EPA SECTION 319 NON-POINT SOURCE POLLUTION WATERSHED IMPLEMENTATION PROJECT

FINAL REPORT

LAKE POCASSE/LAKE CAMPBELL WATERSHED IMPLEMENTATION PROJECT

By

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And

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Grant #: 9998185-05
9998185-06

EXECUTIVE SUMMARY

PROJECT TITLE: Lake Pocasse/Lake Campbell Watershed Implementation Project

GRANT #: 9998185-05
9998185-06

PROJECT START DATE: January 1, 2009

PROJECT COMPLETION DATE: June 30, 2010

FUNDING:

Funding Sources	Original Budget	Actual Expenditures
EPA 319 Grant	$103,725	$22,439.40
USDA (EQIP, CRP)	$37,375	$12,505.33
Conservation Commission	$5,000	$0
Campbell Co. Conservation District	$15,100	$11,193.34
Local Match	$62,625	$1,983.60
Total	**$223,825.00**	**$48,121.67**

Summary of Accomplishments

The goal of the Lake Pocasse/Lake Campbell Watershed Implementation Project was to restore and protect the water quality of Lake Campbell, Lake Pocasse, and Spring Creek through the installation of Best Management Practices (BMPs) in the watershed that target sources of sediment, nutrients, and fecal coliform bacteria.

Only one BMP was installed during the project and was implemented through the Conservation Reserve Program (CRP) with the Natural Resources Conservation Service, and the Riparian Area Management (RAM) program through the South Dakota Department of Environment & Natural Resources (SD DENR). The producer enrolled property along Spring Creek into the programs for a period of 10 years. Livestock will be excluded during that time.

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INTRODUCTION

Project Area

The Spring Creek watershed is located in Campbell and McPherson counties in north-central South Dakota, and is approximately 500,000 acres in size. The watershed encompasses four communities in South Dakota: Pollock, Herreid, Mound City, and Artas. Land use in the Spring Creek watershed is primarily agricultural consisting of corn, wheat, sunflowers, and soybeans as the principle crops. There is a considerable amount of pasture for raising beef cattle which compose the vast majority of the livestock produced in the region. Along with pasture land, there is a large number of livestock feeding areas where livestock are contained during the winter months. The stream network made up of Spring Creek and its numerous intermittent drainages drain a combination of cropland, pasture, and livestock feeding areas.

Spring Creek is a natural stream that drains portions of Campbell and McPherson Counties and is the primary tributary to Lake Pocasse in Campbell County. Lake Campbell is also located within the Spring Creek watershed and contributes outflow that eventually reaches Lake Pocasse. Lake Pocasse ultimately drains into the Missouri River. The creek receives runoff from agricultural operations and the lakes have both experienced declining water quality as a result.

There are four federally threatened or endangered species documented in the Spring Creek watershed. The US Fish and Wildlife Service lists the Whooping Crane (*Grus americana*), Piping Plover (*Charadrius melodius*), and the Least Tern (*Sterna antillarum*) as species that have been documented in the watershed. The Pallid Sturgeon (*Scaphirhynchus albus*) is also listed as a species that could possibly be found within the watershed, but none of these species were encountered during the project.

The Lake Campbell/Lake Pocasse Watershed **Assessment** Project was initiated in September of 2006 when SD DENR contacted the Campbell County Conservation District asking for a partnership in a watershed implementation project. The original scope of the project was intended to locate sources of impairment to Lake Campbell and Lake Pocasse, and begin developing strategies to reduce the amount of sediment, nutrients, and fecal coliform bacteria entering the reservoirs through an implementation project. Lake Pocasse and Lake Campbell were both listed in the 2008 South Dakota Integrated Report for elevated Trophic State Index (TSI).

The beneficial uses for Spring Creek, Lake Campbell, and Lake Pocasse are listed below in Table 1.

Table 1: Beneficial Uses for Spring Creek, Lake Campbell, and Lake Pocasse

WATER BODY	BENEFICIAL USES
Spring Creek (SD Hwy 271 to US Hwy 83)	**6, 8, 9, 10**

Spring Creek (US Hwy 83 to Lake Pocasse)	**5, 8, 9, 10**
Lake Campbell	**5, 7, 8, 9**
Lake Pocasse	**4, 7, 8, 9**

Numerical Key to beneficial uses listed above in Table 1:

(4) Warm-water permanent fish life propagation waters
(5) Warm-water semi-permanent fish life propagation waters
(6) Warm-water marginal fish life propagation waters
(7) Immersion recreation waters
(8) Limited contact recreation waters;
(9) Fish and wildlife propagation, recreation, and stock watering waters; and
(10) Irrigation waters.

