	5/21/2002
Diane Grimstad	Pasture planting	10.5 ac	\$510.38	5/21/2002
Jim Boeding	Waterway	1,000 ft	\$1,242.00	5/21/2002
Jim Tollefson	Grade stabilize	1	\$14,250.00	9/17/2002
Roger Henningsgaard	Grade stabilize	1	\$59,841.45	9/30/2002
Tim Knutson	AWS	1	\$18,675.00	11/28/2002
Jim Boeding	Strmbank stabilize	200 ft	\$5,095.69	12/17/2002
Jim Boeding	Terraces	3,600 ft	\$10,077.10	12/17/2002

The issue of both the groundwater and surface water quality was priority issue for everyone involved with the project. The extremely high fecal coliform readings brought up concern over

the potential health problems associated with bacteria contamination with livestock excrement. Livestock waste contains other harmful products to the environment such as nitrogen gas, ammonia, phosphorus, and nitrates. Discussions were held with the livestock producers on the types of activities that could reduce the impact that livestock waste has on water resources. From the initial survey that was completed in 1999, the number of livestock operations had shrunk from 17 to 9 locations. There was also a livestock sale barn located in the watershed. From the pre-project estimate of 20,000 tons being generated, that figure has been reduced to current estimate of 10,788 tons per year based on Iowa State Extension Service's book values for waste production. Most of the reduction of livestock waste being generated was the result of several dairy operations going out of business or the livestock producer retiring.

This project helped to share cost for 3 animal waste storage structures (refer to Table 2). The amount of animal waste that was retained was 2,405 tons (see Table 3).

Table 3

Name	Waste generated	Waste retained	Date completed
Dennis Knutson	1,176 tons	823 tons	11/17/00
Dennis Knutson	920 tons	644 tons	12/07/01
Tim Knutson	1,340 tons	938 tons	10/24/02
	Total	2,405 tons	

One landowner has expanded his chicken operation by 50,000 birds, but opted to construct a total containment system at his own expense.

A series of streambank erosion projects were completed at location directly upstream from the stocked section of Twin Springs. This area had over 1,000 feet of eroding streambank. Stream bank slumping in this stretch of stream would provide a sediment delivery rate of 100% to Twin Springs. Because of the height and erodibility of the banks, the site was stabilized with the use of rock riprap. Before placement of the riprap, the bank was angled back to a 2:1 slope. The estimate soil delivery rate to this location was with estimated to be about 140 tons annually. Upon the completion of the project, the owner agreed to provide a filter strip on both sides of the stream to provide additional protection to the bank.

Non-structural Practices

Non- Structure Objective: Show landowners and farmers the economic and environmental benefits of soil conservation and water quality practices through on-farm demonstrations in the watershed and the implementations of BMPs.

a) Nutrient and Pest Management

With the assistance of Iowa State University Extension Service Area Agronomist, a nutrient management program was presented. Landowners from three active watershed projects in Winneshiek County were invited to attend. The meeting discussed what was required for a nutrient management plan from the NRCS and IDNR standpoint. Landowners and renters

received instruction on how to interpret soil sample results; determine crop nutrient requirements; balance nutrient requirements with the use of manure and legume. The people that participated in the program had to contemplate how to apply or incorporate into the ground their animal waste without exceeding their tolerable soil loss (T) as determined by their conservation plan. To address the issue of manure entering the resource waters for Twin Springs, the issue of storage and proper application of animal waste was addressed. For producer participating in the program, cost share practices were offered at the following rates:

- Obtain a current soil test (\$3.00 per acre)
- Attend a nutrient management planning session presented by the ISU Extension Agronomist (\$1.00 per acre)
- Develop a nutrient management plan (\$1.00 per acre)
- 75% cost share to construct an animal waste storage system

The seven Twin Springs watershed landowners that attended the session represented 780 acres in the watershed. Of the seven landowners, three developed plans for 697 acres and received cost share at \$5.00 an acre. Another landowner in the watershed did develop a nutrient plan that covered 200 acres, but did not request cost share for completing it.

One owner in the watershed was notified that he would fall under the permit process due to the number of livestock in his operation. Assistance was provided to him on potential areas where manure could be applied and the nutrient values for the manure. The owner was not comfortable providing detailed information about his operation to the project. We were unable to determine if reductions in nutrient application had occurred with the landowner and to what extent. The fact he was now under an IDNR nutrient management plan requirement should ensure that proper application and timing of application of manure would occur.

b) Conservation Plans Compliance

Cropping histories and RUSLE calculations were completed for 1,649 acres or 40% of the cropped ground in the watershed during the project. Crop rotations and soil loss were then compared to the conservation plan for the respective field. The results indicated that at least 370 acres did not meet tolerable soil loss. In situations where fields were found to be exceeding soil loss, or not farmed according to their cropping plans, the landowners were contacted and asked to review and/or amend their plans to reduce soil loss. The emphasis to the landowners to adhere to their conservation plans or develop a more progressive conservation plan resulted in changes in their farming practices that reduced soil loss by over 1,100 tons in the watershed. This diminished soil delivery to the stream by 380 tons. Some of the practices implemented included no-till, buffer strips, and more hay in the rotation.

In field status reviews were completed on 791 acres, which represents 19% of the cropped acres in the watershed. For the majority of the fields examined, the tracts were in compliance. About 10% of the fields lack the required conservation practices. Some of the common deficiencies included nonfunctioning waterways; lack of contour planting; and no headlands. Other soil loss determinations were completed on a "spot check" basis. For most of the fields checked, the soil loss on these fields was typically 5 to 7 tons per acre. Fields that were identified as exceeding

“T” level were brought to the attention of the landowner. Methods to reduce the amount of soil loss to “T” were discussed along with financial benefits of doing so.

The use of no-till farming was promoted as an alternative to reduce soil loss. It was estimated that there was an increase in the amount of fields that were being no-tilled from 80 acres to 549 acres. Most of the fields involved had “C” or “D” slope with a corn – soybean rotation. The soil loss saving by no-till versus mulch tillage on average was approximately 4-6 tons per acre. This helped to reduce sediment delivery by 864 tons.

An effective program in stopping soil loss in the uplands was the Conservation Reserve Program (CRP). At the beginning of the project, there were about 486 acres in the watershed enrolled into this program. An additional 266 acres were enrolled during the project. Soil loss on these enrolled acres was reduced on an average from 8 to 1 ton per acre per year. The estimated soil loss delivery reduction was about 558 tons.

The continuous Conservation Reserve Program was used as another tool for landowners to implement soil saving practices. Some of the options landowners adopted include shelterbelts, waterways, and filter strips. Prior to the start of the project there was 75 acres of continuous CRP in the watershed. Another 51 acres were added during the project. The soil loss reduction was from 4 to 1 tons per acre. The net effect was 31 tons of less soil delivery to the stream.

The Natural Resources Conservation Service has begun the implementation of Resource Management System (RMS) planning. The RMS process is a three-phase, nine-step planning process. The primary purpose of the RMS process is to develop sound resource management system alternatives without creating new problems. The process is applicable in the formulation of RMS alternatives for specific fields, conservation management units, or other planning areas. The RMS process involves a tour of the farm with the landowner to discuss the resources of his farm. The owner is encouraged to state his conservation objectives for the land unit, while the conservation planner from the local office gives inputs from their perspective. Both parties involved then develop a conservation and land management plan. Benchmark effects are identified and the progress of the plan is tracked. Conservation practices are considered to be implement if the practice is in place and functioning as planned. A practice is considered planned if the practice is identified as being needed, but not yet implemented. Follow-up visits are encouraged with the landowner to make this an ongoing process. In the Twin Springs watershed, RMS planning was completed on 387 acres.

c) Woodland Management

Woodland management was also identified as a significant contributor to the sediment delivery to Twin Springs. Often high sediment losses could be contributed to livestock access to the woods that reduces cover and accelerated erosion by traffic patterns. Another concern of woodlands is the conversion to cropped fields. The wooded areas are often seen as potential production acres. Normally, the reason the areas were left as woodlands was due to the low productivity potential of the land. These areas are however very well suited to tree production. Landowners are encouraged to view raising trees as a commercial crop versus clearing the land

for non-profitable crop production. The Iowa Department of Natural Resource Area Forester met with six landowner to inventory their stands and develop a management plans. As a result, management plans were developed for 247 acres. The majority of the woodlands did not require any immediate attention, with the exception of about 68 acres. Cost share was provided for a timber stand improvement practice of thinning or pruning trees on these acres. The reduction of soil delivery to watercourses was estimated at 90 tons. Another 179 acres of timberland in the watershed is currently under an IDNR approved plan.

d) Pasture planting/Improvement

There was one minority landowner converted 55.5 acres of cropland to rotational grazing. The soil loss on these fields had been over 12 tons per acre. The change to grassland reduced this to 1 ton per acre. The owner also reworked 84 acres of an existing overgrazed pasture. With the movement of cattle on and off the pasture along with better vegetative cover, this has substantially reduced soil erosion. The net effect is 497 tons of soil delivery reduction.

Sediment Delivery Reduction

The estimated soil loss delivery rate from erosion to the stream at the beginning of the project in 2000 was 21,119 tons.

One of the goals of the project was to reduce this amount by 30%, which would be about 7,000 tons. The areas given the highest priority to address were uplands, streambank erosion, and areas around sinkholes.

The use of structural and nonstructural has had the following impact on Twin Springs

Sediment Delivery Reduction

Cost share practices	6,424 tons
No-till	864 tons
Conservation compliance	380 tons
Continuous/General CRP	<u>589 tons</u>
Total	8,257 tons

Soil loss reduction by individual cost share practices can be found in the appendices. Sediment delivery reduction calculations were based on information provided by the Natural Resource Conservation Service. The Revised Universal Soil Loss Equation (RUSLE) was used to determine sheet and rill erosion, while channel, gully, and ephemeral gully erosion calculations were based on a NRCS streambank and gully erosion formula. Sediment delivery to the receiving water body before and after a practice was installed was determined with the assistance of NRCS Geologist, Kathy Woida. Based on the drainage area, slopes, and upland treatment prior to the practice being installed, these delivery ratios and reductions varied by site and by practice.

At the completion of the project almost all of the goals have been met or exceeded which in turn resulted in the achievement of reducing sediment delivery to the stream by over 7,000 tons per year. The reduction of sediment delivered to the stream has been reduced as the result of the watershed project, voluntary implementation of conservation practices by landowners, and the Conservation Reserve Program.

Partners associated with the project feel there has been a greater level of soil loss reduction achieved other than what has been calculated as the result of BMP's applied. These feelings are based on visual observations within the watershed on the number of soil savings practices that have been implemented on a voluntary basis.

