

Waterloo Creek Watershed Project

#1209-006

October 2012 – December 2015

Final Project Report

X *Lynn Stock*

Lynn Stock, Allamakee SWCD Chairman

Financial Accountability

The Waterloo Creek Watershed is a 30,610 acre watershed that spans the county border between Allamakee County, Iowa and Houston County, Minnesota (Appendix 1). The Iowa portion amounts to 13,034 acres. A total of \$35,031.49 of the \$100,000 Watershed Improvement Review Board Funding awarded to the Waterloo Creek Watershed Project has been spent during the three-year term of the project. The funds were available for the following practices (Table 1): terraces, grade stabilization structures, stream bank stabilization, and pasture management as well as for salary.

Table 1. WIRB budget for the Waterloo Creek Watershed Project

Grant Agreement Budget Line Item	Total Funds Approved (\$)	Total Funds Approved – Amended (\$)	Total Funds Expended (\$)	Available Funds (\$)
Salary	\$63,750	\$19,923	\$20,847.69	-\$924.69
Terraces	\$25,000	\$13,000	\$7,337.33	\$5,662.67
Grade Stabilization Structures	\$11,250	\$24,077	\$4,470.75	\$19,606.25
Stream Bank Stabilization	\$0	\$31,500	\$0	\$31,500
Pasture Management	\$0	\$11,500	\$2,375.72	\$9,124.28
Total	\$100,000	\$100,000	\$35,031.49	\$64,968.51

A grant was obtained from the National Fish and Wildlife Foundation (NFWF) to pay for the salary in years 2-3 of the project. The remaining salary funds from WIRB were transferred to new ledger lines for stream bank stabilization and pasture management. Fewer terraces were installed than had initially been contracted and/or designed. A few of the landowners who had proposed or contracted terrace projects sold their ground and the new landowners decided not to go through with the projects. There were also a few landowners who were interested in installing terraces, but their renters did not want them to be built. Fewer grade stabilization structures were installed than were proposed largely due to site issues such as shallow soils or large drainage areas. One stream bank project was installed using entirely EQIP funds. Two additional stream bank projects were surveyed and designed but the landowners were unhappy with the high cost of practice estimate, even with 75% cost-share, and decided not to follow through with the practices. The DNR completed a stream bank stabilization project utilizing other funding sources. Two additional stream bank sites were assessed, but the landowners were unwilling to move forward with the projects after the rough cost estimates were presented. One large pasture fencing project was completed right before the WIRB project started. One pasture project that was funded through this project was downscaled from the initial proposed project due to the landowner having financial concerns.

The total cost of the Waterloo Creek Watershed Project was **\$255,404.79**, of which **\$138,953.81** was used for practice installation. In the amended budget, 27.6% of the total project funds were budgeted to come from WIRB (Table 2). The actual WIRB contribution to the project was 13.7%. Of the money budgeted for practice installation, 25% was planned to come from WIRB funding. When initially determining the WIRB contribution to projects, it was estimated that EQIP funds would cover 50% cost-share on all eligible practices and WIRB would cover the

remaining 25% to get the total cost-share up to 75%. In some instances, the EQIP amount covered more than 50% cost-share with some covering more than 75% cost-share based on their flat-rate payments. Approximately 50% of the practice budget was planned to come from EQIP funding, and 25% from landowners. The actual WIRB contribution for practices accounted for 10.2%, EQIP funding accounted for 38.4%, landowners accounted for 13.2%, and the DNR accounted for 36.7%. Cost-share provided through the Iowa Department of Agriculture and Land Stewardship (IDALS) provided financial incentive for several waterways to be installed in the watershed and accounted for 1.5% of the practice funds.

The biggest differences between the approved budget and actual amounts expended from WIRB funds were due to reduced implementation of contracted and proposed projects. EQIP funds were used in the Minnesota portion of the watershed to install many different conservation practices.

Table 2. Total Project Funding

Funding Source	Cash		In-Kind Contributions		Total	
	Approved Application Budget (\$)*	Actual (\$)	Approved Application Budget (\$)*	Actual (\$)	Approved Application Budget (\$)*	Actual (\$)
WIRB	\$100,000	\$35,031.49	\$0	\$0	\$100,000	\$35,031.49
Landowners	\$80,077	\$18,273.74	\$0	\$0	\$80,077	\$18,273.74
EQIP	\$160,154	\$53,348.27	\$0	\$0	\$160,154	\$53,348.27
IDNR Fisheries	\$0	\$51,048	\$11,250	\$10,780	\$11,250	\$61,828
IDALS	\$0	\$2,100**	\$10,000	\$12,125	\$10,000	\$14,225
Northeast Iowa RC&D	\$0	\$0	\$1,000	\$1,575	\$1,000	\$1,575
IDNR Water monitoring	\$0	\$0	\$4,000	\$0	\$4,000	\$0
Trout Unlimited	\$0	\$0	\$2,520	\$330	\$2,520	\$330
NFWF****	\$0	\$70,793.29	\$0	\$0	\$0	\$70,793.29
Totals	\$340,231	230,594.79	\$28,770	\$24,810	\$362,481	255,404.79

* Incorporates the changes of amendment 1209-006-01 approved 11-08-2013

**The IDALS cost-share for waterways is not shown in the WIRB finance ledger.

*** Funds from the National Fish and Wildlife Foundation (NFWF) were not included in the initial application

Watershed Improvement Fund contribution: Approved application budget: 29.4%
Actual: 13.7%

IDNR Fisheries had initially planned to do fish hides, but did not end up installing any. The landowner who did a stream bank stabilization project chose not to have fish hides as part of the

project. The DNR sloped back most of the banks on their property to a 6:1 slope and seeded them to a prairie mix. The goal of their project was to re-establish connection to the floodplain. Their in-kind amount was for a fish assessment in 2013 and staff time for the survey and design of their stream bank stabilization. IDNR Water Monitoring did not provide monitoring equipment in 2013 due to limited availability of monitoring equipment and better suited sites elsewhere.

The Iowa Department of Agriculture and Land Stewardship (IDALS) provided in-kind support of secretarial assistance for the three years of the project. IFIP cost-share from IDALS was used on a waterway project in the watershed.

Trout Unlimited had planned to provide funds for event sampling in 2013, however no event samples were taken. No “events” occurred on days that would have allowed for staff to get samples to the lab for evaluation in a timely manner. Their in-kind support was provided at a field day where volunteers from the Driftless Chapter of TU helped seed stream banks and install straw erosion mats on the DNR stream bank sites. This local TU chapter plans to work with the IDNR on another stream bank in the spring of 2016.

Environmental Accountability

Waterloo Creek has been on the Iowa DNR’s “Impaired Waters List” since 2008 for indicator bacteria (*E. coli*). While this is currently the only impairment, turbidity is also a concern because it influences stream temperature and clarity, which can impact aquatic populations and human recreation. To determine the water quality of Waterloo Creek, water monitoring was conducted from 2010-2012 at 7-8 sites throughout the watershed. The evaluated field parameters included pH, chloride, turbidity, dissolved oxygen, temperature, and total flow. In 2010, the only lab parameter analyzed was *E. coli*. In 2011, nitrate-nitrogen and total phosphorus were added. In 2012, the DNR wrote a water monitoring plan and included all of the above parameters plus ammonia nitrogen, total kjehldahl nitrogen, and total suspended solids. Rainfall events were monitored with additional samples in 2010 and 2012.