Attainment of the beneficial uses (Table 1) in the watersheds allows continued use of the waterbodies for recreation, irrigation, livestock watering, and wildlife propagation. This segment of the implementation project was intended to lay the groundwork necessary for successful restoration of the Spring Creek watershed, Lake Pocasse, and Lake Campbell to their intended beneficial uses. Beneficial uses threatened in the Spring Creek watershed, as discussed above, impact the use of the lakes and the watershed for swimming, boating, recreation, wildlife, and residential living.

Project Goal

The goal of the Lake Pocasse/Lake Campbell Watershed Implementation Project was to restore and protect the water quality of Spring Creek, Lake Campbell, and Lake Pocasse through the installation of BMPs in the watershed that target sources of sediment, nutrient, and Fecal Coliform Bacteria. This project was the initial step toward reducing non-point source (NPS) pollution to both Lake Pocasse and Lake Campbell, and to achieve full support status of all the beneficial uses. This project also targeted BMP installation in the Spring Creek watershed in order to develop a long term Project Implementation Plan for the watershed.

To attain this goal, this project aimed to:

- Initiate BMP implementation in the Spring Creek watershed targeted toward installation of BMPs in high priority areas identified during the Spring Creek Watershed Assessment Project.
- Work with local citizens and organizations to develop the needed long-term project implementation plan based on the finalized watershed assessment for the Spring Creek watershed.
- Conduct a public education and outreach campaign to educate and inform landowners, stakeholders, producers, and area residents of the Spring Creek watershed of the water quality issues and the BMPs necessary to address the issues.

An estimate of BMPs needed to restore the waterbodies in the watershed to meet the beneficial uses are shown below in Table 2. The practices that needed to be installed were based on the findings from the Lake Campbell/Lake Pocasse Watershed Assessment Project.

Table 2: Estimated Best Management Practices

		Estimate of acres/practices completed by Project Segment		
Best Management Practice (BMP)	**Total acres/practice**	**Segment 1 (2 yr.)**	**Segment 2 (4 yr.)**	**Future Segments (4-10 yr.)**
Riparian Area Management:	20	4	8	8
Alternative Water Source/Fence	20	4	8	8
Grazing Management:	20	4	8	8
Planned grazing systems	20	4	8	8
Cropland Management:	640	40	200	400
Riparian Area Restoration/Critical Area Seeding	320	20	100	200
Cropland buffers	320	20	100	200
Ag Waste Systems:	20	2	6	12
System design	10	1	3	6
Alternate system construction	10	1	3	6