Information and Education

To achieve the project's objective to demonstrate the economic and environmental benefits of best management practices, the project maintained an educational program designed to increase awareness, understanding, and appreciation of the water resources in the watershed. Not only were landowners and farmers targeted, but also the general public was kept informed of developments. School programs, field days, newsletters, radio programs, tours, personalized letters, and farm visits were utilized to make people aware of the project and its goals. The following is a list of educational and informational opportunities that were completed:

- * Tour of the watershed with Luther College students to explain conservation practices benefits, and dynamics of a watershed. Stops were made at locations where various conservation practices have been completed. Over 120 students have attended this tour during the project's duration. (October 2000, October 2001, October 2002)
- * A VIP tour was held to activities of the Twin Springs Project. In attendance were state legislatures, county supervisors, advisory board members, IDNR personnel, district staff, and state field representative. Additional VIP meetings were held each year to update the status of the project. (September 2000, September 2001, September 2002)
- * A program to local agriculture bankers on the importance of a watershed project to the local community (November 2000)
- * The use of Twin Springs for an IOWATER training site for 30 participants (July 2001)
- * Watershed project coordinator Fairchild was involved in a field day with the local seventh grade class in the fall and spring of each year. Students were informed about water quality issues as it relates to a watershed approach to nonpoint pollution. Over 340 students participated in the field days over the span of the project. (September 2000, April 2001, September 2001, April 2002, September 2002)
- * Highlights of the past year's accomplishment were presented at the District's annual VIP meetings. (December 2001, December 2001, December 2002)

* Watershed news letters were sent out to landowners, renters, contractors, bankers, government representatives, educational institutions, partners in the project, and other interested parties. (July 2000, January 2001, July 2001, November 2001, December 2002)

* Information was presented on Twin Springs as part of a media presentation for the Iowa Watershed Initiative. (January 2002)

*A rotational grazing field day was held in with approximately 32 people attending the session. The site was a minority landowner farmer that had converted her fields from row crop to rotational grazing. A team from Iowa State Extension Service attended the session to discuss the current research they are conducting on the effects of grazing on the streams. They also demonstrated their rainfall simulator and how they used it to calculate run-off of nutrients from a rainstorm event at a particular location. Following the demonstration, the participants toured a rotational grazing system developed for a beef cow operation. Information was provided on watering livestock, seeding, fencing, pasture management, and the benefits of not grazing woodlands. (August 2002)

One of the major information/education activities included the participation of the Decorah Middle School in collecting water samples of the stream along with macroinvertebrate and habitat evaluations. Decorah Middle School's seventh grade science instructor, Meg Storkamp oversaw the water sampling. Meg is working through the IOWATER program to ensure the sampling techniques and protocol followed an accepted standard. Water sampling results have indicated that nitrate levels normally fall in the 2-5 ppm range while phosphate in the .1-.4 ppm range. Meg also worked with the students to identify macroinvertebrate that inhabit the stream. These "bugs" help to indicate the water quality by seeing which ones are present that are tolerant or intolerant to pollution. The class also evaluated the habitat of the stream. Results of the student's work can be found on the IOWATER web site under Twin Springs. The interest and involvement of the students was very evident as several of them showed up once a month on a Saturday morning to do the sampling.

The class also installed 45 feet of fish hyde structures in the stream that help provide habitat to the trout. Along with the students, parents also showed-up to help. All of the work was completed after school hours that again showed the interest of the students in being involved.

The school's participation with this project served as a living classroom for students. These students are likely to share their hands-on experiences and knowledge of land stewardship practices with family members and other people within the local community.

In addition to field tours and presentations, several news articles appeared in the local newspapers and the Farm Bureau Spokesman emphasizing some of the completed practices and benefits of them. A discussion of the project was part of an "Our Town" radio interview.

Personalized letters were sent to cooperators to inform them of a livestock regulation meeting, a forestry field day, the CRP/Riparian incentive program, rotational grazing pasture walks,

community college education opportunities, private well water sampling, and the nutrient/pest management classes.

To bring the public's attention to practices being implemented, signs were posted along the road identifying the sponsoring agency for the practice.

Each year at the Winneshiek County Soil and Water Conservation District's annual awards banquet, a cooperator from the project was recognized for their efforts in land stewardship and community involvement. The project's advisory board selected the cooperator.

Notable Achievements/Problems

A) *Nutrient/management program shortfalls*

At the beginning of the project, a cost share incentive was offered to producers to soil sample and develop a nutrient management plan. Due to budget cuts to the Water Protection Funds, this component of the project was eliminated.

Even without cost share available, on two occasions the project has sponsored a nutrient management planning session with the assistance of the local Iowa State Extension Agronomist. The program goals were to educate the producers on the state and federal rules that may apply to their situation. Also discussed was how to calculate nutrient needs based on crop removal; interpreting soil sampling results; and supplementing nutrient needs with manure.

At this time there has not been any interest by consultants to work with producers due to the fact these farms typically are small in size and are not viewed as being economically feasible to work with. Almost all of the operations within the watershed are small owner-operation systems with both livestock and crop production. This means that the producer is involved in all of the farm's day to day activities from dawn to dusk. Most have indicated they just don't have enough time in the day to spend on overseeing, analyzing and developing crop input needs. It is much easier for them to let their local agronomy supplier deal with these issues. This lack of time availability was also noticeable when trying to encourage producers to be involved with the various educational programs being offered. Again, they indicated to us they were interested in the concepts, but didn't feel they could afford the time commitment.

With the lack of local crop scouting services, it seems the next logical approach may be working with local agronomy suppliers. The producer will need to understand that these types of services will not be offered for free, but rather is fee driven. The benefit to the producer should be the savings associated with eliminating over-applied nutrients and better weed/pest control. The message to the local supplier should be to recognize these services are needed by the local producers in order for their operation to stay viable. If not, the farming units will become larger and less dependent upon local suppliers and more dependent on bulk purchases from wholesale

suppliers. It appears that some of the local agronomy providers are making some effort to offer some level of planning assistance.

B) Project funding

The reduction and elimination of cost share money to the project due to budget cuts resulted in a delay in providing financial incentive to the landowners. This has required us to refocus on areas we can address without cost share. Other funding sources such as EQIP, CRP, and WHIP were considered to address landowner needs. A number of the local landowners did apply for EQIP funding, however none were selecting for funding. This lack of a constant funding source can cause conflict with the landowner whom is trying to decide whether or not to install a practice based on the need for cost share money to help finance it. The project has received some Watershed Protection Funds to carry it to its conclusion.

C) Owner-renter conflicts

During the course of the project, we began to see a shift from owner-operators farms to renters. Of the 4,000+ cropped acres in the watershed, renters are farming over 1,800 acres or approximately 45% of the cropped acres. Without exception these renters want to implement more corn-soybean rotations on these farms. We have also seen a dramatic reduction of conservation practices being implemented on these farms. Waterways, headlands, buffer strips, and contour lines are being removed or eliminated in favor of getting another acre of row crop planted. To combat this scenario, we have been striving to educate landowners on the cost of soil erosion to them and the effects of this on their farm. Several landlords have expressed their interest in enrolling their whole farm into a general Conservation Reserve Program if one is authorized in the future. As more and more landlords have become aware of the need to work with renters over maintenance or installation of conservation practices we have seen a shift back to some traditional practices.

D) Involvement of a local school

Throughout the project, the Decorah Middle School has been active with the project. Students have had field days, work days, and special projects that no doubt have influenced them on their understanding of the environment they live in. Over 300 students have been involved with the stream over the past three years.

E) Strong response from the Twin Springs Community

From the beginning of the project to its conclusion, there has been strong local support from the landowners. Several producers over the course of the project adopted several of the best management practices to their operation. In a time of low commodity prices, it was amazing the level of monetary commitment landowners made to install conservation practices. The project also benefited from strong partners associated with the project whom committed personnel, materials, equipment, money, and most importantly, their desire to see the project succeed.

F) Customer satisfaction

Efforts were made to have a follow-up visit with the participating producers within one year of their BMP installation. Overwhelmingly and frequently, the producers commented on their satisfaction with the finished project. They remarked how “user friendly” the practice was and how they did not have to make any major changes in their operation to accommodate the practice. Several comments were also made about the professionalism of the staff they worked with and how they felt their concerns were being heard and addressed.

G) Alternatives to corn – soybean rotations

Several of the landowners and renters commented on the need to address the issue of dealing with land slopes above 9% slope. In order to crop these areas and meet conservation compliance, typically several conservation practices applied together need to be implemented. Landowners have resisted spending money to implement these practices just to have a corn – soybean rotation applied to their fields. Renters dislike farming terraces and working with contour buffer strips. Many landowners would like to enroll the steepest part of their farm into a general CRP sign-up and keep the ground idle for a period of time. Currently there has not been a program of this nature for several years. If CRP is not an option, it has been difficult to find a cropping system or crops that could be used in these situations. A proposal being discussed is taking these areas and planting them back to trees. These sites were woodlands prior to being converted to cropland. Over a considerable period of time, the woodlands can be harvested which would provide a cash crop. Landowners have not embraced this practice due to the high cost of planting trees, the maintenance needs for the tree stand, and the long time period involved before a harvest could occur. As long as government programs pay loan deficiencies for the production of corn and soybeans, this will continue as a challenge to us to protect the soil.

Water Quality Monitoring

a) Water chemistry/macroinvertebrate

The Decorah 7th grade science class collected water samples during the project. The sampling methods followed the IOWATER protocol and were conducted under the supervision of Meg Storkamp who has completed the IOWATER level 1 training. The group began sampling August of 2000 and is still currently testing Twin Springs. Monitoring results are as follows:

pH range: 6-8
dissolved oxygen range: 5-10 ppm
nitrite range: 0-1 ppm
nitrate range: 0-5 ppm
phosphate range: 0.1-0.2 ppm

The class also sampled for macroinvertebrate at least one time per year. Certain “bugs” reflect water quality by their presence or absence. Sampling indicated the majority of the bugs captured were the types that were intolerant to polluted water. Some tolerant to pollution bugs have also be observed which suggest there is still organic matter and soil entering the system.

For a complete viewing of the sampling of Twin Springs, the www.iowater.net web site can be accesses for results.

b) Fish survey

A fish population survey was completed for the entire length of the stock portion of the stream in May of 2000. Fish were collected with a backpack mounted electrofishing unit operated at 100 volts DC and 100 pulses per second. Sample runs were made going upstream. All fish captured were identified to species, counted, and immediately released downstream. The survey showed there were about 8.3 wild brown trout per mile, 30 domestic brook trout per mile, and 18.3 rainbow trout per mile. The discovery of wild brown trout in the stream indicated there is natural reproduction occurring. This is the first document event of this nature. The improvement of water quality as the result of the Twin Springs project may help to enhance further propagation. In May of 2002, native brook trout from the South Pine stream were introduced into Twin Springs in an effort to relocate some of this population. In the spring of 2003, a follow-up fish survey is scheduled to be completed.

