IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP

Bill Northey, Secretary of Agriculture

January 31, 2017

Governor Terry E. Branstad
State Capitol
LOCAL

Dear Governor Branstad:

The Watershed Improvement Review Board is pleased to provide this annual report. This report fulfills Iowa Code Section 466A.4. A copy of this report has also been submitted to the Legislature.

The Watershed Improvement Review Board is an appointed body which awards grants for water quality improvement in the state. Eligible applicants include soil and water conservation districts, local watershed improvement committees, public water supply utilities, counties, county conservation boards and cities. These grants are funded through the Watershed Improvement Fund. Funding for these grants comes from annual appropriations and funds from the Animal Agriculture Compliance Fund Penalties.

Statutory changes in 2016 in Chapter 466A have suspended any new activities of the Watershed Improvement Review Board. However, existing projects are allowed to conclude on their own terms. The remaining twenty-five active projects will conclude on or before December 31, 2017.

The Board extends its gratitude to the Governor and the General Assembly for supporting this initiative improving Iowa's water quality and is looking forward to completing existing projects and activities in the upcoming year.

Sincerely,

Jane A. Weber, Chair
Watershed Improvement Review Board

Cc: Bill Northey
Michael Naig
Members, Watershed Improvement Review Board

JAW:JGN

Watershed Improvement Review Board
Calendar Year 2016 Annual Report

The Watershed Improvement Fund and the Iowa Watershed Improvement Review Board (WIRB) were created in 2005. This statute is now codified in Iowa Code Chapter 466A.

The fifteen-member Board conducted six meetings throughout the year in-person or via teleconference. Meetings were held January 20, March 11, June 9, July 15, September 8 and November 16. Attachment 1 lists the board members and their organization affiliation.

Statutory changes were enacted in 2016 affecting the contributions to the Watershed Improvement Fund and the functions and activities of the WIRB. Animal Agriculture Compliance Fund Penalties formerly deposited into the Watershed Improvement Fund are now credited to the Iowa Nutrient Research Fund. In addition, the WIRB is suspended from establishing any new activity, including a project. Existing projects established prior to the statutory changes are allowed to conclude on their own terms. The WIRB will continue to administer ongoing activities, including projects, conducted under Chapter 466A. The remaining active projects will close out by December 31, 2017.

Attachment 2 is a map showing the status of all projects funded since inception of the program. At the end of 2015 there are 127 completed projects and 25 active projects.

In cooperation with the Treasurer of State, the WIRB submitted the 2016 year-end report for the Rebuild Iowa Infrastructure Fund to the Legislative Services Agency and the Department of Management.

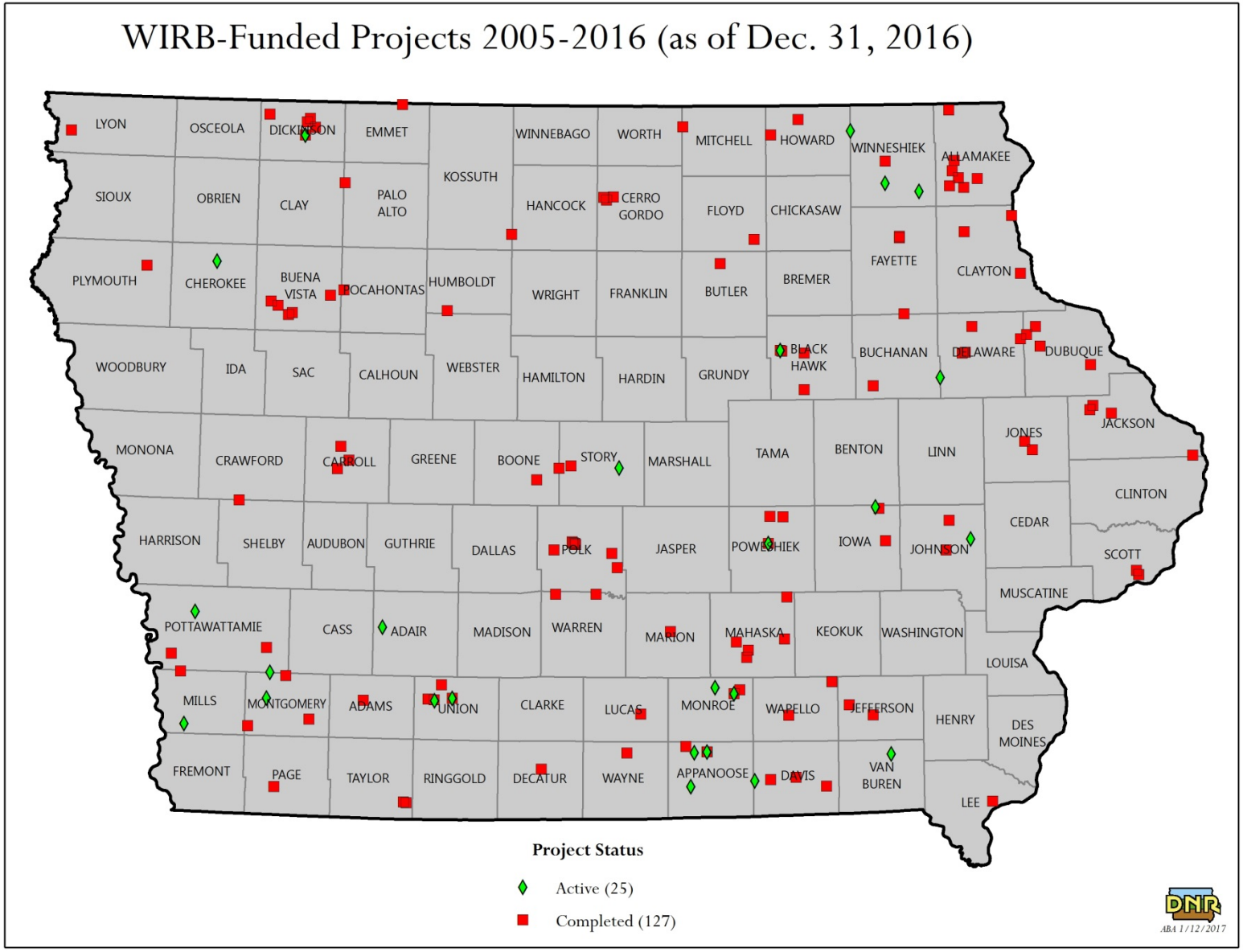
Attachment 3 contains the 2016 annual progress reports submitted from active projects or projects finished in 2016.

