BATTLE CREEK WATERSHED GROUNDWATER PROTECTION PROJECT

RESULTS OF PROJECT-ENDING SURVEY

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Project background.

From 1996-2001 the Ida County Soil and Water Conservation District sponsored a groundwater protection project involving town and rural residents of the Battle Creek watershed. Local drinking water comes primarily from shallow water table wells and surface contamination by agricultural activities and inadequate septic systems is a documented problem.

With funding and other support from the Iowa Department of Agriculture and Land Stewardship, the U.S. EPA 319 Nonpoint Source Program through the Iowa Department of Natural Resources, the Natural Resources Conservation Service, Iowa State University Extension and local groups, the project provided information, education and evaluation to help watershed citizens take action to protect and improve the source of their drinking water.

Implementation of the survey.

In November, 2001, a project-ending survey was sent to 229 individuals who, according to Conservation District records, owned or farmed property in the watershed. Ida County Conservation District Commissioners supported the survey, signing a cover letter asking for their neighbors' cooperation in providing the information. The addressed return envelope also directed completed surveys to a member of the Soil Commission, rather than the district office.

This local involvement had a major impact. Ninety-seven responses were received. The response rate, at 43%, was nearly triple that of the project's baseline mail-in survey, conducted in August of 1997, which was identified with agency personnel only. Commissioners reported their neighbors stopping them on the street to let them know they were planning to mail their surveys in. Many respondents signed their names, indicating their willingness to be interviewed for further information if necessary.

Results.

Eighty-one of 97 respondents (84%) said they currently own and/or operate farmland as of crop year 2001(Table 1). Many landowners were retired or semi-retired from farming. The majority of respondents still lived on a farm or rural acreage.

Table 1. Characteristics of Respondents

Respondents	% of all responses
Currently own or operate farmland in the watershed:	84%
Consider yourself a full-time farmer:	25%
Consider yourself a part-time farmer:	23%
Hold an off-farm job in addition to farming:	19%
Are retired from farming:	22%
Are an absentee landlord:	16%
Live on a farm or rural acreage:	68%

Forty-one respondents answered questions about crop production in 2001. On average, they operated 636 acres per farm, with a range of 2-2200 acres. They raised an average of 589 acres of corn and soybeans, with a range of 12-1800 acres.

The survey asked about perceived responsibility for crop management, rather than about specific practices. The small sample size virtually assured that variations in farm size, rotations and weather would be too great to learn about actual changes in pollutant loading over the short time period of this project. However, the success of an educational program requires, first, that participants be empowered to act on what they have learned.

Questions about who had primary responsibility for crop management showed that nutrient and pest management programs were correctly targeted at watershed producers. Eighty-three percent named themselves or a family partner as responsible for their fertility programs. Watershed producers took even greater responsibility for their pest and cultural management (Table 2).

When asked about the actual amount of N, P and K used in 2001, active crop producers reported depending on soil tests (83%), yield goals (63%), dealer recommendations (51%) and their own experience (18%) in that order. Seven producers had relied on a crop consultant, and two on an extension specialist.

Six respondents had participated in the nutrient and pest management workshops sponsored by the project. On average, they operated 702 acres, with a range of 300-1500 acres. All but one considered themselves to be full-time farmers.

There is potential for further manure management education in the watershed. Twenty-seven respondents had livestock, four of whom reported no crop acreage. Twenty-four had beef cattle and eight raised hogs, including six operations with both beef and hogs. Although 67% said they took manure nutrient value into account when spreading manure, only two had ever had their manure nutrient content tested.

Table 2. Management responsibility of crop producers.

	In 2001, who had **primary** responsibility for: (can mark more than one)		
N=41	Fertilizer application (amount, timing, etc.)?	Planning pest and herbicide management for your crops?	Decisions like hybrids, varieties, cultural practices?
Dealer or coop. representative	32%	24%	7%
Self or family partner	83%	89%	100%
Landlord	0	0	0
Those who custom farm your place	2%	5%	0
Crop consultant	0	0	0
ISU Extension specialist	0	0	5%
Someone else?	0	0	0

One of the attitude questions which ended the survey was: "Although manure is a useful nutrient, the cost of using it for crop fertilizer may outweigh the return.". Forty-eight percent of respondents disagreed with this statement, and another 31% were uncertain (Table 4). The active farmers (full and part-time) in the sample were more likely to disagree, and those who had participated in the NPM workshops were most likely to disagree (Table 5).

Twenty respondents had installed structural conservation practices in the past five years. Either the availability of cost share funding or an "opportunity to treat a problem" - or both together - were cited as the greatest influence on their decision to do so. Seeing the practice on a neighbor's farm, or input from a soil technician were not as significant.

All residents were then asked about their drinking water sources. Eighty-six percent of those who answered the question have private wells, and nearly half of the wells are less than 100 feet deep. More than half of wells are 6" or more in diameter. This predominance of older, shallow wells confirms the high-risk groundwater situation in the area. The attitudes portion of the survey (Table 4) also shows that groundwater contamination is a significant concern.

While some residents have reverse-osmosis units, chlorination or carbon filters on their drinking water, over half of residents have no drinking water treatment.

Success of the project's information campaign.

IDNR support for the project information marketing resulted in broad local awareness of the project. Eighty-two percent of survey respondents were aware of the Battle Creek Watershed Groundwater Protection Project. Most of these had seen the Conservation Insights newsletter and local news articles produced by the project information specialist. Awareness of various sources of information is shown in Table 3.