Conclusion

The Winneshiek Soil and Water Conservation District would like to **ACKNOWLEDGE THE PARTNER'S COOPERATIVE EFFORTS** and express their sincere thanks to the contributions they have made to the project. Without their support and efforts, this project would not have achieved its level of success that it has accomplished.

- * Division of Soil Conservation - Iowa Department of Agriculture and Land Stewardship
 - Administers the Water Protection Fund (WPF) and Watershed Protection Fund (WSPF), assisted in project administration and provided staff support.
- * Iowa Department of Natural Resources (IDNR)
 - Administers Iowa section 319 funding programs and provides technical support
- * Natural Resource Conservation Service, U.S. Department of Agriculture
 - Provides technical assistance for staff and landowners
- * U.S. Environmental Protection Agency
 - Administers the Federal Nonpoint Source Management Program, Section 319
- * Iowa State Extension Service
 - Provides assistance with the development and training with the ICN program to producers
- * IDNR Fishery Staff, Decorah Fish Hatchery
 - Monitored fish populations, provide educational programs to school groups, assisted with habitat restoration projects at Twin Springs.
- * Winneshiek County Board of Health
 - Conducts groundwater sampling within the watershed
- * Winneshiek County Supervisors
 - Contributed funding for technical assistance
- * Winneshiek County Pheasants Forever
 - Provides cost share for native grass seeding and personal to develop seeding plans
- * Luther College
 - Provided assistance with students to assist with the project
- * IDNR Forester
 - Works with landowners to develop tree planting and timber stand improvement plans
- * Local Staff of NRCS and IDALS
 - Provide technical assistance in the field
- * Decorah Middle School Seventh Grade
 - Stream monitoring, water testing, and habitat improvement
- * Landowners
 - Without their cooperation there would not be a Twin Springs project

We would also like to acknowledge the following people for their efforts:

Twin Springs Citizens Advisory Board:

Jim Boeding	Sarah Graves-Otteson
Bill Kalieshek	Doug Groux
Dean Larson	

Decorah Field Office Staff

Todd Duncan, District Conservationist	Don Jensen, Soil Conservationist
Stacy Opat, State Secretary 2	Rebecca Weinberger, Soil Conservationist
Clarence Steggall, State Technician	Barb Exey, Soil Technician
Ron Borsheim, Soil Technician	Ron Fairchild, Environmental Specialist 2
Dave Mellick, CET	Marc Oylo, Soil Technician

Winneshiek County Soil and Water District Commissioners

Wilber Stoen	David Roslien	Dwayne Hauber
Denis Buddenburg	John Lubke	
<i>assistant commissioners</i>		
Ober Sacquitne	Lillian Bruvold	Lyle Luzem John Olds

Project Coordinator's Comments

The Twin Springs Water Quality Project was well supported by the local community and project's partners. No doubt Twin Springs can be considered as a successful adventure for several reasons. First, many of the goals of the project were met or exceeded. Second, the project successfully increased the awareness of nonpoint pollution to the public. This resulted in landowners being more aware of their problems and the need to request assistance. Third, the project demonstrated that measures done on a voluntary basis could be successful in effectively controlling nonpoint pollution.

As with most successful projects, the involvement of the watershed landowners was the key to making good things happen. Time and time again, people were receptive to ideas that were presented to them on possible changes they could make to their operation to reduce soil loss even though it meant a change in the way they do business. In some cases, it required equipment purchases such as no-till planters or realizing the land may be suited for a crop different than their traditional choice.

Also, my sincere thanks to our project's partners. Several of them went above and beyond the call of duty to provide excellent service to the landowners. All of them are busy with in their own duties, yet they made the time to help out when asked without complaining (most of the time). It was their dedication that brought a high level of professionalism to the project that made the whole process of a watershed project fall into place and be successful.

A big **THANK YOU** to all of the people involved with finding funding sources for the project. No doubt budgets are tight at both the Federal and State level and working to secure funding for a project of this nature must be challenging. These people are "hidden assets" that make a project flow to its completion.

It has been a privilege and positive experience to serve as the project coordinator for the Twin Springs Water Quality Project. I would say without hesitation this project has completed its mission on educating the public about non-point pollution problems, recognizing solutions, and

implementing practices to make the necessary changes. The project has also had major success in encouraging the local community to be involved and to unite together in harmony through a non-regulatory, locally led process.

RECOMMENDATIONS

- There is a need for secure funding for the life of the project. Encouraging people to participant only to tell them latter that funding is not available only makes for a stressful situation for both sides.
- Federal programs, such as the CRP, can provide an immediate and long-term benefit to the watershed. However as rules change and more restrictions are applied, landowners become frustrated and disappointed with the programs and the paper process. There needs to be more emphasis on making these programs fit the particular field situation.
- Develop an Internet web based reporting form. This would allow data to be entered as soon as possible; reduce the need for monthly, quarterly, and annual reports; and allow interested parties to pull the information they need for their particular need or report in a timely manner.
- The need to follow-up with the landowners following the conclusion of the project would help keep the interest going with the need to protect Twin Springs. All landowners have a wish list of projects they would like to complete over a period of time well past the length of a watershed project. A follow-up visit would help to update and establish a time frame for practices to be completed.
- Staffing needs for a project need to be more defined. On several occasions there were costly delays or not being able to address issues on a timely basis. Several of the key players involved with soil investigations, culture resource determinations, and engineering needs cover a multi county area which often results in difficulty in providing service to address the customer's needs.

Project Funding and Budget Summary

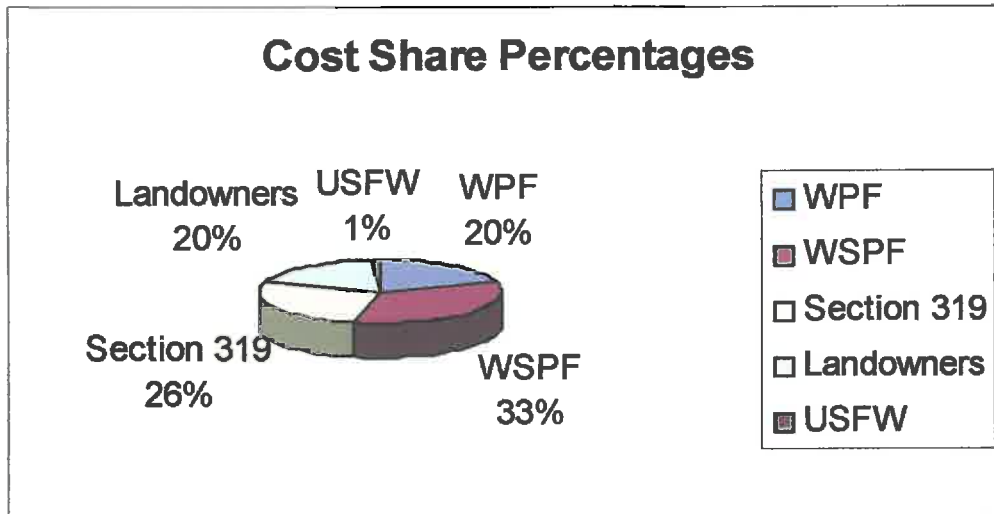
The corresponding charts show the estimated cost of carrying out the Twin Springs Water Quality Project.

2000 - 2003

Expenditures

WSPF	\$178,309.68
Section 319	\$117,078.34
WPF	\$108,825.15
Landowner	\$ 84,553.21
USF&Wildlife	\$ 6,000.00
Total	\$535,445.69

Percentage of Expenditures



Year to year expenditures can be found in the appendices.

APPENDICES

- FINANCIAL**
- SOIL LOSS REDUCTION**
- MAPS**
- PUBLICATIONS**
- PICTURES**

FY 2000

Salary/Benefits	\$22,401.45	Program Sec 319
Indirect Costs	<u>\$ 3,992.30</u>	Sec 319
Total	\$26,393.75	

FY 2001

Name	Practice	Amount	Total Cost	Cost Share	Owners Cost	Date completed	Program
Dennis Knutson	AWS	1	\$ 21,380.25	\$ 16,035.19	\$ 5,345.06	11/07/00	WSPF
Marlyn Knutson	Grade Stabilize	1	\$ 31,236.19	\$ 23,427.14	\$ 7,809.05	9/19/00	WPF
Huber Lennon	Terrace	5,050 ft	\$ 16,862.90	\$ 12,647.18	\$ 4,215.72	11/21/00	WPF
James Boeding	Terrace	850 ft	\$ 7,128.31	\$ 5,250.00	\$ 1,878.31	11/21/00	WPF
James Wenthold	Terrace	2,000 ft	\$ 6,324.11	\$ 4,743.08	\$ 1,581.03	1/02/01	WSPF
James Wenthold	Terrace	2,950 ft	\$ 8,892.96	\$ 6,669.72	\$ 2,223.24	1/02/01	WSPF
James Wenthold	Terrace	3,500 ft	\$ 7,402.86	\$ 5,552.15	\$ 1,850.71	1/02/01	WSPF
Herbert Kleve	Nutrient Mange	140 ac	\$ 700.00	\$ 700.00	\$ -	4/03/01	WPF
James Wenthold	Terrace	750 ft	\$ 5,682.00	\$ 4,261.50	\$ 1,420.50	6/12/01	WSPF
Jim Boeding	Nutrient Mange	291	\$ 1,455.00	\$ 1,250.00	\$ 205.00	5/22/01	WSPF
Tim Knutson	Waterway	3,080 ft	\$ 2,286.00	\$ 1,714.50	\$ 571.50	5/22/01	WPF
Diane Grimstad	Watering	1	\$ 10,426.69	\$ 2,625.00	\$ 7,801.69	6/19/01	WPF
Diane Grimstad	Fencing	228 feet	\$ 2,631.43	\$ 1,620.00	\$ 1,011.43	6/19/01	319
Diane Grimstad	Timber Improve	24 ac	\$ 2,260.00	\$ 1,695.00	\$ 565.00	6/19/01	WSPF
Charles Humpal	Nutrient Mange	120 ac	\$ 600.00	\$ 600.00	\$ -	6/19/01	WSPF
Anthony Quandahl	Nutrient Mange	95 ac	\$ 380.00	\$ 380.00	\$ -	6/19/01	WSPF
Anthony Quandahl	Timber Improve	30 ac	\$ 3,000.00	\$ 2,250.00	\$ 750.00	6/25/01	WSPF
Tim Knutson	Nutrient Mange	51 ac	\$ 51.00	\$ 51.00	\$ -	6/12/01	WSPF
James Boeding	Timber Improve	14 ac	\$ 1,200.00	\$ 900.00	\$ 300.00	6/24/01	WSPF
Diane Grimstad	Pasture plant	129 ac	\$ 7,064.92	\$ 5,298.69	\$ 1,766.23	6/25/01	WPF
Diane Grimstad	Grade Stabilize	1	\$ 3,680.00	\$ 2,760.00	\$ 920.00	6/29/01	WSPF
Jim Boeding	Streambank stab	200 ft	\$ 2,282.81	\$ 1,712.11	\$ 570.70	9/18/01	319
Bob Timp	Terrace	2,675 ft	\$ 10,073.36	\$ 7,555.02	\$ 2,518.34	11/21/01	WSPF
Jim Boeding	Terrace	1,750 ft	\$ 8,033.24	\$ 6,024.93	\$ 2,008.31	11/21/01	WSPF
Jim Boeding	Water & Sed	1	\$ 3,049.15	\$ 2,250.00	\$ 799.15	11/21/01	WSPF
Dennis Knutson	AWS	1	\$ 17,067.25	\$ 12,400.44	\$ 4,666.81	12/07/01	WPF
Total			\$181,150.43	\$ 130,372.65	\$ 50,777.78		