Attachment 1. Appointed Members of the Watershed Improvement Review Board

January 1 – December 31, 2016, Iowa Code Chapter 466A

Name	City	Term Ending	Sponsoring Organization
Jane Weber (Chair)	Bettendorf	2018	Soil & Water Conservation Districts of Iowa
Dennis Bogaards	Pella	2017	Iowa Soybean Assn
Larry Gullett	Oxford	2018	Iowa Assn of County Cons Boards
Jake Hansen	Des Moines	2017	Representative of IDALS
Susan Heathcote	Des Moines	2018	Iowa Environmental Council
Steve Hopkins	Des Moines	2017	Representative of DNR
Carrie Keppy	Davenport	2017	Iowa Pork Producers
Carolyn Sweeting (January – April)	Iowa City	2016	Iowa Association of Water Agencies
Molly Toot	Nevada	2018	Agribusiness Assn of Iowa
Lisa Walters (January – April)	West Des Moines	2016	Iowa Rural Water Association
Curt Zingula	Central City	2018	Iowa Farm Bureau
Rita Hart (February – December)	Wheatland	2017	State Senator
David Johnson (January – June)	Ocheyedan	2017	State Senator
Ken Rozenboom (July – December)	Oskaloosa	2017	State Senator
Bruce Bearinger	Oelwein	2017	State Representative
Norlin Mommsen (June – December)	Dewitt	2017	State Representative

Attachment 2. WIRB Project Status December 2016



Attachment 3. 2016 Annual Project Reports Table of Contents

Project Name: 1411-004 Cooper Creek Watershed Project
Project Sponsor: Appanoose Soil and Water Conservation District
Length of Project: April 1, 2015 – December 31, 2017

Counties included in the project area: Appanoose and Wayne Counties

Total Watershed Improvement Funds awarded for this project:	$ 241,000.00
Total Watershed Improvement Funds spent:	$ 62,224.12
Total Watershed Improvement Funds obligated:	$ 100,690.47
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 78,085.41

Project objectives:

- To reduce sediment delivery to Cooper Creek by 2,310 tons/year.
- To reduce phosphorus deliver to Cooper Creek by 3,004 pounds/year
- To raise awareness of urban BMP's through the installation of at least two demonstration practices.

Summary of Accomplishments and Water Quality Outcomes

To date, this grant has obligated/expended funds for 10 grade stabilization structures, 5,394 ft. of terraces and 33 basins. These projects have reduced sediment delivery by 1,258 tons/year and phosphorus loading by 2,619 lbs./year, benefitting 1,408 acres or 25% of the watershed.

Outreach is being provided by semi-annual newsletters to producers, articles in the local newspaper and being at the Appanoose County Fair for a week.

The City of Centerville is in the final designing phase of the Bio-retention cell. Construction will most likely begin in the spring with a field day planned sometime this summer. Our attempts to establish a second Urban project were met with financial barriers from the Seymour community.

Education is an integral part of this grant. The coordinator continues to utilize Iowa State University's Water Rocks! program in the classroom in two school districts. Since purchasing this kit, students have learned about watersheds, bio-diversity and methods on improving soil health just to name a few of the lessons that are being brought into the classrooms.

Project Name: 1416-008 Fox River Watershed Project
Project Sponsor: Davis Soil and Water Conservation District
Length of Project: April 1, 2015 – December 31, 2017

Counties included in the project area: Appanoose, Davis, and Van Buren

Total Watershed Improvement Funds awarded for this project:	$ 130,000.00
Total Watershed Improvement Funds spent:	$ 63,681.11
Total Watershed Improvement Funds obligated:	$ 26,2661.08
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 39,657.81

Project objectives:

- Administer the Fox River Water Quality Improvement Project to ensure all objectives and activities planned are implemented.
- Construct 8 grade stabilization structures on treating 315 acres. Construct 22 water and sediment control basins treating 110 acres. Construct 19,500 feet of terraces treating 497 acres. Install 525 acres of cover crops.
- Reduce sediment delivery to Fox River by 2,058 tons of sediment per year.
- Conduct an information and education program to increase awareness and knowledge of Fox River Watershed water quality issues to watershed residents, and the local community.

Summary of Accomplishments and Water Quality Outcomes

Practice	Unit	Goal	Achieved 2016	Total Achieved to Date	Percent Complete
Grade Stab	No.	8	3	4	50%
W&S Basin	No.	22	11	17	77%
Terrace	Ft.	19,500	14,144	17,949	92%
Cover Crop	Acre	525	476	476	91%

The Fox River Water Quality Project has had a successful year and is well aligned to meet goals by the end of the project. Currently obligated projects include 3 grade stabilization structures, 1,400' of terraces, and 8 water and sediment control basins.

The project coordinator participated in the local schools Ag Day, where various organizations gave presentations to 2^{nd} – 8^{th} grade students. Presentations were meant to education children on the importance of agriculture and how agriculture effects many parts of our everyday lives. The project coordinator also gave presentations to 6^{th} grade students at the annual McGowen Field Day. The rainfall simulator was on site to demonstrate the effects of erosion and the impact that cover crops and soil health has on the land.

The project recently received notification that it's been selected for funding through the Regional Conservation Partnership Program (RCPP). The project submitted the proposal for funding through the National Funding Pool and will be collaborating with the counties in Missouri for the 3 year project. RCPP is contributing about $900,000 to this project and the eight partners are providing $1 million.

Project Name: 1315-006 Gere Creek Watershed
Project Sponsor: Cherokee Soil and Water Conservation District
Length of Project: January 1, 2014 – February 28, 2017

Counties included in the project area: Cherokee County

Total Watershed Improvement Funds awarded for this project:	$ 299,942.00
Total Watershed Improvement Funds spent:	$ 202,884.65
Total Watershed Improvement Funds obligated:	$ 0.00
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 97,057.35

Project objectives:

- Conduct 6 Information and Education activities a year
- Contact 5 landowners monthly to discuss practices
- Reduce sediment loading by 376 tons/year and phosphorous loading by 489 pounds/year

Summary of Accomplishments and Water Quality Outcomes

Despite the loss of two coordinators over the projects three year span, substantial progress was made in the final year.

Preliminary phosphorous and sediment reductions are estimated to be 3 times greater than the project's initial goals. The completion of one grade stabilization structure largely contributed to the reduction numbers, but over 4 miles of terraces and 2.5 miles of waterways were also installed. 700 new cover crop acres, installed between 8 new practice users, also contributed to the reduction.

Many field days and outreach efforts were made for landowners, including cover crop and no-till/strip-till events. A largely successful pollinator habitat field day, which aided new CRP enrollees in the installation and maintenance of new pollinator habitat, was also held to ensure the success of the program within the watershed by teaching landowners techniques and tips. Multiple 4'x2' signs promoting cover crops were also installed within the watershed.