The sampling results showed that the nitrogen and phosphorus parameters as well as pH, chloride, and dissolved oxygen were all in acceptable ranges and were not determined to be risks to the watershed. Throughout the sampling, the *E. coli* and turbidity levels increased during the warmer months of the year and decreased during the cooler months, partially due to more rain and more runoff. They also rose significantly during the event samples as sediment and fecal matter were washed into the stream. Almost all of the event samples and the majority of the summer samples exceeded the EPA one-time threshold of 235 colony forming units (CFU)/100 ml.

The EPA recommended threshold for turbidity is 3.38 nephelometric turbidity units (NTU) was exceeded about 1/3 of the time. This data shows that continued work needs to be done to encourage producers to install practices that reduce erosion and sediment delivery to the stream as well as practices that reduce the amount of *E. coli* that enters the stream, such as rotational grazing. Larger detention structures in the upper reaches of the watershed would help to reduce flood potential. Funding can be difficult to obtain for these structures due to their high cost and presents a hurdle for implementation. Future monitoring should be done to determine if there

has been a change in the water quality. However, it takes several years for changes in management and conservation practice implementation to have any effect on water quality.

Practices and Activities

The practices that were planned in the project application are compared to what was actually completed in Table 3. Also shown are the estimated reductions in sediment delivery and phosphorus.

Table 3. Practices and Environmental Benefits

Practice	Unit	Approved Application Goal	Accomplishments	Percent Completion	Acres Treated	Sediment Reduction (t/y)	Phosphorus Reduction (lbs/yr)
Terraces	Ft.	10,000	3,450	35%	23.6	35	46
Grade stabilization structures	No.	12	3	25%	94	235	307
Streambank	Ft.	2,500	2,401	96%	2	263	342.2
Pasture management	No.	3	2	66%	24.6	24	31
Waterways	Ft	0	1.9	190%	36.7	89	115
Total					180.9	646	841.2

Large strides were made in meeting the goals of the project, however not as many practices were implemented (Appendix 2) in comparison to the number of cost estimates generated for landowners/producers (Appendix 3). The first goal was to expand upon current partnering and develop a formal working relationship between technical staff in Iowa and Minnesota. NRCS in both states provided funding to hire a temporary technician who could work in both states with a focus on Minnesota to increase the amount of practices implemented. This technician was able to meet with a large percent of the Minnesota landowners to help design and contract practices such as pasture management systems, grade stabilization structures, terraces, grassed waterways, and cover crops.

The second goal was to identify specific locations for BMP implementation with the objective of meeting with 100% of landowners in critical areas. All landowners with crop/pasture ground were contacted and face-to-face meetings were conducted with all landowners in the critical areas.

The third goal was to reduce sediment loading to Waterloo Creek. Photos of some of the completed projects are found in Appendix 4. As can be seen in Table 3, the goals for practice implementation were not met. However, significant effort was made to meet with landowners/producers and generate cost estimates for proposed practices. Estimates were generated for at least an additional 21,700 feet of terraces, 1,473 feet of streambank, and 8 grade

stabilization structures or water and sediment control basins and two pasture management systems. Applications had even been approved for several of these projects. There were several reasons for practices not being completed. Some of the landowners sold their ground and the new landowners were not interested in completing the projects. Also, tighter cost margins for crop farming meant that some landowners had less funds to put into new conservation practices. Some of the landowners who wanted grade stabilization structures did not have suitable sites based on soils and slopes. Additional pasture management work to set up a watering system in paddocks has been contracted through EQIP, but was not completed before the end of the WIRB project and so did not receive funds for implementation.

The fourth goal was to reduce flooding potential in the watershed. The installed grade stabilization structures will have a small impact on flooding. However, large structures in the upper reaches of the watershed would be needed to have a big impact on flooding potential. These would require a dedicated funding source as each structure would likely cost \$20,000 to \$50,000 or more. Continued efforts to target upland treatment efforts such as terraces, no-till, cover crops, and sediment basins will help to increase infiltrate and reduce/capture surface runoff.

Additional conservation work was completed in the Iowa portion of the watershed. Two waterway projects were installed with other funding sources, EQIP and IFIP state cost-share. Approximately 1.9 acres of waterways captured water from 36.7 acres and resulted in a reduction of 89 tons of sediment delivery per year and 115 pounds of phosphorus per year. Contour lines were laid out on 58 acres of crop ground.

Even though not all of the interactions with landowners resulted in conservation practice implementation, the efforts did yield some results. One landowner has been anti-government in the past, but discussions with SWCD staff encouraged him to consider new conservation practices. He was even willing to sign up for cost-share, but site conditions were not suitable for his desired practice. A few other landowners or producers have been known to rarely visit the NRCS office, but were willing to meet with SWCD staff on site and discuss conservation opportunities. Even if they did not sign up for cost-share, it was a step in getting them to consider how conservation could be implemented on their properties. One producer who was just starting to transition to his grandfather's farm stopped in the office during the last month of the project to inquire about pasture management funds. Unfortunately, this cost-share could not be used on a project for him based on timing, but shows that continued work will be done in the watershed.

A final project survey (Appendix 5) was sent to all landowners in the Iowa portion of the watershed to determine opinions about the watershed and the watershed project. The survey had questions about water quality, land-use, and satisfaction with installed conservation practices.

When asked the most important resource concern in the watershed, most responses said either soil erosion or groundwater quality. Over seventy-percent said that the watershed project had a positive influence on the resource concerns while 17% said it had no real effect. Seventy percent also felt that the water quality in Waterloo Creek is improving, 20% said it has stayed the same, and 10% said it has gotten worse due to flooding issues. A question asked what practices that

were not funded by the project that people had interest in. A letter was sent to all people who responded who provided their name and indicated a desire for additional practices to inform them of what cost-share options could be used for the specified practices. When asked what factors limited the adoption or expansion of use of specific practices, the most common responses were that they currently use the practice or that they felt it isn't practical for their farm.

Program Accountability

Articles on the project were printed annually in the district's annual report, which is published in the local newspaper, and the district newsletter. Newsletters were sent out twice a year in 2013 and 2014 to all watershed landowners. Letters were also mailed to them in 2015. Articles were printed in the Waukon Standard newspaper at least twice a year. A pasture walk was held at one site in the watershed in 2013. An informational meeting was held for any interested landowners (both Iowa and Minnesota) in March of 2013 to describe the results of the water sampling and available cost-share opportunities. Articles were posted on the Allamakee SWCD website to announce the project, describe the watershed, and announce available cost-share as well as specific project deadlines.