Salary/benefits	\$ 44,302.00	Sec 319
Salary/benefits	\$ 6,959.19	WPF
Indirect costs	\$ 7,981.19	Sec 319
Travel/training	\$ 406.42	WPF
Education/info	\$ 1,019.30	WPF

FY 2002

Name	Practice	Amount	Actual Costs	Cost Share	Owners Share	Date Completed	Funding
Jim Boeding	Strmbank stab	400 ft	\$3,400.00	\$2,550.00	\$850.00	12/10/01	Sec 319
Gerald Bakken	Terraces	1,150 ft	\$5,772.59	\$3,375.00	\$2,397.59	9/18/01	WPF
Huber Lennon	Terraces	1,300 ft	\$6,102.90	\$4,577.18	\$1,525.72	11/13/01	WPF
Huber Lennon	Terraces	1,600 ft	\$4,825.67	\$3,619.25	\$1,206.42	11/13/01	WPF
Jim Tollefson	Terraces	2,740 ft	\$12,886.20	\$9,664.65	\$3,221.55	11/13/01	WPF
Jim Boeding	Terraces	1,200 ft	\$5,262.91	\$3,947.18	\$1,315.73	12/10/01	WPF
Jim Wenthold	Terraces	1,400 ft	\$5,478.87	\$4,109.15	\$1,369.72	12/10/01	WPF
Jim Wenthold	Terraces	2,650 ft	\$7,356.29	\$5,517.22	\$1,839.07	12/10/01	WPF
Diane Grimstad	Pasture planting	10.5 ac	\$680.50	\$510.38	\$170.12	5/21/02	WPF
Jim Boeding	Terraces	900 ft	\$4,892.13	\$3,669.10	\$1,223.03	12/10/01	WSPF
Jim Boeding	Waterway	1,000 ft	\$1,656.00	\$1,242.00	\$414.00	5/21/02	WSPF
Charels Humpal	Waterway	1,575 ft	<u>\$3,309.00</u>	<u>\$2,481.75</u>	<u>\$827.25</u>	5/21/02	WSPF
			\$61,623.06	\$45,262.86	\$16,360.20		
Salary/benefits				\$48,500.00			Sec 319
Salary/benefits				\$798.23			WPF
Indirect costs				\$8,900.00			Sec 319
Info & Ed				\$223.48			WPF

FY 2003

Name	Practice	Amount	Actual Costs	Cost Share	Owners Share	Date Completed	Funding Source
Jim Tollefson	Grade Stabilize	1	\$19,981.25	\$14,250.00	\$5,731.25	9/17/02	WSPF
Roger Henningsgaard	Grade Stabilize	1	\$79,788.60	\$59,841.45	\$19,947.15*	9/30/02	WSPF
Tim Knutson	AWS	1	\$25,065.79	\$18,675.00	\$6,870.59	11/26/02	WSPF
Jim Boeding	Streambank Stab	200 ft	\$6,794.25	\$5,095.69	\$1,698.56	12/17/02	WSPF
Jim Boeding	Terraces	3,600 ft	<u>\$12,456.13</u>	<u>\$9,342.10</u>	<u>\$3,114.03</u>	12/17/02	WSPF
			\$145,066.02	\$107,939.24	\$37,606.58		
Salary/benefits				\$17,600.00			Sec 319
Salary/benefits				\$35.57			WPF
Indirect costs				\$4,400.00			WPF

* of this amount, the U.S. Fish and Wildlife Service donated \$6,000.00 toward the project

Practice	Acres	S&R* before	(tons) after	Channel/g&ag before	(tons) after	Total erosion before	Total erosion after	Erosion reduction	Delivery for S&R before(%)	after(%)	Delivery for Channel/g&ag before(%)	after(%)	Sed delivery before	Sed delivery after	Sediment reduction
grade stable	34	272	34	45	1	317	35	282	58	3	90	3	198	1	197
grade stable	188	380	380	152	6	532	386	146	55	3	90	3	346	12	334
waterway	27	324	135	148	1	472	136	336	50	20	65	20	258	27	231
pasture planting	129	1,548	129	0	0	1,548	129	1,419	50	35	0	0	774	45	729
terraces	12.3	123	62	0	0	62	62	61	55	10	0	0	68	6	61
terraces	10.5	189	116	0	0	189	116	73	70	10	0	0	132	6	126
terraces	9	90	45	0	0	90	45	45	70	10	0	0	63	5	58
terraces	10	100	50	0	0	100	50	50	70	10	0	0	70	5	65
terraces	17	136	85	0	0	136	85	51	62	10	0	0	84	9	75
terraces	5.2	44	26	0	0	44	26	18	80	10	0	0	35	3	32
terraces	17	425	153	0	0	425	153	272	62	10	0	0	35	3	32
terraces	23	161	97	0	0	161	97	64	60	10	0	0	97	15	82
water/sediment	11	110	55	20	1	130	56	74	78	10	65	10	99	6	93
timber improve	14	21	14	0	0	21	14	7	68	35	0	0	14	5	14
timber improve	24	24	24	0	0	24	24	0	60	35	0	0	14	8	14
timber improve	30	45	30	0	0	45	30	15	58	35	0	0	26	11	15
streambank stable	1	0	0	90	1	90	1	89	0	0	100	0	90	1	89
terraces	6.6	66	26	0	0	66	26	40	75	10	0	0	50	3	47
terraces	8.2	82	33	0	0	82	33	24	70	10	0	0	40	3	37
terraces	8.2	82	33	0	0	82	33	49	70	10	0	0	57	3	54
terraces	9	90	45	0	0	90	45	45	70	10	0	0	63	5	58
terraces	11	110	55	0	0	110	55	55	78	10	0	0	86	6	80
terraces	25	625	225	0	0	625	225	400	60	10	0	0	375	23	353
terraces	7	84	49	0	0	84	49	35	75	10	0	0	63	5	58
terraces	12	120	55	0	0	120	55	65	55	10	0	0	66	6	61
streambank stable	1	0	0	189	1	189	1	188	0	0	100	0	189	1	188
waterway	19	188	73	3	1	171	74	97	60	20	65	20	103	15	88
waterway	23	185	92	4	1	189	93	96	60	20	65	20	114	15	99
pasture planting	10.5	126	11	0	0	126	11	115	70	35	0	0	88	4	84
grade stable	226	555	490	22	1	577	491	86	43	3	90	3	258	15	244
grade stable	2,401	4,178	4,158	970	748	5,148	4,906	242	35	3	90	3	2,335	17	2,163
streambank stable	1	0	0	153	1	153	1	152	0	0	100	0	153	1	152
terraces	20	340	200	0	0	340	200	140	60	10	0	0	204	20	184