One of the biggest successes of the project's outreach efforts was with landowners, two of whom are now requiring no-till as a stipulation within their lease agreements, thereby eliminating the multiple deep tillage passes that their hundreds of acres would normally receive on a yearly basis. One other landowner/producer has also transitioned from occasionally moldboard plowing to, for the first time, no-tilling beans into a standing rye cover crop, which eliminated his need for a post herbicide application in year one.

Although the project has had many successes, the most notable may be a flood reduction project with the city of Meriden. The city of Meriden was experiencing flooding due to heavy surface runoff from adjacent farm ground during rain events. After working with the farm's owner and city officials, a plan to install terraces on the ground that was shedding water was made and the terraces were installed this fall. No tile was placed in the terraces, so water volume will be reduced significantly.

Many accomplishments were made during the projects three year period; however, there are a number of areas where continued improvement is needed and countless landowners/producers who would be willing to participate if funds were made available.

Project Name: 1335-016 Hickory Grove Lake Watershed
Project Sponsor: Story County Conservation Board
Length of Project: July 1, 2014 – December 31, 2016

Counties included in the project area: Story

Total Watershed Improvement Funds awarded for this project:	$ 223,095.00
Total Watershed Improvement Funds spent:	$ 201,627.29
Total Watershed Improvement Funds obligated:	$ 0.00
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 21,467.71

Project objectives:

- Reduce bacterial loading by providing cost share to replace nine septic systems and eliminate livestock access to 1,640 feet of streambed by providing alternative water sources and fencing the stream.
- Reduce sediment loading by 285.97 tons/year (42.24% of the WMP goal) by reshaping and stabilizing 1,640 feet of streambank, installing grass buffers, and constructing a grade stabilization structure.
- Reduce nitrogen into the lake through the installation of one saturated buffer.

Summary of Accomplishments and Water Quality Outcomes

This year was the conclusion of the Hickory Grove Lake Watershed project WIRB grant. The project had two major improvement areas: septic system upgrades in the lake watershed and work on private property to exclude cattle from a stream and reduce nutrient loading to the lake. Other than the septic system upgrades, the work being conducted on private property is permanently protected through a conservation easement.

The following practices were completed in 2016: upgrades to the remaining three septic systems, completion and monitoring of saturated buffer, and fencing to exclude cattle from the stream. The environmental benefits per practice are as follows: a total of 1.31E + 13 organisms/year *E. coli* reduction and 37.5 lbs./years phosphorus reduction for three septic systems, the saturated buffer has removed 85 lbs. nitrates to date, cattle exclusion reduces bacteria in stream by 2.63×10^{10} organisms. Load reductions were calculated using guidelines set by the Iowa Department of Natural Resources for failing septic systems, which assumes each household is approximately 2.5 persons. The watershed coordinator worked with the IDALS staff to calculate sediment and phosphorous load reductions for the as-built agricultural practices using the IDALS/DNR Pollutant Reduction Calculator.

Several educational and outreach activities were conducted in 2016. Two updates about the grant progress were posted on the projects page of the Story County Conservation website. An additional post was made on social media via our Facebook account. Two presentations were given to special interest groups about the watershed and associated work.

The other partners in the project were: IDNR Lakes Restoration, Story County Conservation, Story County Board of Supervisors, Story County Environmental Health, and Story Soil and Water Conservation District.

Project Name: 1321-010 Hurley Creek McKinley Lake Watershed Project
Project Sponsor: City of Creston
Length of Project: January 2, 2014 to February 28, 2017

Counties included in the project area: Union

Total Watershed Improvement Funds awarded for this project:	$ 299,495.00
Total Watershed Improvement Funds spent:	$ 157,421.92
Total Watershed Improvement Funds obligated:	$ 0.00
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 142,073.08

Project objectives:

- Administer the Hurley Creek Watershed Improvement Project and work with all stakeholders to ensure all objectives and activities planned are implemented as scheduled.
- Educate the public about the Best Management Practices (BMP) and the benefits of work in the watershed.
- Implement wetland restoration (6.9 acres), grass waterways (1,131 feet), and 1 demonstration urban watershed practice (this is revised by amendment). Document the environmental benefits of the practices installed.
- Assist the Hurley Creek Watershed Committee with inventory, evaluation, and water monitoring activities for water quality improvements on Hurley Creek and at McKinley Lake.

Summary of Accomplishments and Water Quality Outcomes

The project started in 2014 and is 36 months old. In the first year, we completed several committee meetings, a public meeting, and a mailing with brochures. We started work on the ledger, plan of work, water monitoring, and engineering/permitting. An engineering contract, a project management contract, and the State's WIRB contract were signed. Work started in 2014 and continued through 2015 on final design, permits, and a project website. Several people have signed up to have a tour of their property for possible urban and/or agricultural practices to be built (buffers, grass waterways, etc.). In the end, no private landowners participated with urban infiltration practices. In December 2015, the engineering firm presented to the City updated design for the wetland piece based on an approach acceptable to the IDNR, ACoE, and FWS permitting agencies. In the summer 2016, the wetland area was bid and construction was completed in December 2016. A rain garden was built in McKinley Park but is not finished because it was too cold to install the native plants. These will be installed by volunteers (high school students and others) next spring, using local funds. The other urban practice was a grass waterway to improve a tributary of Hurley Creek just north of the main wetland area. This also was not complete entirely because the ground froze. Final work will be complete as soon as weather allows and with local funds. Signs will be installed in the spring to educate the public on the projects and their water quality benefits. Each of the three years, water monitoring was completed and results will be reported with the final report. The final closeout of the grant should be on budget and on schedule. Work is still needed in the wetland area and upstream from the site. With an additional $200,000, all phases of the wetland improvement could be accomplished within two years. It took some time to gain momentum but lots of activity has occurred recently, and now, too late, landowners are showing interest.

Project Name: 1413-005 Iowa Great Lakes Watershed Project
Project Sponsor: Dickinson Soil and Water Conservation District
Length of Project: May 1, 2015 to December 31, 2017

Counties included in the project area: Dickinson

Total Watershed Improvement Funds awarded for this project:	$ 84,000.00
Total Watershed Improvement Funds spent:	$ 21,892.00
Total Watershed Improvement Funds obligated:	$ 60,000.00
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 2,108.00

Project objectives:

- **Administration:** Administer the project to ensure all plan of work activities are completed, required reports are submitted in a timely manner, and project partners are kept informed.
- **Information/Education:** Keep watershed stakeholders, lake associations, and leaders informed of project activities and provide educational opportunities for the public through news articles, presentations, and other teaching tools.
- **Implement water quality improvement practices:** Including 20 tile intake treatments, 600 linear feet of shoreline stabilization, three fish barriers, on Center Lake, and one lake renovation fish kill on Center Lake.
- **Improve water quality by reducing sediment delivery to the lake:** Reduce sediment and nutrients deposition to the lake by 173 tons per year of sediment and 361 pound per year of Phosphorous. Conduct a water quality monitoring program May through October to document water quality parameters.