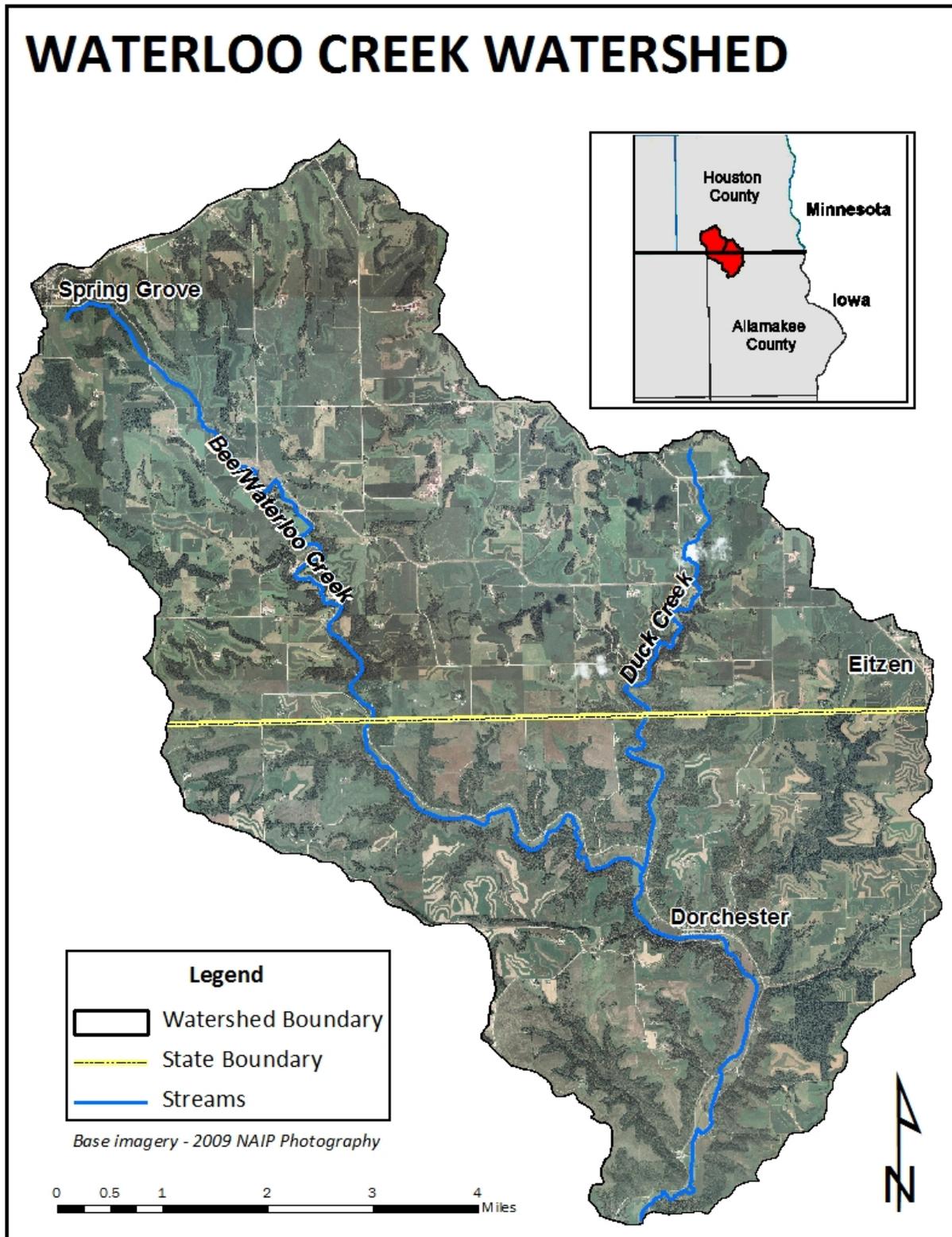
A presentation about the watershed project was given at the 2013 Driftless Symposium in La Crosse, Wisconsin as well as at the 2015 Spring Regional Commissioners' meeting. Posters about the project were presented at the Iowa Water Conference in 2013, 2014, and 2015.

While information was mailed to all landowners in the watershed, it was the face-to-face interactions that were the most successful at achieving consideration of conservation practices and eventual implementation.

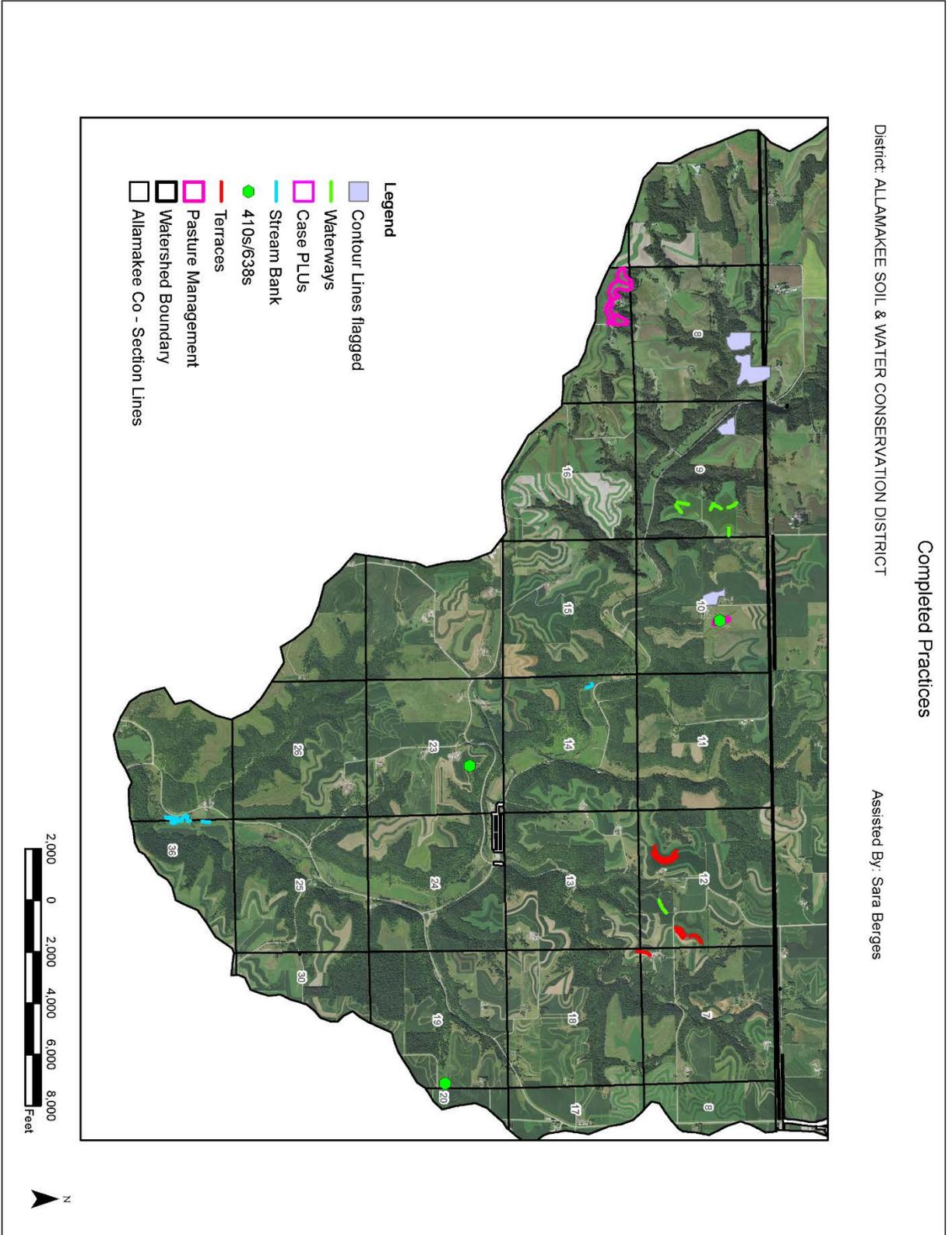
One challenge that we ran into with this project was that several sites we looked at for grade stabilization structures were deemed unsuitable due to large drainage areas or shallow soils as determined by soil boring. The current economic climate also influenced the number of people who signed up for cost-share as well as those who cancelled practices. Another issue that hindered the project was land turnover. In many cases, the older landowners who sold their properties were more willing to put in conservation practices than the younger landowners who bought the properties. This change in ownership resulted in fewer practices being implemented, but did give us the opportunity to talk to new landowners, several who have not worked with the SWCD/NRCS before.