6,424

WATERSHED BOUNDARY

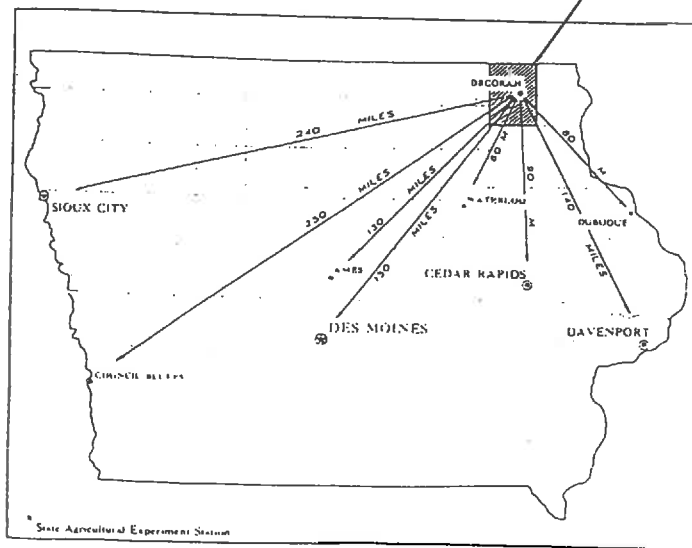
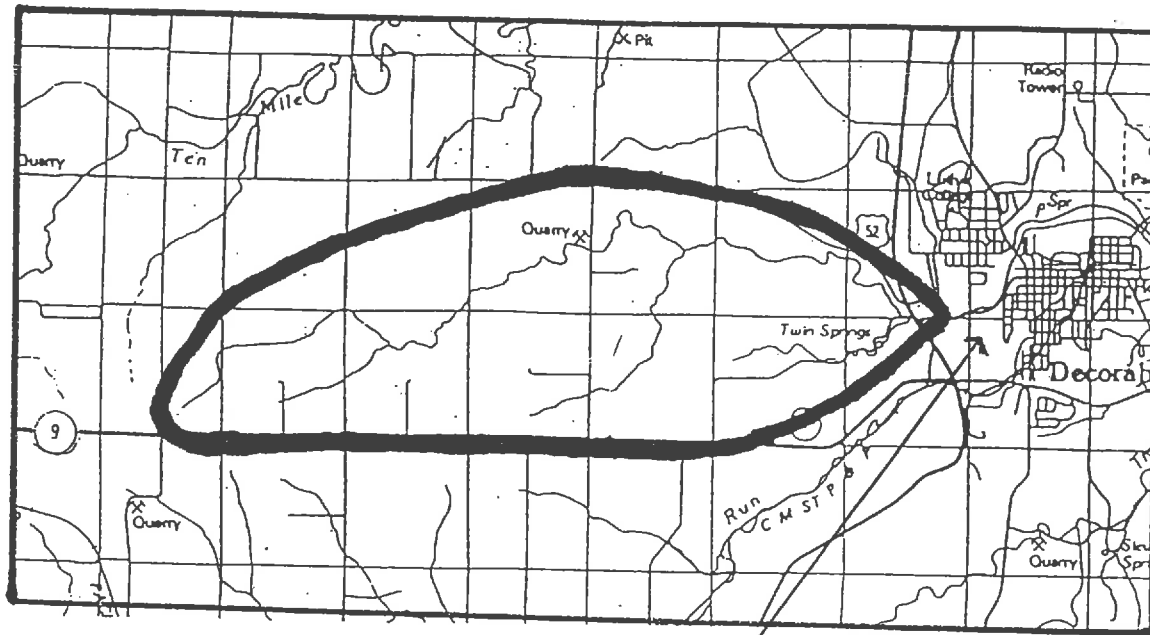
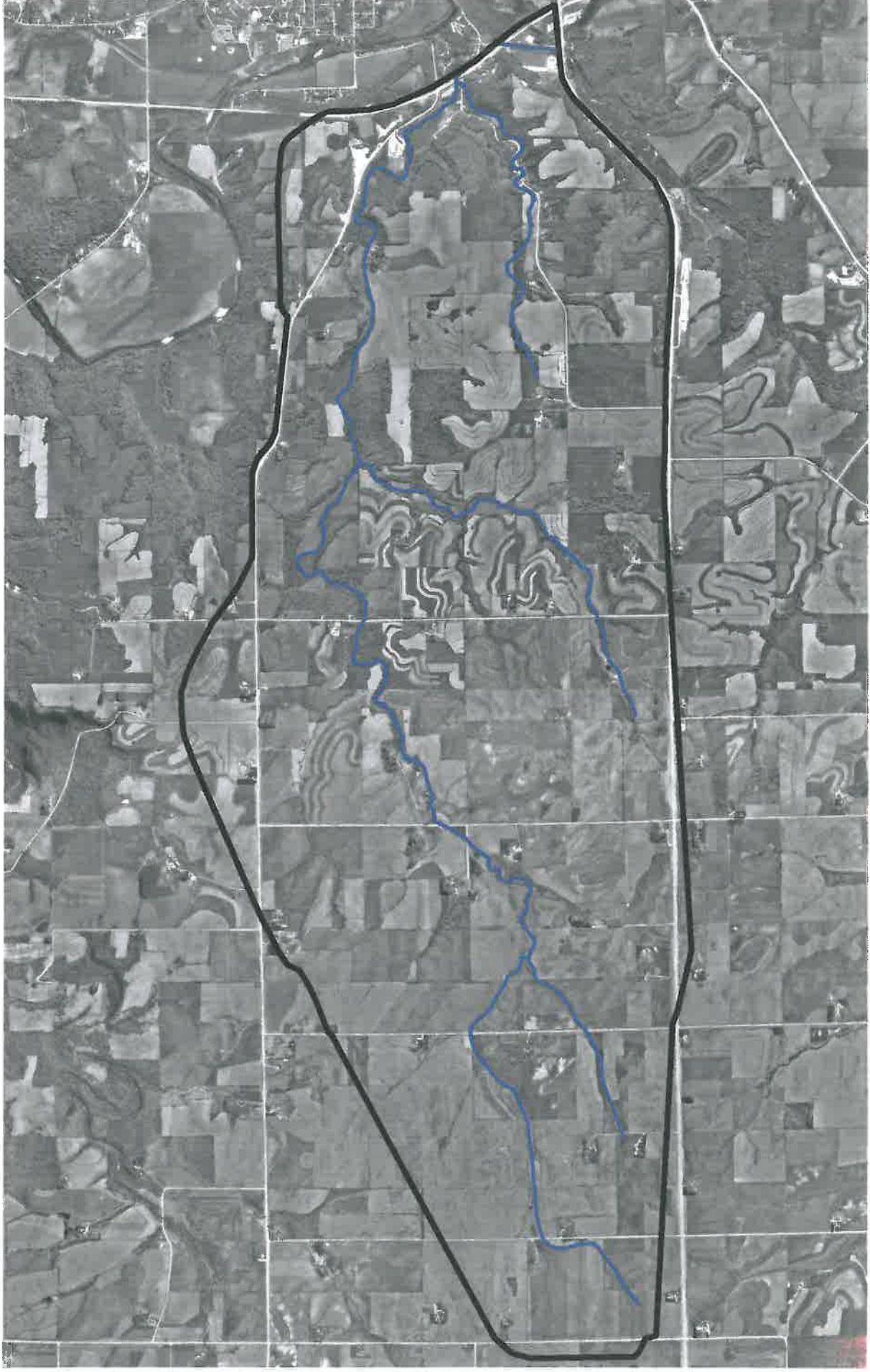


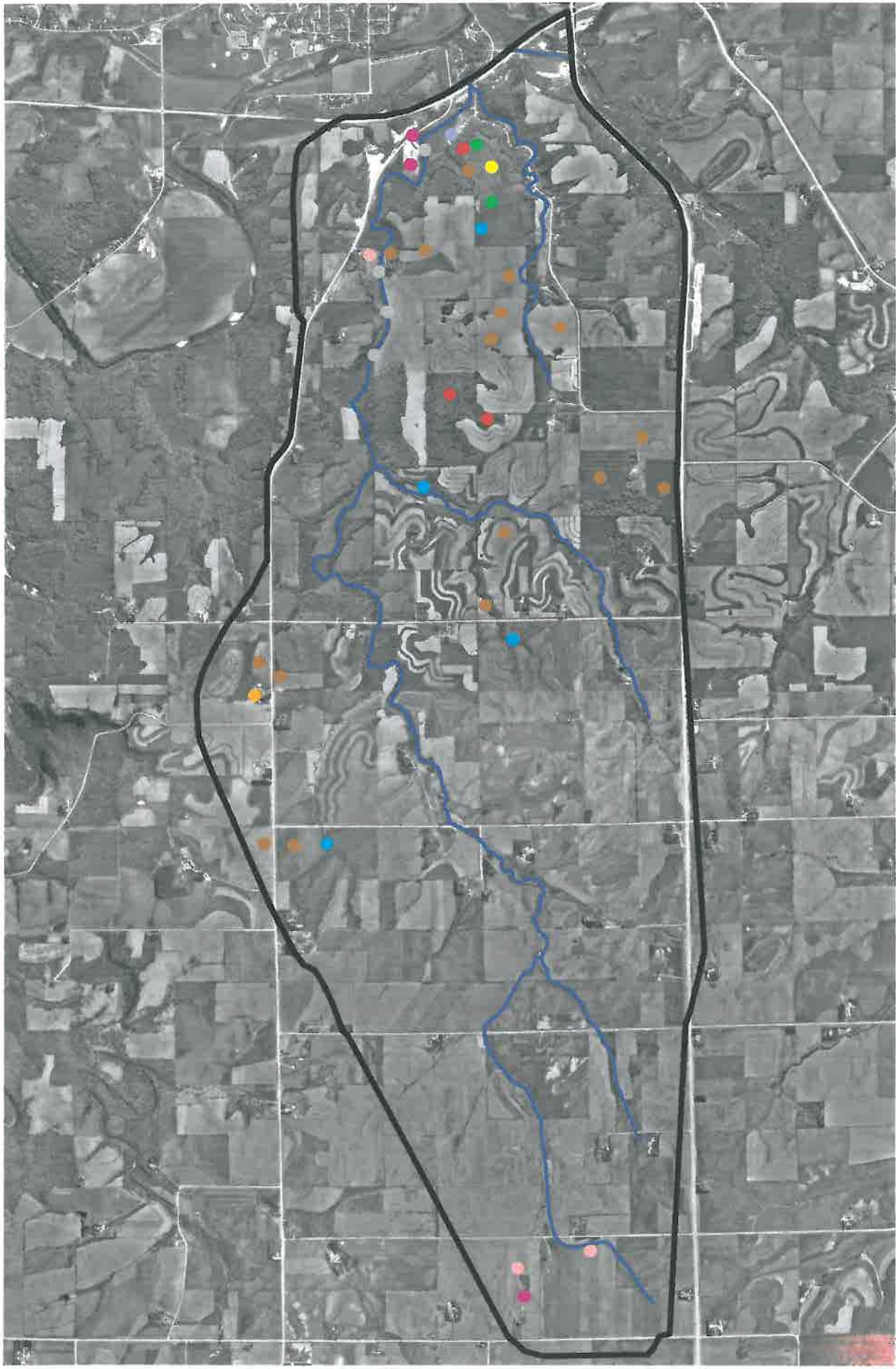
Figure 1.—Location of Winneshiek County in Iowa.