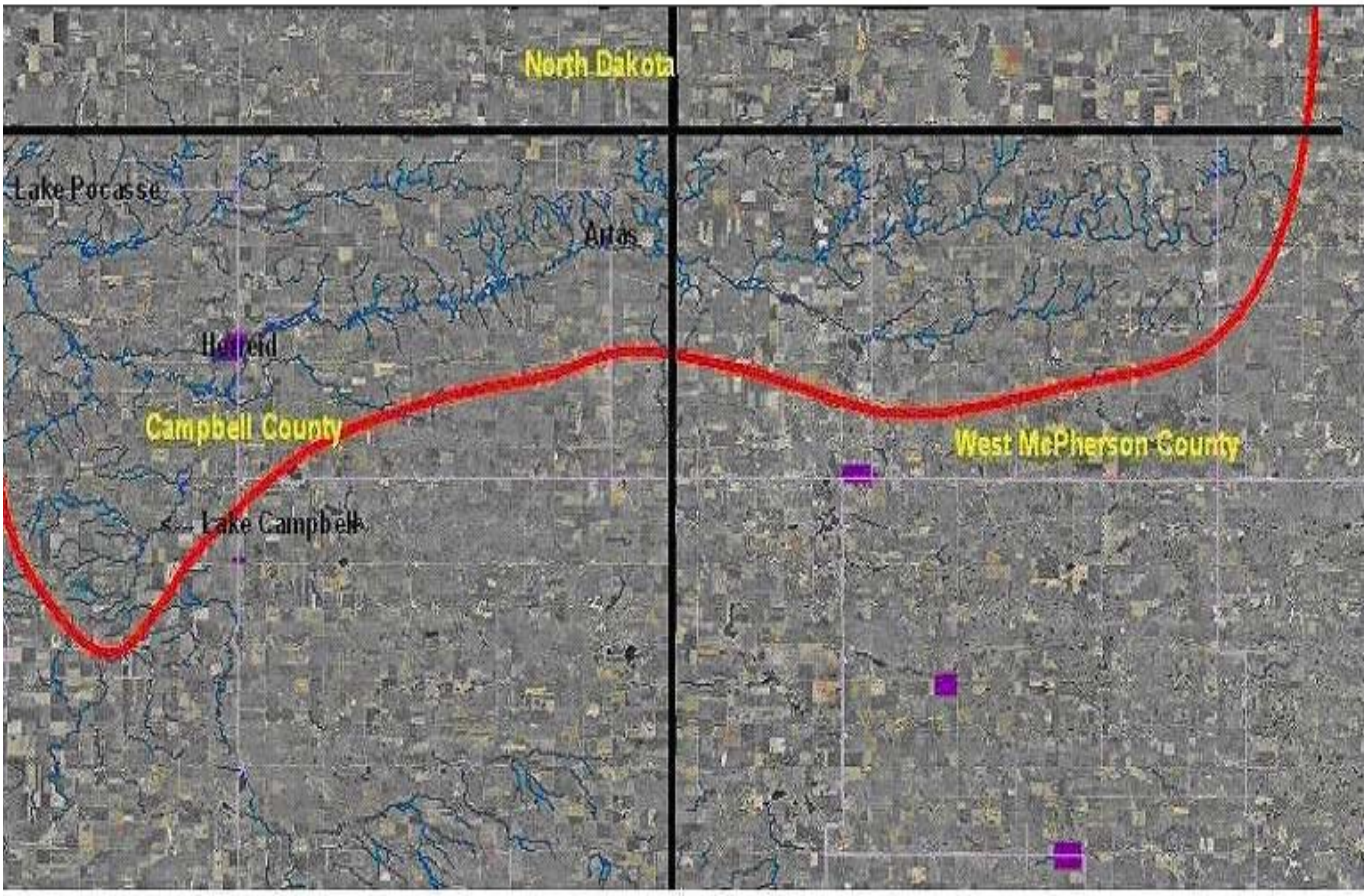

Figure 1: Spring Creek Watershed

PROJECT OBJECTIVES & ACTIVITIES

Objective 1: Provide assistance to local stakeholders to complete a long-term project implementation plan for the Spring Creek watershed that identifies, quantifies, and schedules needed BMP implementation to restore Lake Campbell, Lake Pocasse, and Spring Creek to full support status of all their beneficial uses.

Task 1: Develop a project implementation plan for the Spring Creek watershed.

> **Accomplishments:** Although an initial Project Implementation Plan (PIP) was developed for Segment 1, there was a lack of interest in the watershed project from the local landowners and producers. There was no long-term PIP completed.

Objective 2: Install BMPs in critical areas to reduce sediment, nutrient, and Fecal Coliform Bacteria loadings to Lake Campbell, Lake Pocasse, and Spring Creek.

Task 2: Riparian Area Management

Accomplishments: One producer enrolled pasture land that he owns along with some additional land that is rented (separate contract) along Spring Creek into CCRP (CP-30) and RAM programs. A total of 46.5 acres were enrolled, and livestock will be excluded from those acres for the length of the contract (10 years).

There were several other producers in the watershed that showed interest in these two programs, but due to the low payment rates the programs offer for livestock exclusion, they chose not to participate. The RAM and CP30 programs per-acre payment that is offered in return for livestock exclusion is not competitive with profits or current rental rates for pasture land in Campbell County. Furthermore, perimeter fences needed to be set far enough away from Spring Creek's flood plain to protect the fences from being destroyed every year. Moving the fences back required enrollment of additional acres in the programs, coupled with low payment rates, made the RAM and CRP programs less attractive to producers.

Task 3: Grazing Management

Provide technical assistance to landowners for the installation of BMPs on 4 planned grazing systems to reduce nutrient and sediment loading through reduced water runoff, and improve stream bank and riparian area vegetation.

Accomplishments: Producers within the Spring Creek watershed were encouraged to implement planned grazing systems with the help of EQIP funds through NRCS. However, due to refusals from the local rural water system to supply new taps or pipelines within the rural water systems corps area, there was no feasible option for an alternate water source. Nose pumps or solar pumps are not an option due to Spring Creek being dry at certain times of the year. No grazing management projects were implemented.

Task 4: Cropland Management BMPs

Provide technical assistance to landowners for the installation of BMPs on 40 acres of cropland to reduce sediment and nutrient loads from critical areas identified during the watershed assessment study. The BMPs expected include, but are not limited to, grass waterways and cropland buffers.

Accomplishments: Due to the low incentive payments for cropland management BMPs, there were no producers interested in implementation. The most viable options for a per-acre reimbursement for re-seeding cropland areas to grass were the CCRP (CP-21) and RAM programs. The payments received through these programs were not competitive with profits or current rental rates for cropland in Campbell County. Landowners were not willing to take a loss on the cropland acres that would qualify for a cropland management BMP. No cropland management BMPs were installed.

Task 5: Ag Waste Design

Provide assistance to landowners to complete one alternate feedlot system construction and one animal waste management system (AWMS) design for installing facilities that reduce nutrient and Fecal Coliform Bacteria loading.