The DNR will continue to monitor the fish populations in Waterloo Creek, which will alert us to improvement or degradation of water quality in the watershed. Grant opportunities will continue to be sought for the large detention structures that would decrease flood potential and would mostly be located in the Minnesota portion of the watershed. Even though a dedicated funding source will not be available for staffing and conservation practice implementation in the watershed, continued efforts will be made to protect the quality of Waterloo Creek and reduce erosion and sediment delivery in the watershed.

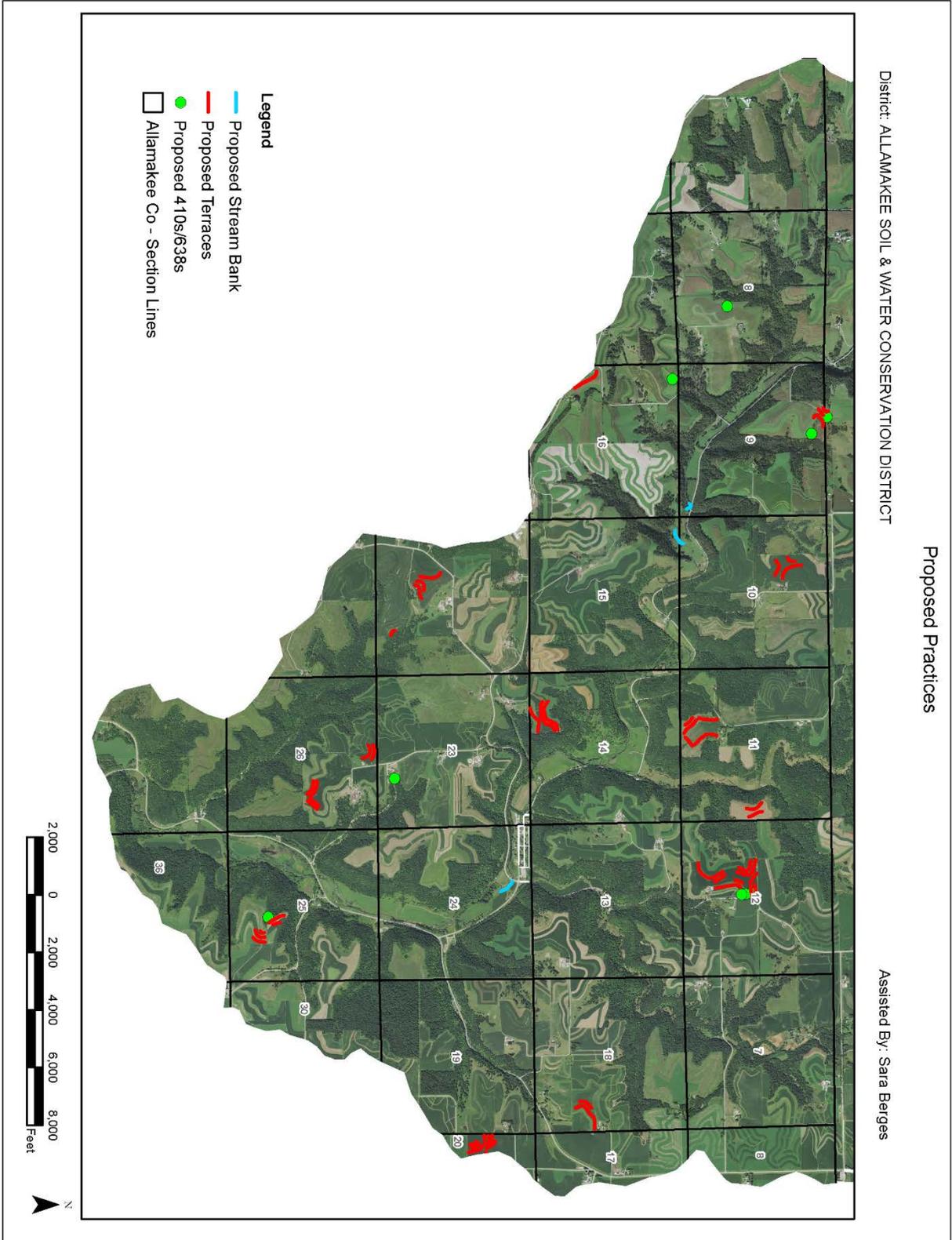
Appendix 1. Waterloo Creek Watershed Location