Summary of Accomplishments and Water Quality Outcomes

- **Administration:** All work activities were completed as planned and required reports were submitted in a timely manner. Project partners were kept informed of project activities.
- **Information/Education:** 9 Project signs that show how practices work were commissioned and will be emplaced on 9 project sites in the spring of 2017. Stakeholders, lake associations, and leaders were kept informed of project activities. Five news articles were written and published in newsletters.
- **Implement water quality improvement practices:** Install 6 tile intake treatments (more to be installed if money can be found), 2,045 feet of shoreline stabilization (more shoreline will be treated in the upcoming year), 2 fish barriers were installed (1 more large structure will be installed below Center Lake). No lake Restoration was conducted.
- **Improve water quality by reducing sediment delivery to the lake:** Sediment and Phosphorous were prevented from reaching a lake. Over 167 tons of sediment was prevented from reaching a lake by the practices installed. In addition over 540 pounds of Phosphorous was stopped before it was able to reach a lake each year.

Project Name: 1401-001 Little Bear Creek Watershed Improvement Project
Project Sponsor: Poweshiek Soil and Water Conservation District
Length of Project: May 1, 2015 to December 31, 2017

Counties included in the project area: Poweshiek County

Total Watershed Improvement Funds awarded for this project:	$ 109,736.00
Total Watershed Improvement Funds spent:	$ 39,234.78
Total Watershed Improvement Funds obligated:	$ 23,778.84
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 46,722.38

Project objectives:

- Reduce annual sediment delivery by roughly 1,583 tons and associated phosphorus delivery by 2,058 pounds
- Develop an information and education program aimed at producers and residents within the headwaters of Grant and Malcom townships

Summary of Accomplishments and Water Quality Outcomes

In the last year landowners worked with the Poweshiek County SWCD to complete 3 water and sediment control basins, 5.3 acres of grassed waterways, 13 acres of conservation crop rotation and 209 new acres of cover crops. These practices will treat 1,315.3 acres and they had a total estimated sediment delivery reduction of 504 tons/year and phosphorus reduction of 655.5 pounds/year. An urban landowner completed a 1,198 sq. ft. demonstration permeable paver driveway in Malcom that will treat 2,457 sq. ft. of impervious surface, reduce total suspended solids by 118 pounds and treat 43,284 gallons of stormwater each year. Three additional landowners were approved for fall construction on 4 acres of grassed waterways and 4 water and sediment control basins. Once these practices are completed they will treat 84.1 acres and they will have an additional estimated sediment delivery reduction of 299 tons/year and phosphorus reduction of 389 pounds/year. Iowa Financial Incentive Program (IFIP), Environmental Quality Incentive Program (EQIP), Water Quality Initiative (WQI) and Resource Enhancement and Protection (REAP) were all programs used along with WIRB to provide cost share to the landowners.

In the first 8 months of the project 3 landowners completed 327.2 acres of cover crops, and 2 landowners re-enrolled 43 acres in the Conservation Reserve Program (CRP). These practices will treat 550.2 acres and improve water quality by reducing sediment delivery by an estimated 221 tons/year and phosphorus by an estimated 290 pounds/year in Malcom Township. One of these landowners received cost share through EQIP and the other landowners completed the cover crops on their own. The approved and completed projects to-date will treat 1,949.6 acres and provide a total estimated sediment delivery reduction of 1,024 tons/year and phosphorus reduction of 1,334.5 pounds/year, which is 65% of the SWCD goal.

The project coordinator also assisted the City of Grinnell with a State Revolving Fund (SRF) Water Resource Restoration Sponsored Projects application. The application was approved for $1 million to go toward sponsored projects per the $10 million wastewater loan. The city is considering rain gardens and permeable paver projects within the watershed in addition to an 11,313 sq. ft. permeable paver practice already started in Central Park this fall.

Project Name: 1323-011 Little Lick Creek Watershed Project
Project Sponsor: Van Buren Soil and Water Conservation District
Length of Project: July 1, 2014 through June 30, 2017

Counties included in the project area: Van Buren

Total Watershed Improvement Funds awarded for this project:	$ 270,762.00
Total Watershed Improvement Funds spent:	$ 81,939.07
Total Watershed Improvement Funds obligated:	$ 82,983.48
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 105,839.45

Project objectives:

- Establish 1,000 acres **of cover crops** to protect soil quality and reduce storm water driven phosphorous loading as well as demonstrate nitrogen management benefits.
- Establish 7 **grade stabilization structures** to protect 560 high priority acres and trap 4,480 tons of sediment and 5,824 lbs. of Phosphorous per year.
- Establish 6 **water and sediment control basins** to protect 210 high priority acres and trap 1,512 tons of sediment and 1,965 lbs. of Phosphorous per year.
- Establish 6,000 feet of **terraces** to protect 60 high priority acres and prevent the loss of 1,512 tons of sediment and 156 lbs. of Phosphorous per year.
- Establish 10 acres of **wildlife habitat and native perennial vegetation** in critical CRP areas to increase water infiltration and reduce soil erosion.

Summary of accomplishments and water quality outcomes

On 6/16/16, The Little Lick Creek Project requested transfer of funds from salary to Grade Stabilization Structures. We have completed 2 grade stabilization structures and obligated 4 additional grade stabilization projects with funds transferred. These additional 4 structures are scheduled to be completed by June 30, 2017.

The project has completed 6 water and sediment control basins treating 40 acres and increasing the environmental benefits of the project by 7,880 tons of sediment reduction annually and 9,644 lbs. of phosphorous annually with the additional practices completed by the funds transfer.

On-farm contacts targeting livestock producers and landowners farming less productive rolling ground utilizing NRCS cover crop handouts and information has created little or no interest. The main concern being an added expense they could not afford, and increased use of herbicides.

The CP-42 program and buffer initiative has been popular within the watershed with approximately 200 acres being enrolled with will greatly enhance upland wildlife habitat. Pheasants Forever (PF) Farm Bill Biologists and PF native grass seed program are contributing to the success and interest in this program.

Project Name: 1328-013 Miller Creek Phase III Nutrient & Sediment Reduction Project
Project Sponsor: Monroe Soil and Water Conservation District
Length of Project: July 1, 2014 to June 30, 2017

Counties included in the project area: Monroe County

Total Watershed Improvement Funds awarded for this project:	$ 216,489.00
Total Watershed Improvement Funds spent:	$ 147,575.00
Total Watershed Improvement Funds obligated:	$ 10,422.01
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 58,491.99

Project objectives:

- Install BMP's aimed at trapping, treating and tying up phosphorus and nitrate loads in surface water entering Miller Creek using grade stabilization structures, sediment basins and terraces benefitting an estimated 176 acres of high priority land.
- Maximize nutrient efficiency with soil sampling to gain knowledge of nutrient levels
- Improve soil health with cover crops @240ac/year/ for 3 years benefitting 720 acres.
- Implement nutrient mgt. practices in high priority areas based on the 4R concept utilizing soil sampling & nitrate testing methods to ensure proper applications.