Twin Springs Watershed



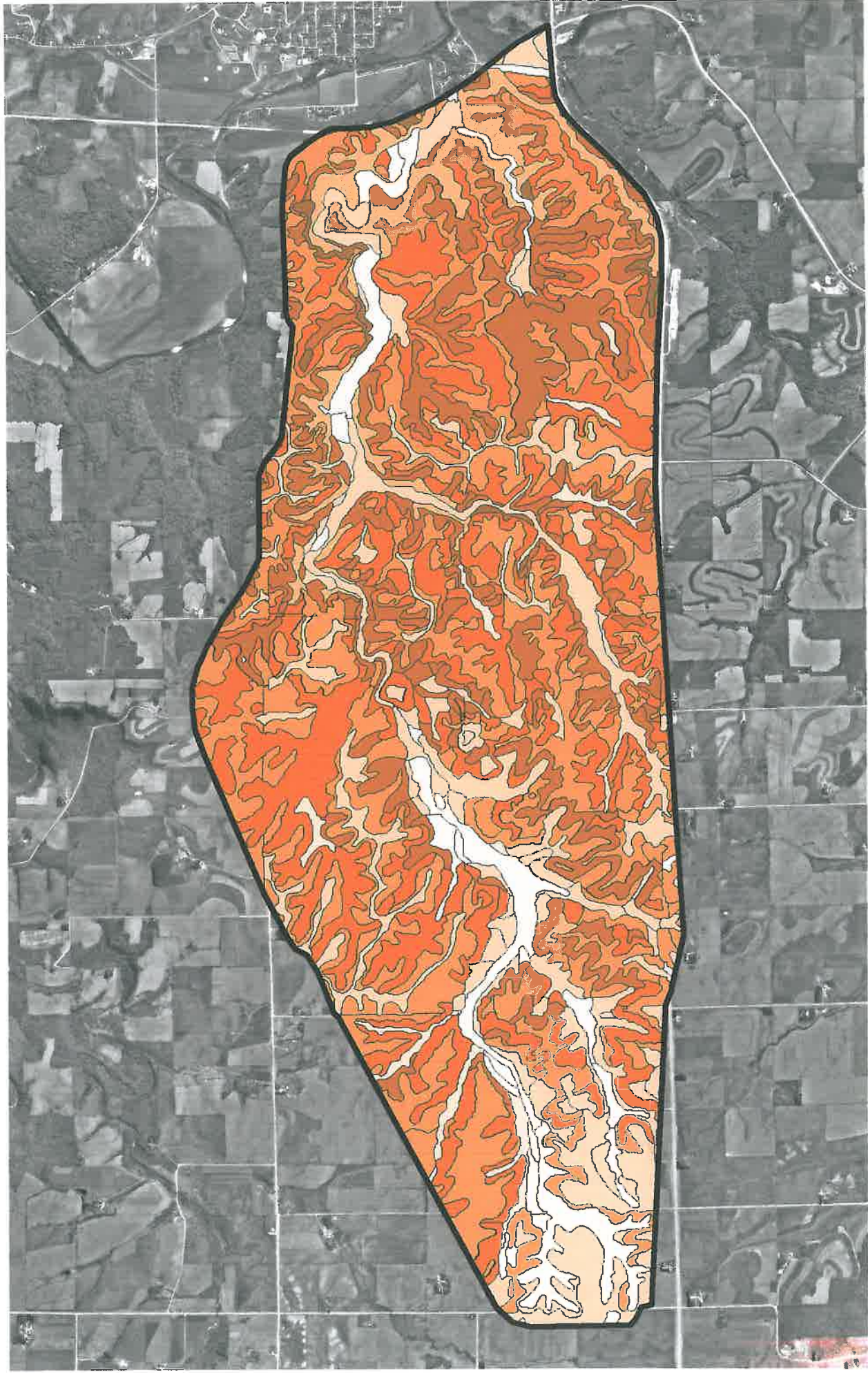
Legend  Watershed Boundary  River

Twin Springs Completed Practices

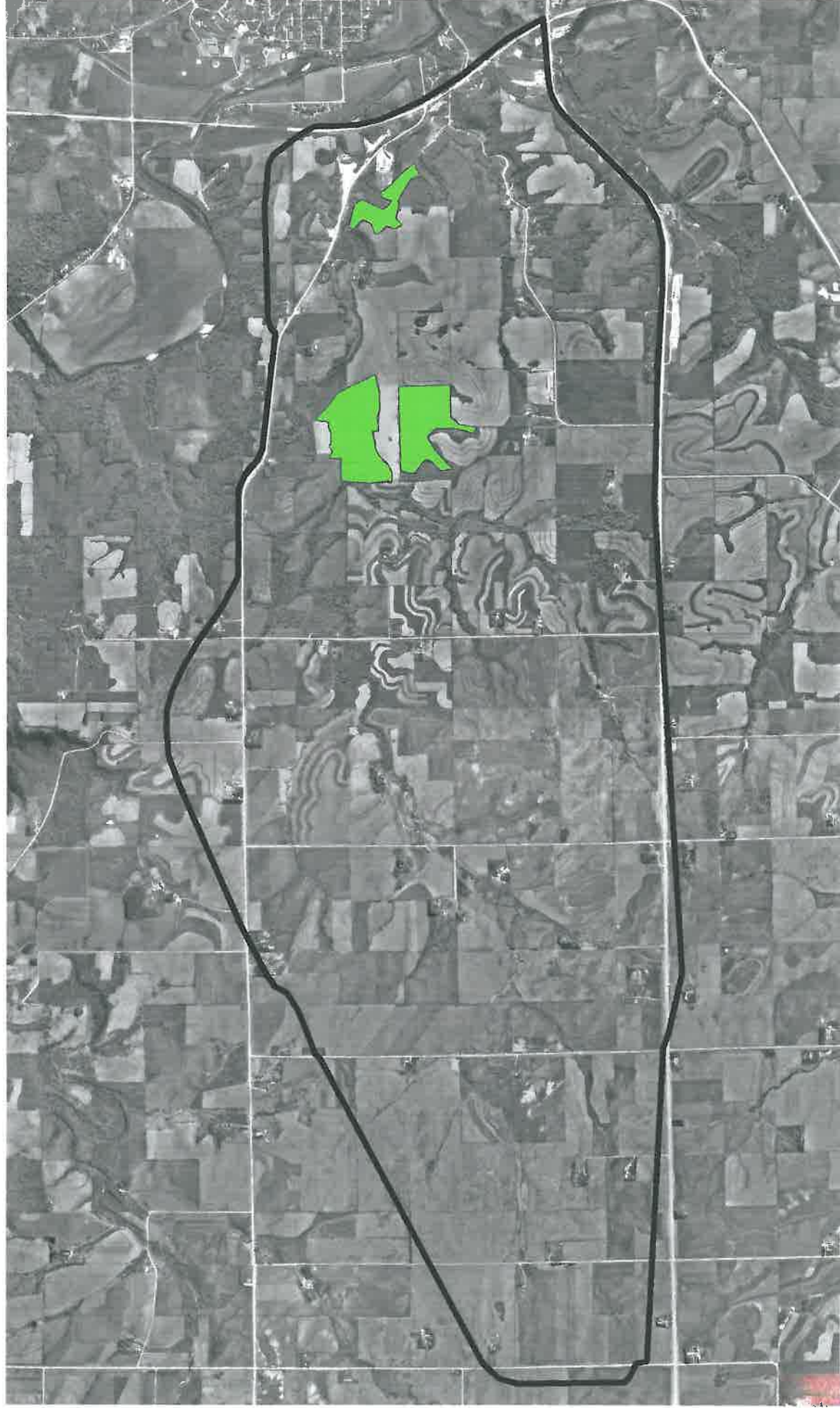


- Legend**
- Watershed Boundary
 - Streambank Stabilization
 - Offsite Watering
 - Paddock Fencing
 - Timberstand Improvement
 - Water and Sediment Basin
 - Animal Waste System
 - Pasture Management
 - Waterways
 - Grade Stabilization Structure
 - Terraces
 - River