Appendix 2. Completed Practices



Appendix 3. Proposed Conservation Practices



Appendix 4. Photos of Completed Practices

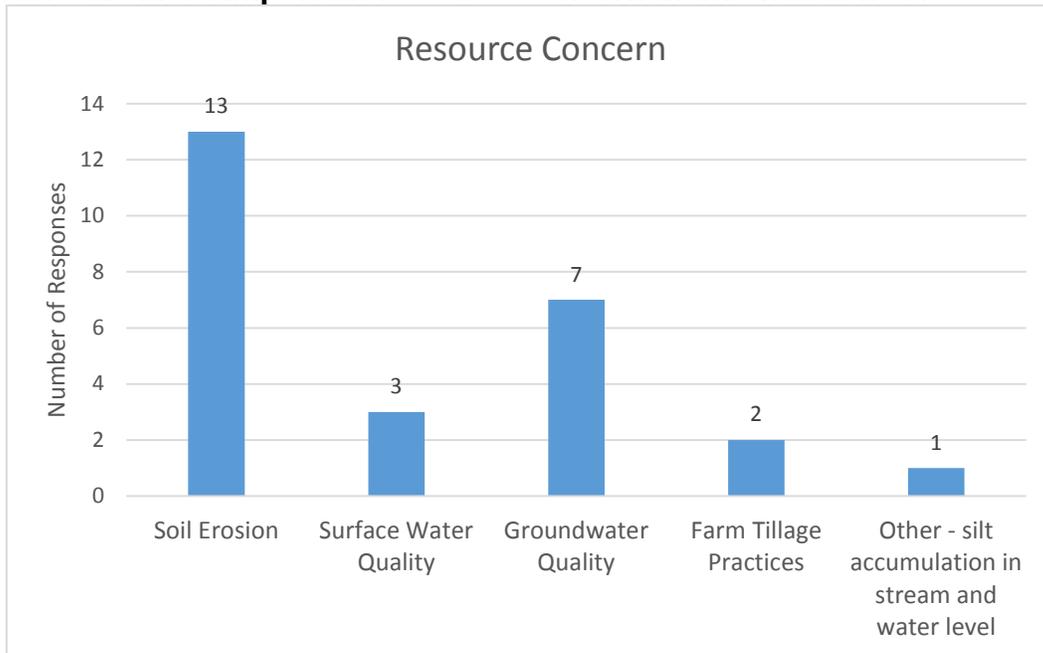




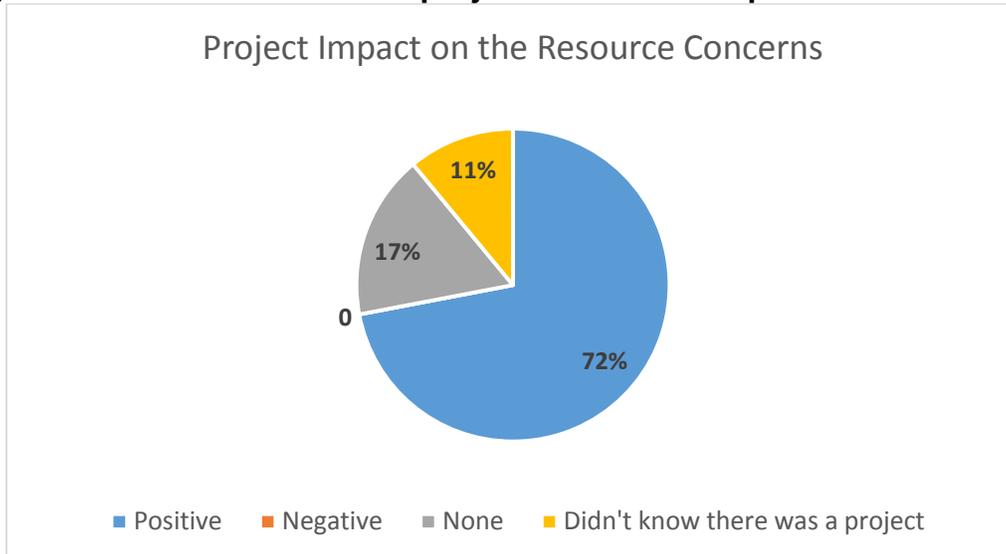


Appendix 5. Final Project Survey Results

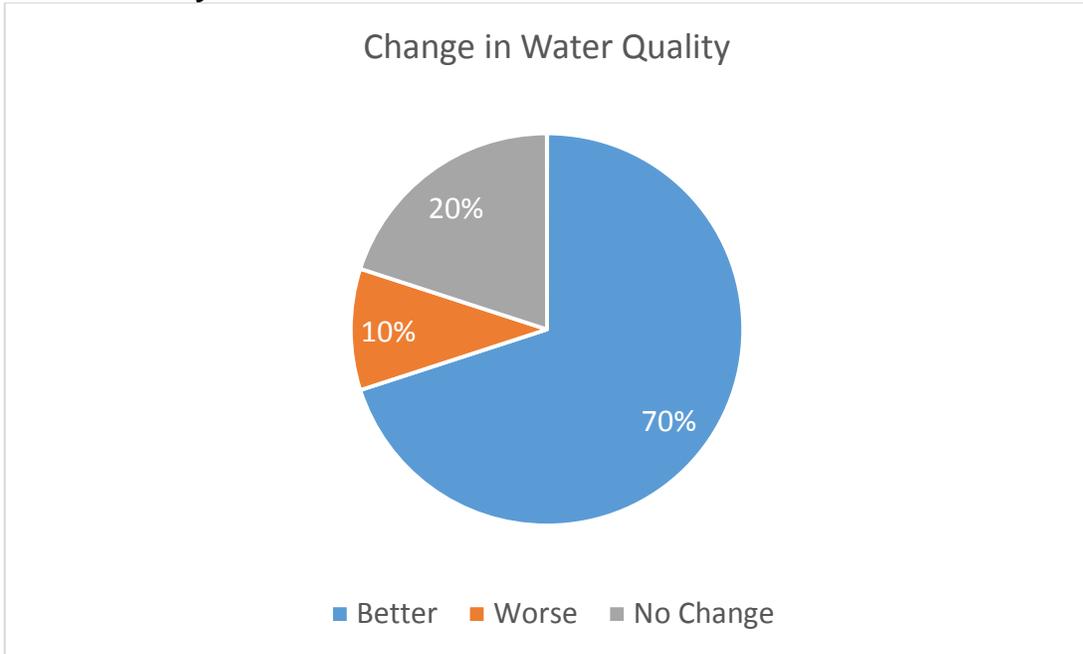
1. What is the most important resource concern in this watershed?



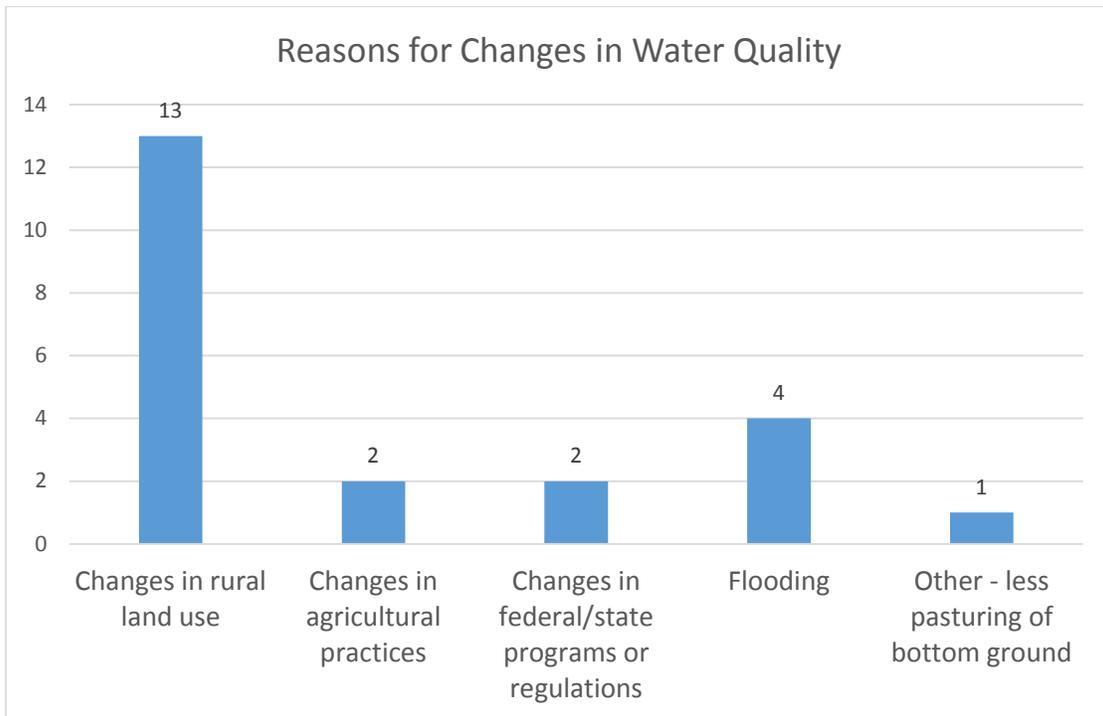
2. Do you feel that this watershed project has had an impact on that concern?