Summary of Accomplishments and Water Quality Outcomes

In September due to funding for Water Sediment Control Basins being exhausted, the District requested the WIRB Board amend agreement 1328-013 to allow excess dollars from Late Spring Nitrate Test (LSNT) Fall Stalk Nitrate Test (FSNT), Soil Grid sampling and the Denitrification Bioreactor to be moved to Water Sediment Control Basins. A total of $15,877.06 was transferred in FARMS to allow for 23 additional basins to be installed.

The District offered both nutrient management and sediment reduction practices. The nutrient management practices were tools that producers could build better management plans upon. The tools comprised of various field tests such as the LSNT, FSNT and Soil Grid Sampling. These were offered as 50% cost-share in which many producers felt the amounts too low and not worth their time nor effort. Feedback was that, these tools should be offered as higher incentives vs. cost-share would encourage producers to implement and continue them in the future. Obtaining these samples was difficult due to timing and weather patterns. Late Spring Nitrate Test for example, had a very narrow window to complete because of timing when soil conditions were adequate when the corn height was between 6 to 12 inches. Early spring was optimal for planting corn but then at the end of May through June soil was extremely saturated. Taking fall stalk nitrate samples also posed a challenge. Stalks need to be taken when most kernels on the ear are in the black layer stage and that is usually when producers are also chopping. As more application requests came in it was clear that producers' interests were greater for sediment reduction practices than nutrient management practices with the exception of cover crops.

Even with water & sediment control basins being of greater interest, the District was still able to meet its goals in terms of the number of producers participating and the number of acres enrolled. As for basins, the district was able to come close to meeting the agreement's goals but still fell short due to inadequate funding, more demand and duration of the project to short.

Project Name: 1320-009 Mosquito Creek Watershed Project
Project Sponsor: West Pottawattamie Soil and Water Conservation District
Length of Project: January 1, 2014 - February 28, 2017

Counties included in the project area: Pottawattamie

Total Watershed Improvement Funds awarded for this project:	$ 279,811.00
Total Watershed Improvement Funds spent:	$ 125,807.00
Total Watershed Improvement Funds obligated:	$ 3,095.00
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 150,909.00

Project objectives:

- Reducing runoff and thus delivery of nutrients, sediment and other pollutants.
- Reduce intermittent flooding in the cities of Neola and Underwood.
- To educate residents of the watershed on how their actions and land use practices affect watershed health.
- Promote the Iowa Nutrient Reduction Strategy; Federal, State, SWCD cost share programs; and State Revolving Fund loans

Summary of Accomplishments and Water Quality Outcomes

In addition to the totals above, there was $67,807 spent on conservation practices from other funding sources; IFIP, REAP, LOST. Landowners have spent $84,274.

An assessment, and application for Publically Owned Lakes Grant Funds for Arrowhead Pond Watershed was made this year and grant funds were awarded in July. Arrowhead Pond Watershed is a subwatershed of Neola Creek Watershed within the project area.

Cumulative loading reductions for terraces and basins:
Sediment – 8,579 T/yr.
Phosphorous – 11,155 lbs/yr.

Project Name: 1330-014 Rapid Creek Watershed Project
Project Sponsor: Johnson Soil and Water Conservation District
Length of Project: July 1, 2014- June 30, 2017

Counties included in the project area: Johnson County

Total Watershed Improvement Funds awarded for this project:	$ 247,650.00
Total Watershed Improvement Funds spent:	$ 123,810.39
Total Watershed Improvement Funds obligated:	$ 57,060.79
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 66,778.82

Project objectives:

- Implement water quality initiative BMPs to reduce nutrient delivery to Rapid Creek
- Reduce sediment delivery by 2,103 tons/year or 21%
- Reduce phosphorus by 2,734 lbs/year or 21%
- Reduce/ limit livestock access by 10% or 1 mile
- Increase water quality by implementing infiltration practices

Summary of Accomplishments and Water Quality Outcomes

The Rapid Creek Watershed Project saw continued progress in its goals to reduce the loss of soil and nutrients from landscapes within the Rapid Creek watershed. 2016 practices included installation of 1 basin, 1 grade stab structure, 24.3 acres of waterways, and seeding of 97 acres of CRP and nearly 1,005 acres of cover crops.

As a result of practices funded in the Rapid Creek watershed since the beginning of the project, sediment and phosphorus loading was reduced by 979.12 tons/year and 1,275 lbs./year, respectively. Sediment reductions account for 46.6% of the total contract goals and phosphorus reductions account for 46.6% of the total contract goals.

This was a busy year for education for watershed landowners and farmers, including four events covering topics on cover crops, soil health, rotational grazing and nutrient management, as well as a new watershed newsletter. On March 1st the project partnered with Iowa Learning Farms and Practical Farmers of Iowa to discuss management of cover crops in the spring season with 70 participants. In the June Cover Crop workshop, nearly 50 people participated to learn more about the benefits of cover crops on soil health. Partners included the Iowa Soybean Association and Iowa Learning Farms. The September Monoslope Tour and Rotational Grazing Field Day had 30 participants who toured a facility based in the watershed and learned about grazing cover crops. Last, the November Nitrogen Management meeting included 5 participants who learned about nitrogen rates and efficiency in a corn-SB rotation. Additionally, in June over 800 newsletters were distributed to watershed residents providing updates on the project and information on specific practices and cost share availability.

The paired watershed monitoring study with Keith Schilling and the University of Iowa will continue to provide valuable, detailed information on the response of water quality to climatic events. The current agricultural economic environment continues to limit conservation implementation for some producers. Efforts will continue in 2017 to establish and educate landowners/operators on conservation practices in the watershed through the end of project funding and beyond.