Twin Springs Watershed Soils

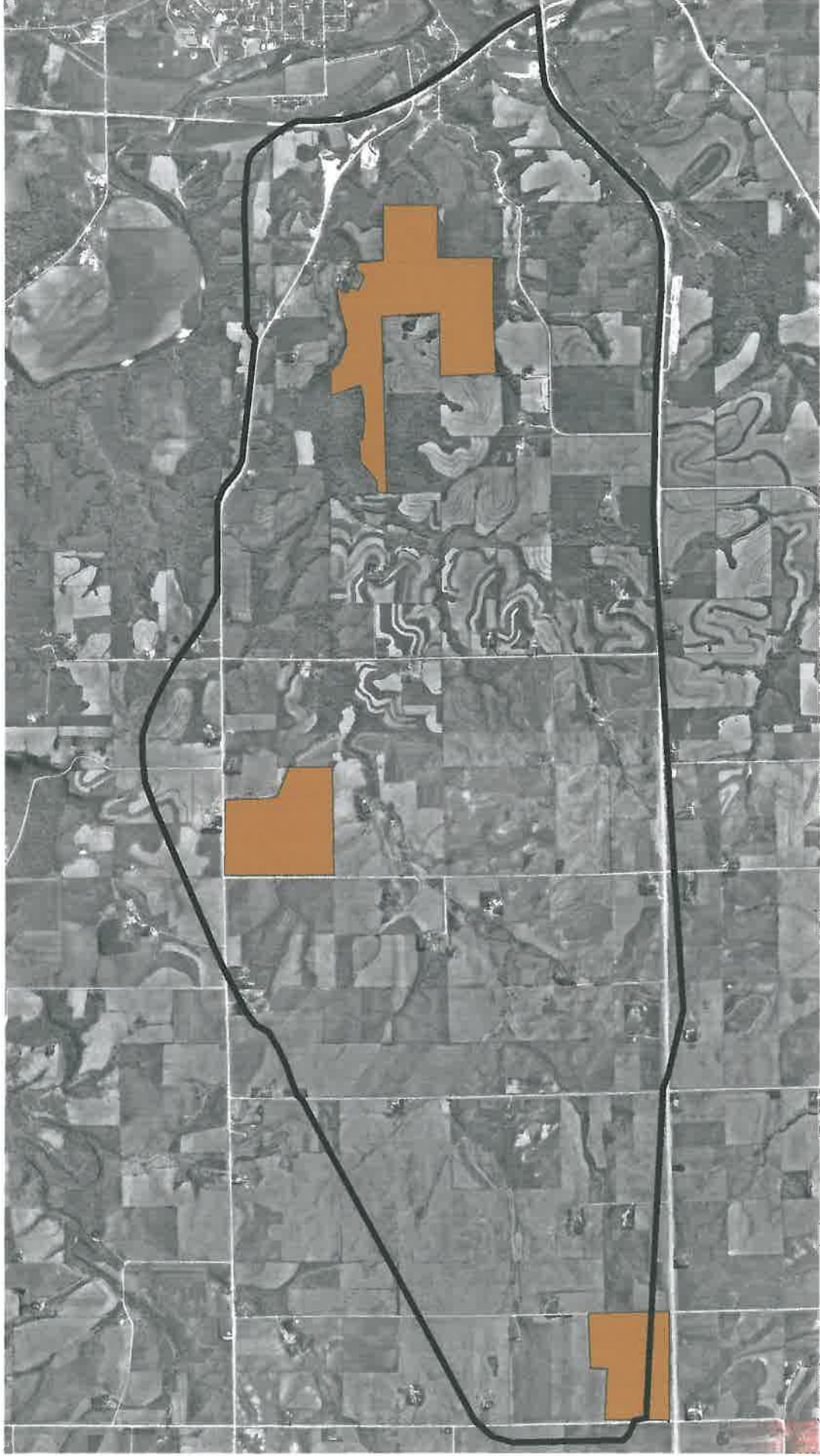


Twin Springs Watershed Forestry



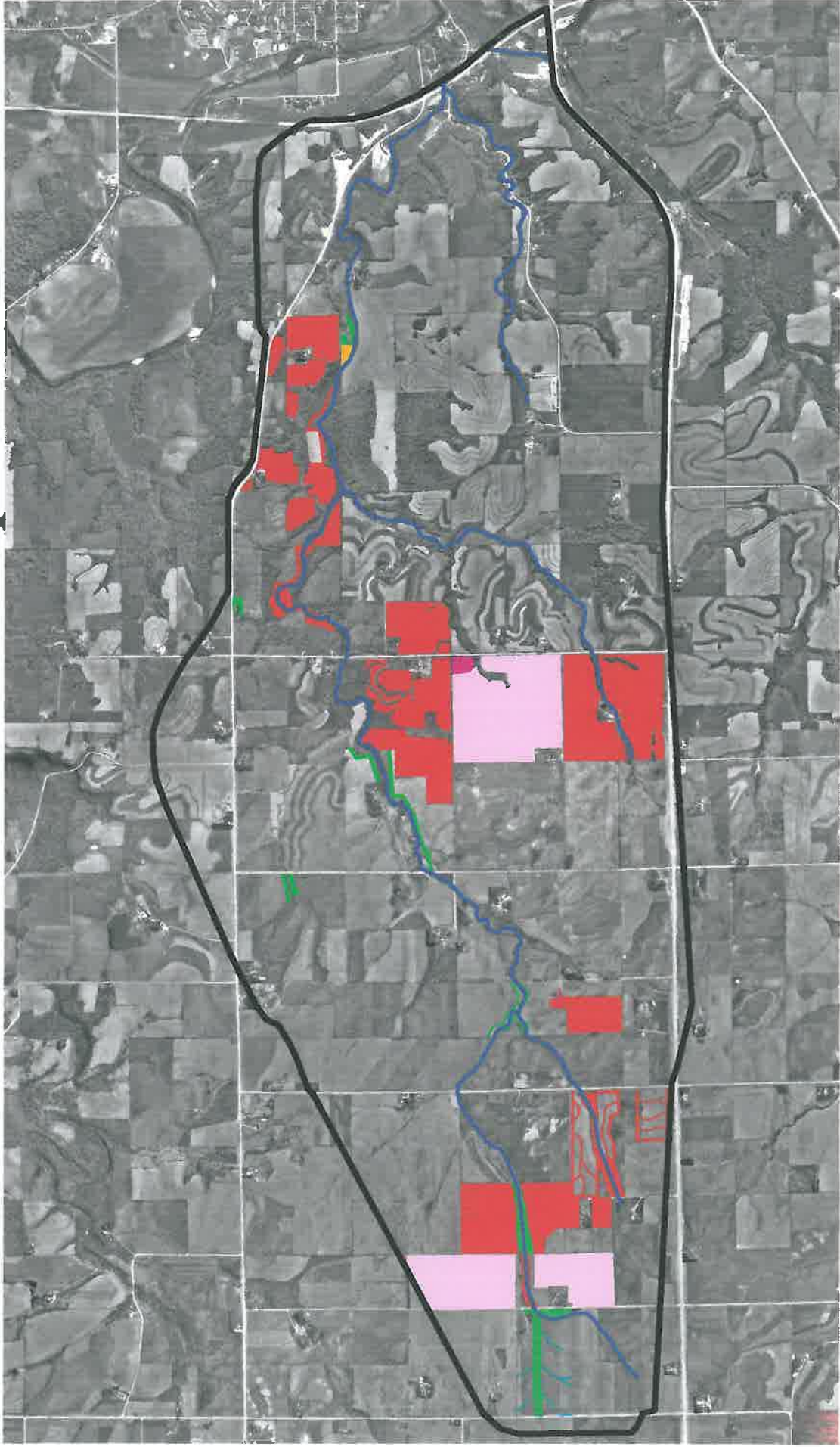
Legend  Watershed Boundary  Forest

Twin Springs Watershed Nutrient Management



Legend  Watershed Boundary  Nutrient Management

Twin Springs Watershed CRP Practices Completed



- Legend**
- Watershed Boundary
 - CP-8A
 - CP-21
 - CP-25
 - CP-22
 - CP-16A
 - CP-4D
 - CRP Prior 10/99

Continuous Conservation Reserve Program Legend

CP4D	permanent wildlife habitat
CP8A	grass waterways
CP16A	field windbreak
CP21	filter strips
CP22	riparian buffer strip
CP25	rare and declining habitat

TWIN SPRINGS WATERSHED SURVEY

Name (optional) _____

1. Livestock Inventory or Annual Production

Swine

Sows and gilts Head _____

Market hogs sold Head _____

Feeder pigs sold Head _____

Beef

Stock cows Head _____

Feeder cattle Head _____

Dairy Head _____

Poultry Head _____

Other _____ Head _____

2. Please indicate your cropping acres for 1998

Corn following corn Acres _____

Corn following soybeans Acres _____

Corn following sod Acres _____

Soybeans Acres _____

Hay Acres _____

Pasture Acres _____

Woodland Acres _____

Total acres farmed or rented within the watershed _____

3. Yield range (bushels per acre):

Corn: _____ (lowest field) to _____ (highest field)

Soybeans _____ (lowest field) to _____ (highest field)

Alfalfa (tons) _____ (lowest field) to _____ (highest field)

4. Current commercial fertilizer application

Rotation

N

P

K

Corn following corn

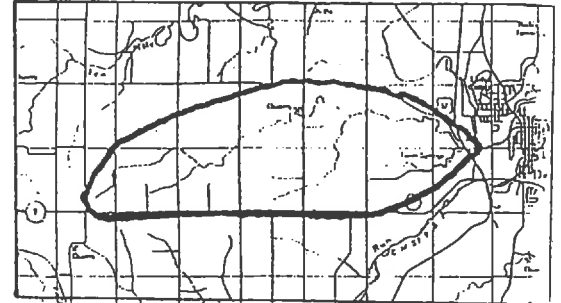
Corn following soybeans

Corn following sod



TWIN SPRINGS TRIBUTARY
Newsletter for the Twin Springs Watershed Project
December 2001

Project Accomplishments: Wow- what a difference in the watershed since last year at this time. Some of the activities and people involved include **Jim Boeding, Jim Tollefson, Gerald Bakken, James Wenthold, and Huber Lennon** have all installed terraces; **Diane Grimstad** constructed a pond; **Jim Boeding** completed both a streambank project and sediment basin; **Tony Quandahl, Diane Grimstad, and Jim Boeding** completed woodland improvements; **Tim Knutson** built a waterway; **Charles Humpal, Jim Boeding, and Hubert Kleve** developing nutrient management plans; **Diane Grimstad** installing off-site watering, paddock fencing, and pasture renovation; **Dennis Knutson** animal waste storage system; and CRP sign-ups by **Llewellyn Storlie, Bushman Family Farms, Marlyn Knutson, Jim Boeding, Jim Tollefson, and Dean Larson.**



End of the Project

Even though it seems like the Twin Springs Project has begun, it is in its 3rd year of a proposed 4 year project. Needless to say in January we will be preparing the final budget for the project. If you are interested in a practice with 75% cost share now is the time to let us know. In all likelihood, we will not receive any more funding. In other words, it is now or never if you would like to be involved.



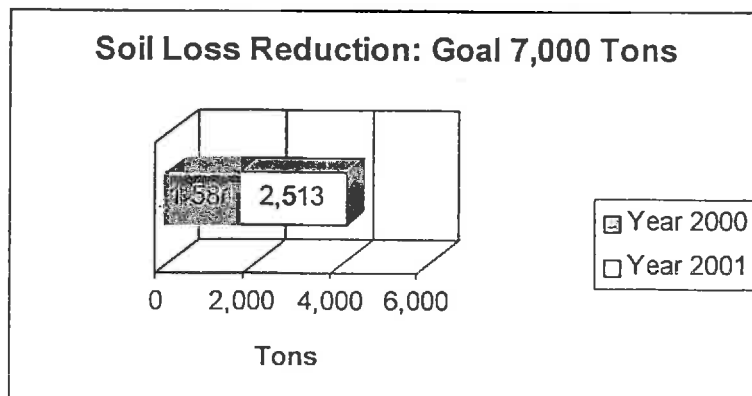
The Decorah Middle School's Seventh Grade Activities

The Decorah Middle School's seventh grade has been very active with the Twin Springs Project. They continue to actively sample water at Twin Springs under the IOWATER program. If you have access to the Internet you can log-on to www.iowater.net, select IOWATER-online data base, select view online data, and choose by site - Twin Springs. The class also spent a day at the springs learning more about the watershed. Lectures included stream assessment, nature writing, history of the area, fish management, and art projects related to nature themes. Several members of the class along with some parents spent some time after school one day installing fish habitat know as half logs (see next page). Future activities for the class will be to continue with the water monitoring program throughout the year along with a possible field trip back to the stream next spring.

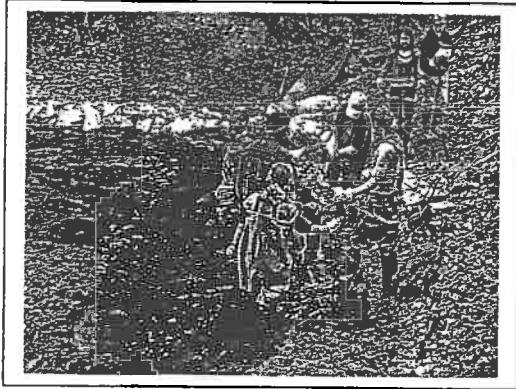
Project's Goals

The Twin Springs project had outline goals in order to accomplish its objectives of reducing sediment and nutrients to the stream. The following chart tracks your accomplishments to date:

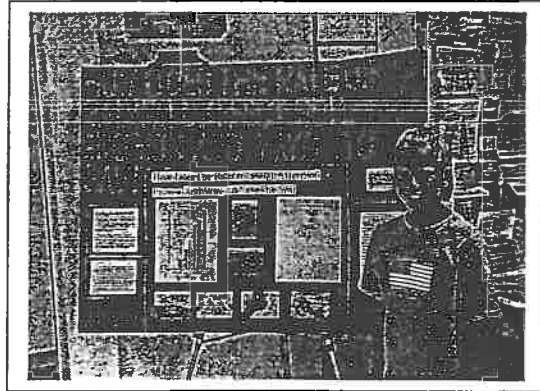
<u>BMP</u>	<u>Original Goal</u>	<u>Amount Reported</u>	<u>%of Goal</u>
Nut./Pest Mgt	2,000 acres	526 acres	26%
Animal Waste System	3	2	66%
Water & Sediment Basin	4	1	25%
Terraces	4,000 ft	18,900 ft	472%
Water Impoundment Structure	2	2	100%
Grass Waterway	4,000 ft	3,080 ft	77%
Livestock Crossing	3	0	0%
Rotation Grazing	50 acres	129 acres	258%
Streambank Stabilization	600 ft	200 ft	33%
Corridor Fencing	2,000 ft	2,178 ft	109%
Livestock Watering System	1	1	100%
Woodland Management Plans	240 acres	247 acres	103%



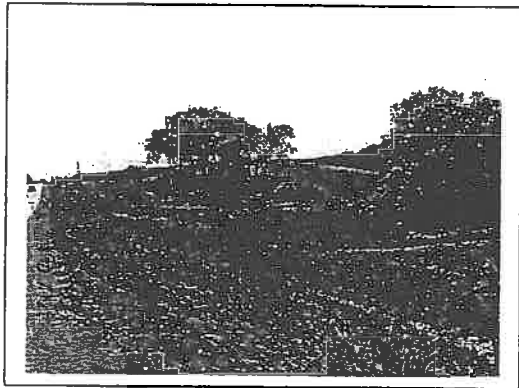
PICTURE PERFECT RESULTS



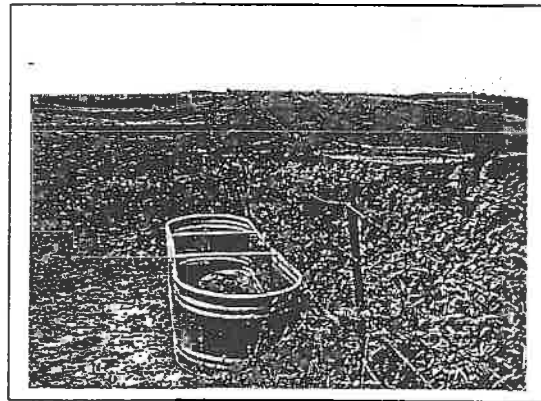
seventh grade installing fish habitat erosion