The project-sponsored *Conservation Insights* newsletter was well-received. Of the 60 individuals who said they received it, 24 read all of it, and 33 read some of it. Eighty-nine percent said the newsletter contained information that was not available to them elsewhere.

Thirty-eight individuals said they had received information directly from Battle Creek Watershed project staff. Virtually all (90-100%) of these agreed that the information received was both useful and timely.

On-farm demonstrations were one thing that could clearly be improved on in future efforts. Only 5 people said they had gone on their own to examine a field demonstration site.

Seventy percent of respondents did not have children in the school system, and awareness of the project through school programs was small in the survey. However, over a thousand children participated in school activities sponsored by the project. The fact that this did not appear in the survey is probably due to the well-documented aging of Iowa's farm population. Parents of primary school-age children are not as likely to be active farmers or farmland owners. The results are consistent with the 38% of respondents who said they were retired or absentee landlords.

Table 3. Where have you gotten information about the BCWP?	
Local newspaper articles	76%
The Ida *Conservation Insights* newsletter	70%
ISU Extension or NRCS staff	27%
My neighbors have been project cooperators	16%
I have been a project cooperator	13%
I have attended on-farm demonstrations or field days	13%
Radio or television programs	9%
School programs	3%
Ag suppliers	1%

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Attitude survey.

The final section of the survey concerned attitudes about water quality issues. Table 4 shows the full results of these questions. Table 5 summarizes average responses according to some groups within the total sample. These include respondents who said they were active farmers (full or part-time), retired farmers, NPM cooperators, and "town or other".

The "Town or other" group included the 31 respondents who said they lived "in town". Twenty-seven of these owned or operated farmland in the watershed, including some of the larger acreage farms. However, only one claimed to be a full-time farmer. Six others were part-time, eight "retired" and 12 "absentee landlords". The "town or other" category also includes 12 respondents who did not answer the question about having a relationship to farming and who said they did not "own or operate farmland" in the watershed.

In general, all respondents agreed most strongly with the statement that contamination of streams and groundwater are important environmental problems in their county. They are more concerned about water quality than they were five years ago. Although the sample size is small (N=6), results from the NPM cooperators appear to document an impact of the project's educational program. As a group, they stand out as most concerned about water contamination and soil conservation, most likely to believe water quality BMP's don't need to be costly, and most likely to agree that manure nutrients can be profitably managed (Table 5).

Table 4. Results of Water Quality Attitude Survey

	Strongly Agree	Agree	Unsure	Dis-agree	Strongly Disagree	N=
Contamination of streams and groundwater is an important environmental problem in Ida county.	35.8%	45.7%	14.8%	3.7%	0.0%	81
Agricultural fertilizers are a significant threat for water contamination in this county.	19.3%	38.6%	32.5%	9.6%	0.0%	83
I am more concerned about water quality issues now than I was five years ago.	17.6%	51.8%	7.1%	22.4%	1.2%	85
I am confident that herbicides and pesticides, if used as directed, are not a threat to the environment.	7.2%	41.0%	34.9%	12.0%	4.8%	83
Farmers in Ida County are already controlling soil erosion on their land to the greatest degree that is practical and profitable.	5.9%	47.1%	22.4%	23.5%	1.2%	85
Private septic systems are a significant threat for water contamination in this county.	9.6%	21.7%	48.2%	19.3%	1.2%	83
Farming practices that increase water quality protection are often costly to adopt.	1.2%	35.7%	33.3%	28.6%	1.2%	84
More government rules will be needed to make people take more action to protect the environment and water quality.	4.7%	30.6%	28.2%	27.1%	8.2%	85
Although manure is a useful nutrient, the cost of using it for crop fertilizer may outweigh the return.	3.5%	16.3%	31.4%	37.2%	10.5%	86

Table 5. Attitude results for subgroups in the Battle Creek Watershed Survey.

Responses were scored as: Strongly Agree = 1, Agree = 2, Uncertain = 3, Disagree = 4, Strongly Disagree = 5. "Average" attitude scores were calculated by summing the scores of all responses and dividing by N, the number of respondents. Lower scores equal more general agreement with the statement.

	Average score - all respondents	Retired farmers, N=21	Active farmers, N=46	Nutrient/ PestMgt. Workshop Participants, N=6	"Town" residents and non-farmers, N= 39
Contamination of streams and groundwater is an important environmental problem in Ida county.	1.86	1.87	1.90	1.50	1.81
Agricultural fertilizers are a significant threat for water contamination in this county.	2.33	2.38	2.38	2.17	2.21
I am more concerned about water quality issues now than I was five years ago.	2.38	2.50	2.45	2.40	2.27
I am confident that herbicides and pesticides, if used as directed, are not a threat to the environment.	2.66	2.56	2.62	2.67	2.55
Farmers in Ida County are already controlling soil erosion on their land to the greatest degree that is practical and profitable.	2.67	2.41	2.80	3.67	2.65
Private septic systems are a significant threat for water contamination in this county.	2.81	2.81	2.71	2.33	2.85
Farming practices that increase water quality protection are often costly to adopt.	2.93	2.65	3.05	3.83	2.68
More government rules will be needed to make people take more action to protect the environment and water quality.	3.04	3.11	3.09	2.67	2.87
Although manure is a useful nutrient, the cost of using it for crop fertilizer may outweigh the return.	3.35	3.11	3.55	4.00	3.29