Project Name: 1103-002 Rathbun Lake Special Project: BMPs for Priority Land in Targeted Sub-Watersheds 2011
Project Sponsor: Rathbun Land and Water Alliance
Length of Project: March 1, 2012 to February 28, 2017

Counties included in the project area: Lucas and Wayne

Total Watershed Improvement Funds awarded for this project:	$ 125,300.00
Total Watershed Improvement Funds spent:	$ 87,943.19
Total Watershed Improvement Funds obligated:	$ 0.00
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 37,356.81

Project Objectives:

- Apply best management practices for priority land that will reduce annual sediment and phosphorus delivery to Rathbun Lake by 1,050 tons and 3,490 pounds respectively
- Conduct geographic information system analysis, water quality monitoring, and watershed outreach activities to support the application of best management practices for priority land
- Perform all administrative requirements as per grant agreement and approved application

Summary of Accomplishments and Water Quality Outcomes

Rathbun Land and Water Alliance members and partners used geographic information systems and field work to identify priority land owned and/or farmed by landowners in the Upper and Lower Dick Creek and Chariton River #4 and #8 targeted sub-watersheds. The Alliance has assisted fourteen landowners plan and apply best management practices for 681 acres, approximately 340 acres of which was priority land. These practices will reduce sediment and phosphorus delivery to Rathbun Lake by an estimated 1,238 tons and 7,190 pounds per year respectively. Practices applied by landowners included terraces, water and sediment control basins, grade stabilization structures, and the conversion of priority cropland to grassland. The Alliance continued to contact landowners in the targeted sub-watersheds to help them evaluate the need for, and benefits of, applying practices for the priority land that they own and/or farm.

The Alliance's outreach efforts included: continued focus on one-on-one, on-farm contacts with landowners; landowner recognition as *Rathbun Lake Protectors* at the *2016 Protect Rathbun Lake* meeting, bringing the number of individuals selected as *Protectors* to 62; interviews of *Protectors* on WHO radio; installed *Rathbun Lake Protectors* signs; articles on *Protectors* in Wallaces Farmer; 22 *Protectors* have now received the Governor's Iowa Farm Environmental Leader Award; visits and tours for Iowa's Environmental Protection Commission and NRCS State Conservationist; displays for Iowa Water Conference, Water Utility Day, and RAGBRAI; assist Iowa Soybean Association with article about landowners' efforts to protect Rathbun Lake; newsletters for Alliance members and partners; and the Alliance's Internet site at http://www.rlwa.org/ . Alliance partners also completed activities associated with the water quality monitoring program for Rathbun Lake and tributaries in the lake's watershed.

Alliance members and partners worked with the project's team of experts to plan, carry out, and assess activities. The Alliance's board and team members regularly reviewed progress in project implementation. The Alliance submitted required project progress reports and financial ledgers.

Project Name: 1318-007 Rathbun Lake Special Project: BMPs for Priority Land in Targeted Sub-Watersheds 2013
Project Sponsor: Rathbun Land and Water Alliance
Length of Project: January 1, 2014 to February 28, 2017

Counties included in the project area: Appanoose, Lucas, and Wayne

Total Watershed Improvement Funds awarded for this project:	$ 144,000.00
Total Watershed Improvement Funds spent:	$ 54,672.67
Total Watershed Improvement Funds obligated:	$ 0.00
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 89,327.33

Project Objectives:

- Apply best management practices for priority land that will reduce annual sediment and phosphorus delivery to Rathbun Lake by 1,500 tons and 5,000 pounds respectively
- Conduct geographic information system analysis, water quality monitoring, and watershed outreach activities to support the application of best management practices for priority land
- Perform all administrative requirements as per grant agreement and approved application

Summary of Accomplishments and Water Quality Outcomes

Rathbun Land and Water Alliance members and partners used geographic information systems and field work to identify priority land owned and/or farmed by landowners in the Middle Wolf Creek #1 and South Fork Walker Branch targeted sub-watersheds. The Alliance assisted five landowners plan and apply best management practices for 195 acres, approximately 100 acres of which was priority land. These practices will reduce sediment and phosphorus delivery to Rathbun Lake by an estimated 354 tons and 1,573 pounds per year respectively. Practices applied by landowners included terraces, water and sediment control basins, and grade stabilization structures. The Alliance continued to contact landowners in the targeted sub-watersheds to help them evaluate the need for, and benefits of, applying practices for the priority land that they own and/or farm.

The Alliance's outreach efforts included: continued focus on one-on-one, on-farm contacts with landowners; landowner recognition as *Rathbun Lake Protectors* at the *2016 Protect Rathbun Lake* meeting, bringing the number of individuals selected as *Protectors* to 62; interviews of *Protectors* on WHO radio; installed *Rathbun Lake Protectors* signs; articles on *Protectors* in Wallaces Farmer; 22 *Protectors* have now received the Governor's Iowa Farm Environmental Leader Award; visits and tours for Iowa's Environmental Protection Commission and NRCS State Conservationist; displays for Iowa Water Conference, Water Utility Day, and RAGBRAI; assist Iowa Soybean Association with article about landowners' efforts to protect Rathbun Lake; newsletters for Alliance members and partners; and the Alliance's Internet site at http://www.rlwa.org/ . Alliance partners also completed activities associated with the water quality monitoring program for Rathbun Lake and tributaries in the lake's watershed.

Alliance members and partners worked with the project's team of experts to plan, carry out, and assess activities. The Alliance's board and team members regularly reviewed progress in project implementation. The Alliance submitted required project progress reports and financial ledgers.

Project Name: 1319-008 Silver Creek Watershed
Project Sponsor: Howard Soil and Water Conservation District
Length of Project: January 1, 2014 to February 28, 2017

Counties included in the project area: Howard and Winneshiek

Total Watershed Improvement Funds awarded for this project:	$ 240,000.00
Total Watershed Improvement Funds spent:	$ 178,400.00
Total Watershed Improvement Funds obligated:	$ 0.00
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 61,600.00

Project objectives:

- Construct 6 manure structures to reduce open lot runoff and improve management of manure application.
- Limit livestock access to Silver Creek and its tributaries.
- Reduce bacteria loading by breaking the delivery network on the most critical areas.
- Reduce bacteria loading from failing septic systems.