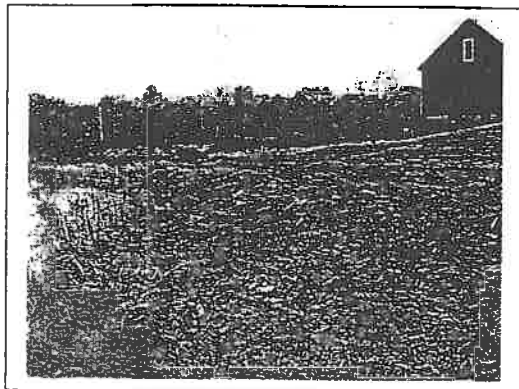
Kia Knutson's science project on soil erosion



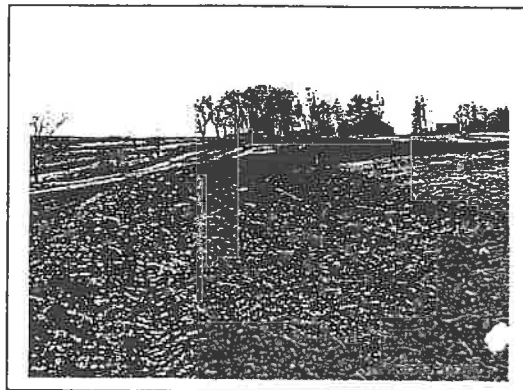
A filter strip around Dean Larson's sinkhole



Diane Grimstad's off-site watering and pasture project



Jim Boeding's stream bank project



Terracing project at Huber Lennon's farm

This project is administered by the Winneshiek County Soil and Water Conservation District and is supported by the Iowa Department of Agriculture and Land Stewardship, Division of Soil Conservation, through funds of the Water Projection Fund; and the Iowa Department of Natural Resources through a grant from the U.S. Environmental Protection Agency, Section 319 funds. Technical and financial assistance is provided by the U.S. Department of Agriculture, Natural Resources Conservation Service and Farm Service Agency. Other cooperating organizations include: Winneshiek County Supervisors, Iowa State University Extension, Winneshiek County Public Health, U.S. Fish and Wildlife Service, Izaak Walton League, Winneshiek County Farm Bureau, Pheasants Forever, Northeast Iowa Community College, Luther College, Decorah Middle School, and the IDNR fishery staff at Siewers Spring.

WINNESHIK COUNTY SOIL AND WATER CONSERVATION DISTRICT

DISTRICT COMMISSIONERS

Wilbur Stoen, Chairperson
John Lubke, Vice-Chairperson
David Roslien
Dwayne Hauber
Denise Buddenber

ASSISTANT COMMISSIONERS

Obert Sacquitne
Lillian Bruvold
Lyle Luzum
John Olds

OFFICE STAFF

Todd Ducan, District Conservationist	Stacy Opat, State Secretary 2,
Don Jensen, Soil Conservationist	Clarence Steggal, State Soil Technician III
Barb Exey, Soil Technician	Rebecca Weinberger, Soil Conservationist
Wally Oxley, Soil Technician	Mike Pavlovec, Conservation Aid
Dave Mellick, CET	Ron Borshiem, Winn County/Pheasant Forever employee
Marc Oylo, Soil Technician	Ron Fairchild, Project Coordinator

All programs and services of the Winneshiek SWCD and NRCS are offered on a nondiscriminatory basis without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Twin Springs Watershed project swings into spring

As winter slowly gives way to longer days and warmer temperatures, the Twin Springs Watershed Project is gearing up for the spring season.

Both landowners and the Winneshiek County Soil and Water Conservation District's staff have been active this winter discussing methods and practices to protect the water quality of Twin Springs.

Landowners are preparing construction and implementation of practices such as waterways, animal waste storage systems, terraces, pasture renovations, no-till practices and timberstand improvements.

Eight farmers attended a nutrient management class this past winter, sponsored by the Winneshiek County Extension service. Brian Lang, ISU agronomist, reviewed how to interpret soil sample results and how to adjust nutrient needs by taking credit for on-farm inputs.

By taking credits, not only will producers save money, but protect Twin Springs' stream from run-off of over-applied nutrients.

The Decorah seventh grade students have been collecting water samples of the stream since last fall. The students are monitoring the stream to record any changes to the water quality as a result of the conservation practices that have

been implemented. The students are working through the IOWATER program that encourages citizen monitoring of Iowa's water bodies.

In the past year alone, the residents of the Twin Spring Watershed have reduced soil loss to the stream by over 1,700 tons. The goal of the project is to reduce soil loss by 7,000 tons per year. It appears the efforts to achieve this goal are already paying off. The Iowa Department of Natural Resources Fishery Biologist, Bill Kalishek, has reported natural reproduction of brown trout has occurred in Twin Springs. This is the first documented event of this nature for the stream.

The Twin Springs Water Quality Project is being funded through a Section 319 grant from the Iowa Department of Natural Resources; water protection funds and watershed protection funds from the Iowa Division of Soil Conservation; Winneshiek County and the Farm Service Agency.

Other agencies involved include Pheasants Forever, Luther College, Winneshiek County Extension Service and Northeast Iowa Community College.

For more information about the Twin Springs Water Quality Project, contact Ron Fairchild, project coordinator at 382-4352.

Signs of success at Twin Springs

The Twin Springs Water Quality project, developed to reduce the amount of nutrient and sediment entering the coldwater stream, has been successful in its first year of activities.

Over the course of the next three years, one of the project goals is to reduce the amount of soil entering the stream by 7,000 tons per year.

Soil conservation practices that have been implemented in the first year of the project have already reduced soil delivery to the stream by 1,850 tons. Some of the methods installed include terraces, water and sediment basin, animal waste storage systems, no-till, filtering strips,

water impoundment and timber stand improvement projects. Landowners and farm operators are completing these projects on a voluntary basis.

The project has had strong support from the landowners located within the watershed. Part of the project is the use of a local advisory board to give input on project direction. Members include Jim Boeding, Sara Gra Otteson, Dean Larson, Bill Kalishek and Doug Groux.

The Iowa DNR fishery management section has documented that natural production of brown trout has occurred in order for this to happen; pristine water quality must be present. This indicates the project is on the right track.

The Decorah Middle School seventh grade class has been taking water samples from the stream to monitor water quality improvements. The results of their sampling can be found on the IOWATER home page. To access the site, go to www.iowater.net and click on "view on-line data."

The Iowa DNR, the Iowa Department of Land Stewardship, Winneshiek County Natural Resources Conservation Service, Farm Service Agency and Winneshiek County Soil and Water Conservation District are sponsoring this project.

Other contributors include North Iowa Technical College, Luther College, Winneshiek County Supervisor and Winneshiek County Public Health ISU Extension.

For further information, contact Ron Fairchild, project coordinator at 382-4352.

Job placement training Feb. 2

Special job placement and training services will be offered to veterans and disabled veterans on Friday, Feb. 2.

The free help is available at the Iowa Workforce Development Center located at 1111 Paine Street, Suite G in Decorah.

A veterans representative will be at the center from 9 a.m. to 2:30 p.m.

Services will include job coaching, vocational counseling, referrals for employment and training and education opportunities.

For more information, contact Iowa Workforce Development Decorah Center (319) 382-0457.



Winneshiek

COUNTY

Nancy Weis, Page Editor
214 Winneshago St., Decorah, IA 52101 • 563-382-8713
email: winneshiek.county@ifbf.org



Twin Springs

Making good things happen

By Ron Fairchild
Environmental coordinator

Since July 1 of the year 2000, people in the Twin Springs Watershed have been working to address soil loss concerns in an effort to protect and improve the water quality of Twin Springs. The project has been funded through a Section 319 grant from the Iowa Department of Natural Resources, along with a Watershed Protection Grant from the Iowa Division of Soil Conservation.

Twin Springs Watershed project objectives include:

Improve water quality by reducing sediment loading to the stream by 30 percent or 7,000 tons per year.

Reduce by 25 percent the delivery of manure, which has harmful substances such as ammonia, phosphorus and bacteria, to surface water.

Develop and implement a comprehensive information and education program targeting the local community to create an awareness about nonpoint pollution.

Provide landowners with financial incentives for reducing sediment and nutrient loading.

This past year along landowners have installed eight acres in the Continuous CRP program, 10 acres of rotational grazing, 400 feet of streambank stabilization,

2,575 feet of waterways, one pond, and 12,600 feet of terraces. To date, soil loss being delivered to Twin Springs has been reduced by over 5,000 tons a year as a result of this project.

Iowa Department of Natural Resources fishery management section has reported they are seeing natural reproduction of brown trout in Twin Springs, which has not been documented before. The need for a quality water source for reproduction indicates the project may be having some positive effects for the fishery.

The Decorah Middle School seventh grade has also been active with this project. Some of their activities include two field days to study the stream and the history of the area; water sampling on a monthly basis; and installing fish habitat in the stream.

Other groups involved with the project are the Natural Resources Conservation Service, Winneshiek County Extension Service, Winneshiek County Board of Health, Winneshiek County supervisors; Winneshiek County Pheasants Forever; Luther College; Farm Service agency; and most importantly, the landowners in the watershed.

For more information about the Twin Springs Watershed project, contact Ron Fairchild, project coordinator, at 563-382-4352.

Calendar

Thursday

Deadline for ads to be in to the Farm Bureau Spokesman for the next week's issue.

Wednesday, Oct. 23

Roadside, forest and aquatic pest management satellite downlink from 9 to 11:45 a.m. in the extension office meeting room in Decorah.

Sunday, Oct. 27

Winneshiek County 4-H council will meet at 7 p.m. in the extension office meeting room in Decorah.

Monday, Oct. 28

4-H leaders meeting at 7:30 p.m. in the extension office meeting room in Decorah.

Pictorial History

solid settling basin doing its job after a rainfall event



one of several terracing projects completed



timberstand improvement project



landowner's daughter's science project on soil erosion in Twin Springs



streambank stabilization project



waterways and filter strip enrolled in CRP



grazing field day



waterway project



grade stabilization project



student conducting a water sample



Decorah 7th grade habitat project



terracing project protecting a sinkhole