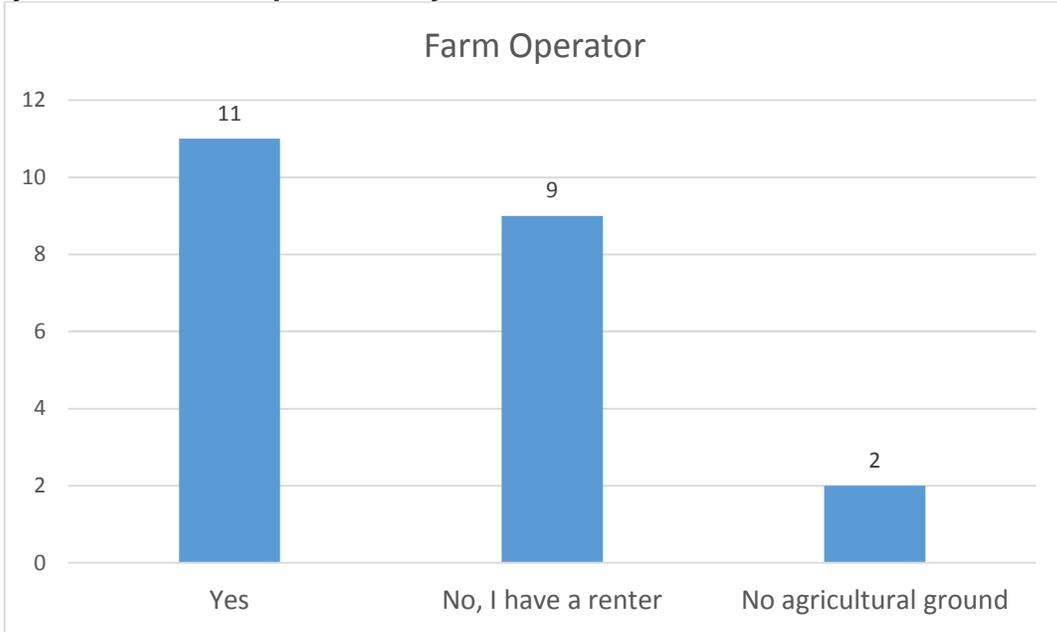
3. Do you believe that the water quality of Waterloo Creek is getting better or worse currently?



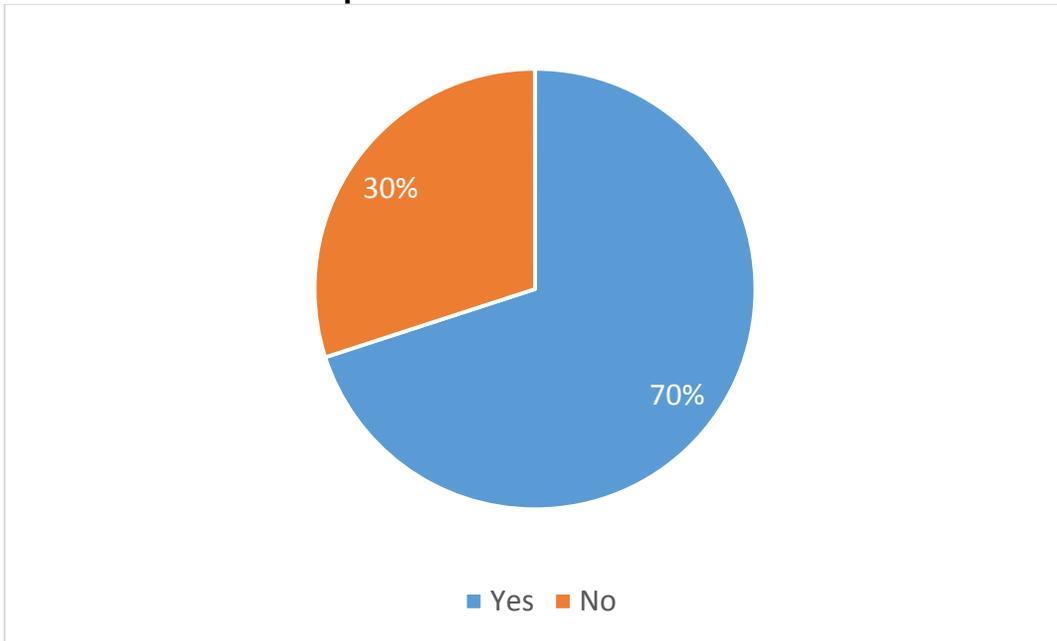
Reasons



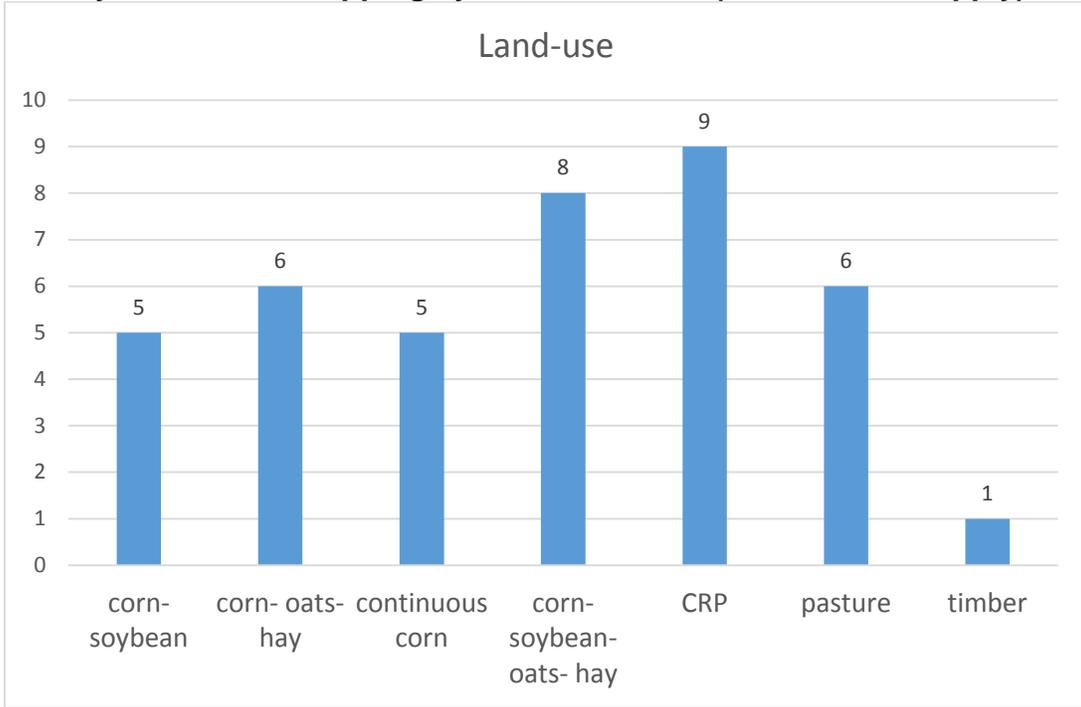
4. Are you the current operator of your farm?