Summary of Accomplishments and Water Quality Outcomes

This was a very productive year for the Silver Creek Project. In January WIRB funds were distributed for an ag waste project. The 175 head dairy farm had no storage prior to the completion of this project and manure was applied to the land year round. Now they will have 6 months of storage. A 4th ag waste will break ground this summer for a 250 head dairy operation. This project will utilize EQIP and 319 funds. It was hoped to leverage WIRB funds for this project but due to the slow pace of EQIP program implementation the project will not break ground until after the WIRB grant expires. A new practice has been added to the list available to reduce bacteria levels. IA DNR 319 will now fund 10 upgrades of outdated unpermitted private septic systems in the watershed in FY17. Three septic systems are approved to be replaced in FY17 with 50% cost share. The SWCD was awarded a special EQIP funding for FY17. Silver Creek is one of 3 watersheds in Iowa's drift less region now eligible to compete for up to $1 million. With this opportunity we have 12 applications that will target streambank stabilization and cover crops on acres where corn silage is removed. Critical areas along the stream corridor have been targeted for enrollment in CRP. In FY16 over 300 ac. were enrolled and already in FY17 we have 250 acres enrolled. In addition 600+ acres of cover crops and no-till/strip-till were completed using EQIP and IFIP funds. Water samples were pulled biweekly for bacteria. We sampled for 7 parameters using IOWATER protocol with supplies paid for by the SWCD. Seven public events showcased the project. Governor Terry Branstad was invited to tour one of the new ag waste projects and dairy farm on June 24th. It was covered on the KIMT TV nightly news. On June 30, three landowners were interviewed by KIMT TV for a feature on conservation practices. Secretary of Agriculture Bill Northey also toured a livestock facility located in the watershed. Howard SWCD is pleased with the progress in the watershed and interest remains high. By leveraging WIRB dollars with other funding sources we have been able to accomplish additional projects, but due to limited funds from EQIP, 319 and WSPF more interest in practices exits than funding is available. The District has submitted a 319 application for a two year extension of the Silver Creek Project beyond FY17 to allow for more time to accomplish our goals.

Project Name: 1414-006 Twelve Mile Lake Watershed
Project Sponsor: Union Soil and Water Conservation District
Length of Project: April 1, 2015 – December 31, 2017

Counties included in the project area: Adair and Union

Total Watershed Improvement Funds awarded for this project:	$ 143,145.00
Total Watershed Improvement Funds spent:	$ 35,309.82
Total Watershed Improvement Funds obligated:	$ 37,275.00
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 70,560.18

Project objectives:

- Implement 5 grade stabilization structures, 4 sediment control basins, 35,000' terraces, and 2 acres of waterways to reduce sediment delivery by 1361 tons, and phosphorus delivery by 1769 pounds.
- Contact 10 landowners each year to discuss implementation of practices.
- Conduct 2 Information and Education activities per year and conduct cover crop demonstration and promote use of cover crops to producers in the watershed.

Summary of Accomplishments and Water Quality Outcomes

Practices: In the last 2 years, 6 acres of waterways and 27,830' of terraces were installed on 5 different landowners' farms. Three hundred and forty acres of crop ground that drains directly into the lake was enrolled into the pollinator CRP program which will provide wildlife habitat as well as prevent soil and nutrient runoff. Seventy acres of crop ground were converted to pasture. Two producers seeded 110 acres of cover crops—they were first time users. Funds are obligated for two farmers to install 1 grade stabilization structure, 1 water and sediment control basin, and 1400' terraces in the spring of 2018.

Contacts: Ten landowners either had farm visits or office visits (or both) to discuss conservation practices and land use on their farms.

Information and Outreach: An update on the 12-Mile Lake project was published in the *Creston News Advertiser* in February. A display about the 12-Mile project and water quality was set up for several days at the Union County Fair. We also asked the Iowa Learning Farm's Conservation Station to stop at the fair for a day.

Outcomes: The conservation practices installed will reduce the sediment loading of the water-source lake by 1,142 tons per year and the phosphorus load by 878 pounds per year which is about 2/3 of our goal. Funding for these practices was obtained from the WIRB, Public Owned Lakes, Conservation Reserve Program, and landowner contribution. Producers' mindsets are beginning to change. Until this year, cover crops had not been used anywhere in the watershed in at least the last 20 years. It took 2 to 3 years of exposing farmers to information about the benefits of cover crops and following up with them before a couple decided to try. With a couple more years and funding for cost share, others in the watershed may be open to trying cover crops or switching to no-till.

Project Name: 1407-003 University Branch Dry Run Creek Watershed Project
Project Sponsor: City of Cedar Falls
Length of Project: April 17, 2015 – December 31, 2017

Counties included in the project area: Black Hawk

Total Watershed Improvement Funds awarded for this project:	$ 250,000.00
Total Watershed Improvement Funds spent:	$ 33,197.12
Total Watershed Improvement Funds obligated:	$ 142,358.03
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 74,444.85

Project objectives:

- Stabilize the toe and banks of 1170 lineal feet of stream
- Reduce sediment loading by 42.3 tons/year
- Treat adjacent parking lot runoff through a permeable pavement section
- Continue to achieve Public Education and Outreach components

Summary of Accomplishments and Water Quality Outcomes

During the spring, three building structures were removed to prepare for the streambank restoration project.

Construction on the streambank project started in August 2016 with placement of permeable pavers. Upon completion of the pavers, the streambank was graded/stabilized with rip rap and stone weirs. These permeable pavers will treat adjacent parking lot storm water runoff.

In October 2016, Merner Avenue was closed for the box culvert replacement. This process took approximately 6 weeks to complete. Currently the contractor is placing the safety railing on the box culvert and plans to finish by the end of the calendar year.

Remaining streambank work will be completed when weather is suitable for excavation and placement of rip rap.

Project Name: 1331-015 Walnut Creek Watershed Project
Project Sponsor: Montgomery Soil and Water Conservation District
Length of Project: July 1, 2014- June 30, 2017

Counties included in the project area: Montgomery and Pottawattamie

Total Watershed Improvement Funds awarded for this project:	$ 300,000.00
Total Watershed Improvement Funds spent:	$ 295,282.71
Total Watershed Improvement Funds obligated:	$ 1,680.00
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 3,037.29

Project objectives:

- Educate landowners and operators on Nutrient Reduction Practices
- Demonstrate and install Nutrient Reduction Practices in accordance with goals set forth in the grant.

Summary of Accomplishments and Water Quality Outcomes

The year 2016 was a great year for the Walnut Creek Watershed project. Nutrient reduction practices have started to take hold and traditional structural practices, which have been a mainstay in the project continued as normal. In order to accelerate the adoption of cover crops the district decided to arrange the purchase of seed and aerial application for landowners if they so choose. The program was very popular, having 26 landowners sign up for the program for a total of 2,645 acres which was flown on in one morning on September 14th. This fall was perfect weather and all the stands look excellent. Drilled and aerial acres totaled 3,922.4 for 2016, far surpassing last year's total of 635 acres. Terrace construction was also excellent with a total of 68,371 feet constructed in the watershed with all funding sources. Overall we were very pleased with project progression.

Education activities conducted included two watershed field days, a newsletter, and a booth at the county fair. A new cover crop plot was started at the Jim Bourn farm which showcased interesting alternatives to a traditional corn bean rotation. Next year we hope to experiment with companion crops as well.

Funding for this year came from WIRB, WQI, and other sources such as EQIP. WIRB funding is basically all spent for this grant with only a few thousand dollars remaining, mostly in the information and education line item. Funding for practices was also all spent in the WQI pot but we were able to transfer administrative monies to hopefully keep us going another year.

We are really looking forward to this spring when all of our cover crop acres begin to turn green again!