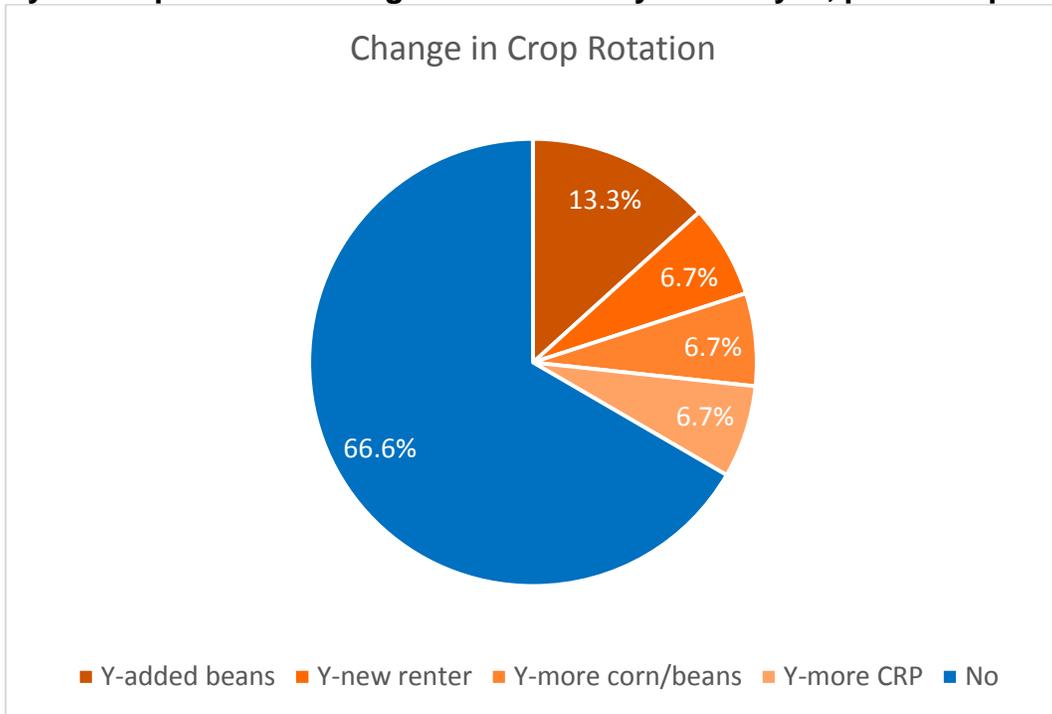
3. If you have a renter for your farm, are you aware of the conservation lease project that the district has implemented the past few years to help landowners/renters incorporate conservation in farm leases?



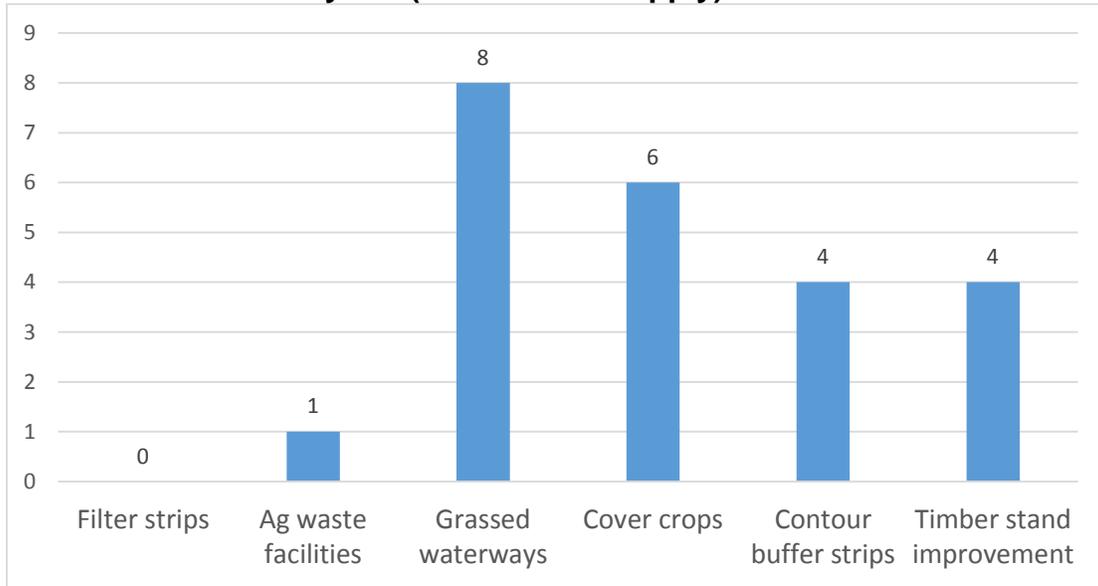
4. What is your current cropping system/land use? (check all that apply)



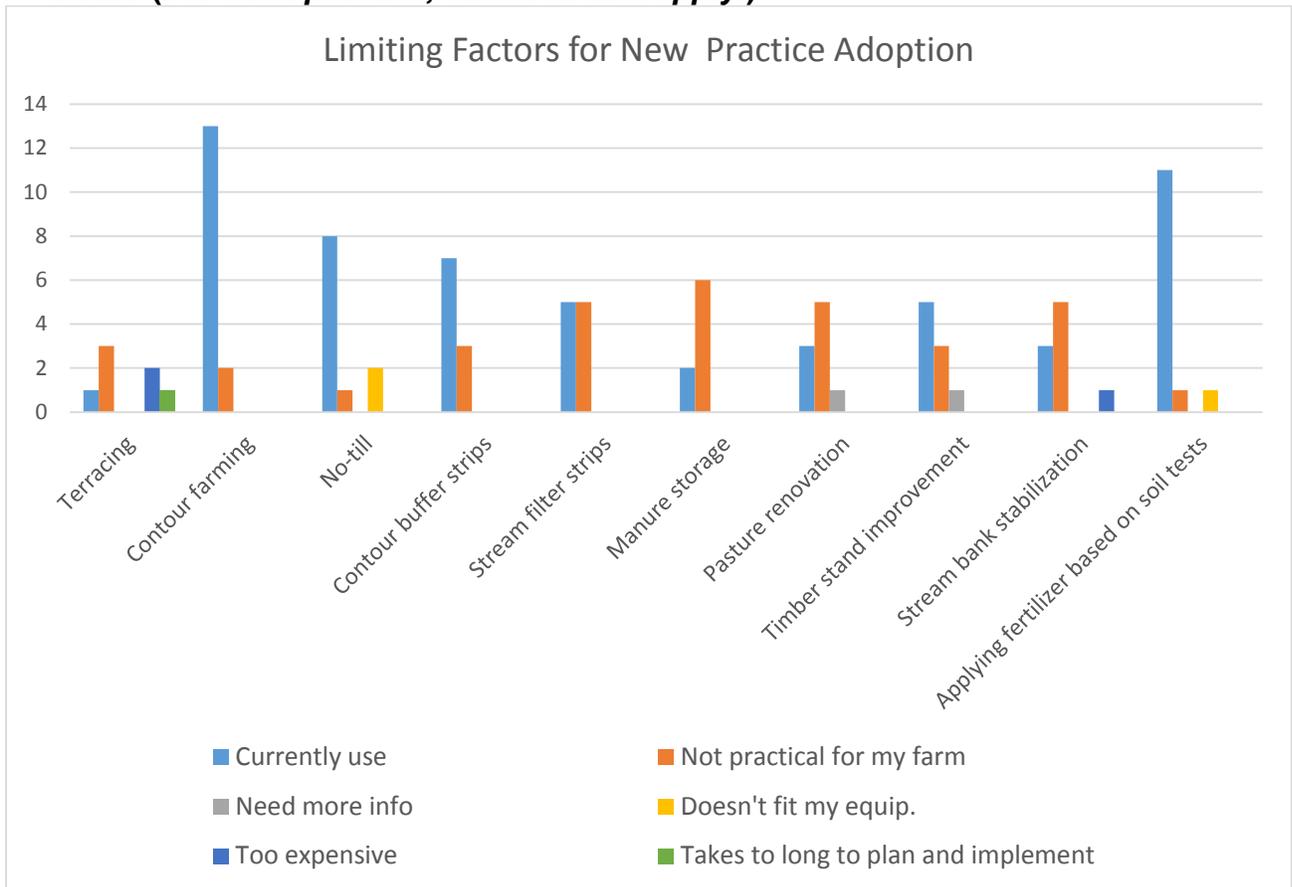
5. Has your crop rotation changed in the last 5 years? If yes, please explain.



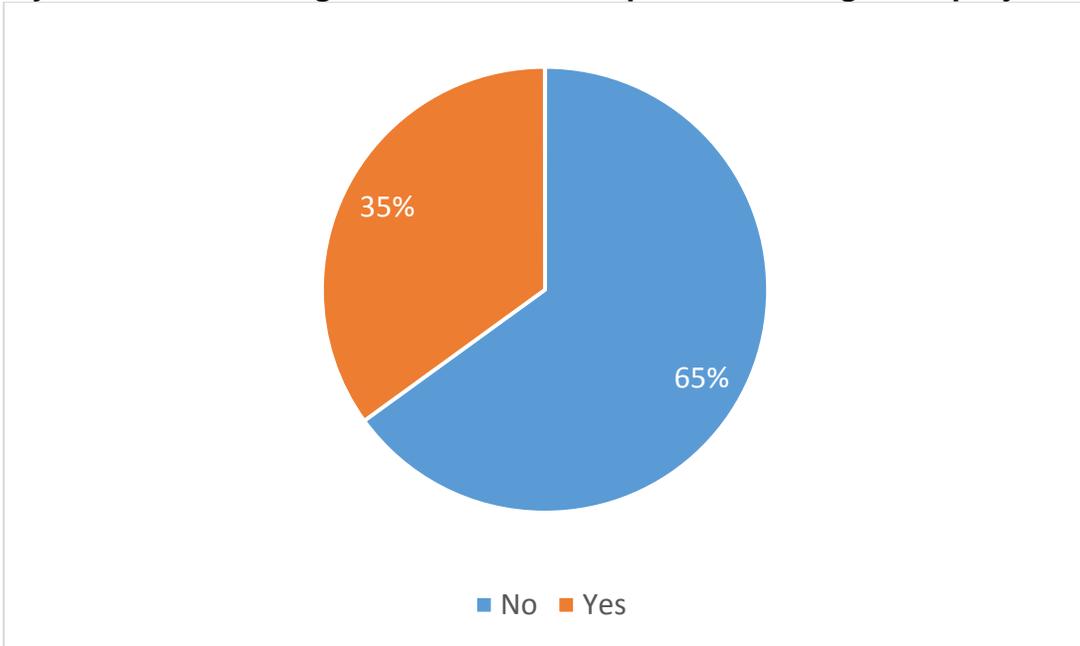
6. Funds were available through this project for terraces, ponds, stream bank stabilization, and pasture management. Are there other conservation practices that interest you? (check all that apply)



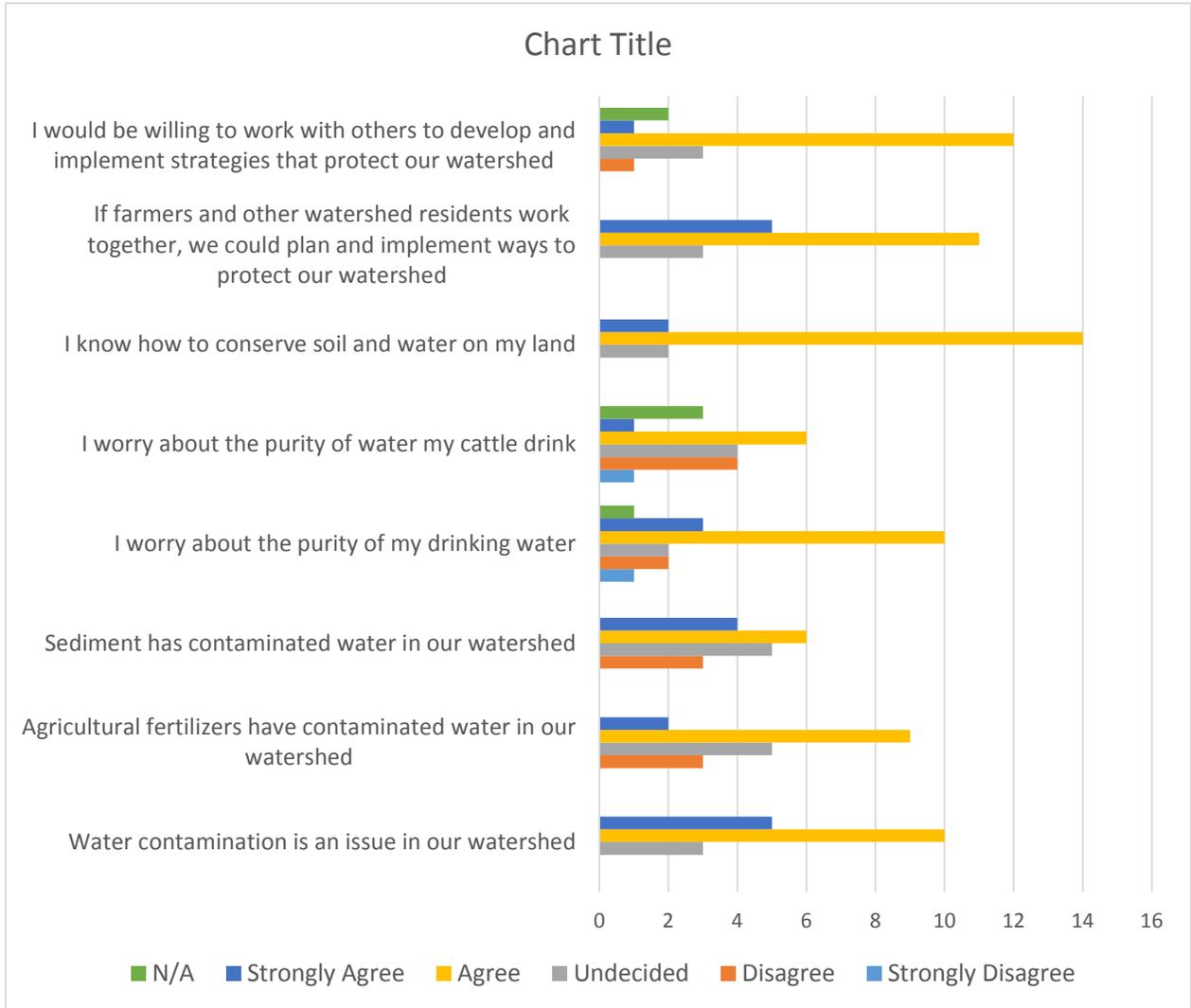
7. What factors *limit* adopting or expanding the following practices on your farm? (For each practice, check all that apply.)



8. Did you receive funding for a conservation practice through this project?



9. Please indicate your level of agreement or disagreement with the following statements.



10. What changes would you suggest for a watershed/water quality project in the future in your watershed or another watershed? What additional comments do you have?

“There should be more strip-cropping and more cover crops. Also less soybeans on the hillsides.”

“Identify the dry gulches that are responsible for stormwater surges and find a way to slow water.”

“More ponds. More hayland.”

“Too many farms have abandoned proven conservation practices. Even basic practices such as contour strips, infield waterways, rotations with alternate strips seeded down are often no longer used.”