Project Name: 1402-002 Waubonsie Creek Watershed Project
Project Sponsor: Mills and Fremont Soil & Water Conservation Districts
Length of Project: April 1, 2015-December 31, 2017

Counties included in the project area: Mills and Fremont Counties

Total Watershed Improvement Funds awarded for this project:	$ 250,000.00
Total Watershed Improvement Funds spent:	$ 17,193.16
Total Watershed Improvement Funds obligated:	$ 14,058.80
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 218,748.04

Project Objectives

1) To reduce the amount of sediment produced by gully erosion by 3,088 t/yr using grade control structures.
2) To reduce the amount of sediment produced by sheet and rill erosion by 367 t/yr using terraces, waterways, no-till hay establishment, cover crops, contour grass strips, and filter strips.

Summary of Accomplishments and Water Quality Outcomes

One Mills County Road Grade Control Structure completed. Two terrace projects have been completed. Six basin projects are approved and are in various stages of survey, design, or construction. One waterway project was completed. One more basin is surveyed and designed and awaits approval.

The project has exceeded the goal for reducing the amount of sediment produced by sheet and rill erosion. WIRB funded and privately funded projects completed to date, combine for a total sediment load reduction of 446 t/yr, or 122% of the project goal.

The project has exceeded the goal for reducing the amount of sediment produced by gully erosion by 3,088 t/yr using grade control structures. The Mills County Road Grade Control Structure alone is responsible for a 3,904 t/yr sediment load reduction, or 126% of the project goal. Pending grade control structure projects will only add to this total.

The sediment load reductions described above result in an annual phosphate load reduction of 6,546 pounds.

Project Name: 1312-005 West Fork Middle Nodaway River Watershed
Project Sponsor: Adair Soil and Water Conservation District
Length of Project: January 1, 2014 – February 28, 2017

Counties included in the project area: Adair and Cass Counties

Total Watershed Improvement Funds awarded for this project:	$ 298,563.00
Total Watershed Improvement Funds spent:	$ 201,075.13
Total Watershed Improvement Funds obligated:	$ 0.00
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 97,487.87

Project objectives:

1) To reduce the amount of sediment produced by gully erosion using grade control structures.
2) To reduce the amount of sediment produced by sheet and rill erosion using terraces, waterways, no-till hay establishment, cover crops, contour grass strips, and filter strips.

Summary of Accomplishments and Water Quality Outcomes

- The West Fork of the Middle Nodaway Watershed Project was well received.
- This project will end in February. I feel it deserves more time, due to the fact that the first six months were spent "learning the ropes". If given more time, we could use the remaining WIRB money for practices that could make a difference in this area.
- We have put in; 1,766 ac of cover crops, 5 grade stab structures, 12,455 ft. of terraces, 9.25 ac of waterways, 10.4 ac of filter strips, 128 CRP acres, a culvert outlet structure.
- The project exceeded its goals for erosion control and for cumulative loading reductions.
  1) Three year goal for sediment reduction was **2,500 t/yr**. – result is **6,934.14 t/yr.**
  2) Three year goal for phosphorus reduction was **3,250 lbs/yr.** – result is **5,802 lbs/yr.**
- The priority area was just one of four sub-watersheds in the WFMNR watershed.
  1) Several landowners in the remaining 3 sub-watersheds have expressed interest in putting Best Management Practices (BMPs) on their farms.
  2) This watershed has potential for putting more practices on the ground that will help with erosion control and water quality. If given the opportunity to receive more funding, I think we could make an impact on the environment in these areas.

Total Funds Expended by Source

Funding Source	Totals	% of Total	Application %
WIRB	$201,075.13	33%	39%
Adair SWCD	$20,736.84	3%	3%
Hungry Canyons	$57,467.27	9%	9%
Adair Secondary Rds.	$17,667.02	3%	1%
EQIP	$56,705.79	9%	8%
IFIP	$62,370.16	10%	11%
CRP	$21,770.00	4%	11%
WPF	$17,721.31	3%	0%
Other (1)	$12,490.00	2%	0%
Recipient	$143,811.68	24%	17%

Project Name: 1301-001 Yellow River Headwaters Watershed
Project Sponsor: Winneshiek Soil and Water Conservation District
Length of Project: January 1, 2014 thru February 28, 2017

Counties included in the project area: Winneshiek and Allamakee

Total Watershed Improvement Funds awarded for this project:	$ 300,000.00
Total Watershed Improvement Funds spent:	$ 113,021.72
Total Watershed Improvement Funds obligated:	$ 0.00
Watershed Improvement Fund unobligated balance as of 12/31/2016:	$ 186,978.28

Project objectives:
Goal 1: Decrease sediment delivery to the YRHW by 50% over the next 3 years.

- **Objective I:** Work with landowners in targeted areas of the YRHW to implement the most effective BMPs to reduce sediment delivery to the stream, thus reducing impact to water quality to the stream

Goal 2: Decrease bacteria loading to the YRHW by 35% over the life of the project.

- **Objective 1:** Work with landowners in the YRHW to implement BMPs to reduce bacteria run-off from open feedlots, change grazing techniques and work on updating/improving septic systems function to reduce bacteria loading

Goal 3: Reduce livestock access to the stream by 75% over the life of the project.

- **Objective 1:** Work with landowners in the YRHW to restrict livestock access to the stream.

Objective 4: Increase the culture of conservation among landowners in the YRHW.

- **Goal 1:** Highlight producer's contributions and investment into project participation and promotion of conservation participation.

Summary of accomplishments and water quality outcomes

The Yellow River Headwaters Water Quality project has been ongoing since 2009. Motivated partners including WIRB, producers and landowners in the watershed have invested over $1.4 million (WIRB 8%) into stewardship practices throughout the project. Best Management Practices installed this past year have resulted in the reduction of 1,318 t/y of sediment and 1,714 lbs. of phosphorus from being loaded in the Yellow River annually. Continued focusing of limited resource dollars to BMP implementation allows the project to specifically highlight the completion projects within the watershed such as 1.5 miles of corridor fencing that will utilize a rotational grazing system that it compliments. A total of 8.5 acres of Use Exclusion filters were implemented; these filter strips ensure pasture or manure applied cropland stormwater washoff has the capability to be strained through a vegetative material such as halyland, native grasses or tree plantings. An additional 501.9 acres of cover crop was seeded to protect cropland and increase soil health that will coincide with the already utilized cover crop acres within the watershed this past calendar year. A livestock open lot that was over 3 acres in size was closed and replaced by a monoslope complete confinement system that will reduce 1.1E+12CFU Daily of bacteria loading. The enthusiastic willingness of the producer to install practices this far into a project illustrates the grassroots support towards the long-term success of the watershed project.