Accomplishments: There were several livestock producers interested in animal waste management systems. Once these producers figured out what it would cost to install an animal waste system, they chose not to participate due to the high cost of construction. There were no AWMS installed.

Objective 3: Outreach

Provide project and BMP information to watershed residents, landowners, and members of stakeholder organizations to inform them of project activities and BMP installation, and to maintain local support and involvement.

Task 6: Information Campaign

Assistance will be provided to the Campbell County Conservation District to develop and implement an outreach/information campaign that informs project residents of opportunities for involvement in and progress of the project.

Accomplishments: Informational meetings were held to inform watershed residents of the opportunities to participate in the project as well as to report on project progress. There was no attendance at the meetings. On numerous occasions there were presentations to include the Campbell County Conservation District, McPherson County Conservation District, and Pheasants Forever. News releases were issued several times to inform residents of the watershed of opportunities to participate in the project. Tours were given to partners as requested.

Objective 4: Project Reports

Provide BMP and project progress reports to watershed residents, landowners, and project partners to inform them of activities and BMP installation, and to maintain local support and involvement.

Task 7: Project reports for EPA, DENR, & partners

Accomplishments: Annual and semi-annual GRTS reports were completed and submitted to DENR in a timely fashion. A final project report was written in June and July 2010 and submitted to SD DENR in August for review.

PLANNED & ACTUAL MILESTONES

Table 3: Planned Versus Completed Project Activities

Goal/Objective/Task	Milestone		Completion Dates	
	Planned	Actual	Planned	Actual
Objective 1: Project Implementation Plan (PIP) Development				
Task 1: PIP Development				
Product 1: Watershed PIP and Segment 2 PIP				
Project PIP	1	1	5/31/2010	1/31/2009
Project Segment 2 PIP	1	0	5/31/2010	
Objective 2: BMP Installation				
Task 2: Riparian Area Management				
Product 2: Alternative water source/Fencing				
Alternative water source	4	1	5/31/2010	5/31/2010
Tree planting (livestock shelter-belt)	3	0	5/31/2010	
Task 3: Grazing Management				
Product 3: Planned Grazing Systems				
Planned grazing system	4	0	5/31/2010	
Tree planting (livestock shelter-belt)	6	0	5/31/2010	
Task 4: Cropland Management				
Product 4: Riparian Area Restoration/Critical Area Seeding	20 acres	0	5/31/2010	
Product 5: Cropland Buffers	20 acres	0	5/31/2010	
Task 5: Ag Waste Design				
Product 6: System design	1	0	9/30/2009	
Product 7: Alternate system construction	1	0	5/31/2010	
Objective 3: Outreach				
Task 6: Information Campaign				
Product 8: Information & education activities				
Tours	3	5	5/31/2010	
Informational meetings	4	3	5/31/2010	
Presentations to partners	12	12	5/31/2010	
News releases	4	2	5/31/2010	
Informational mailing	2	0	5/31/2010	
Objective 4: Project Reports				
Task 7: Project reports for EPA, DENR, & partners				
Product 9: Semi-annual, annual, & final reports				
Semi-annual reports	4	1	5/31/2010	10/15/2009
Annual reports	2	0	5/31/2010	
Final report	1	1	5/31/2010	5/31/2010

MONITORING RESULTS

A summary of load reductions from riparian practices implemented during this project are shown in Table 4. Reductions in Table 4 were calculated by:

- Riparian Area Restoration – STEPL Load Reduction Model's "Gully and Stream Bank Erosion" function.
- Livestock Load Reductions – SD DENR Feed Lot and Grazing Load Reduction Spreadsheet

LOAD REDUCTIONS

Table 4: Load Reductions for the Lake Pocasse/Lake Campbell Watershed Project

Product	**Annual Reductions**		
	P lb/year	N lb/year	Sed. ton/year
Riparian Area Management	17.3	84.2	11.1
Cattle Load Reduction	41.6	43.2	0.00
Totals:	**58.9**	**127.4**	**11.1**

SPONSORS AND OTHER SUPPORTING AGENCIES

Campbell County Conservation District
Project Sponsor

Natural Resources Conservation Service (NRCS)
Technical assistance BMP planning

Farm Service Agency (FSA)
Technical assistance for CCRP, and Campbell County information

Natural Resources Conservation Service
Technical assistance and CCRP funding

South Dakota Game, Fish and Parks (GFP)
Technical assistance in Riparian Area Management

Pheasants Forever
Technical assistance in Riparian Area Management

South Dakota Department of Environmental and Natural Resources (SD DENR)
Technical assistance for monitoring and project administration
Financial assistance

Environmental Protection Agency
Financial assistance

South Dakota Conservation Commission
Financial assistance

PUBLIC PARTICIPATION

The public was notified of opportunities to participate in the project through press releases, newsletters, public meetings, and facts sheets distributed by mail. Meetings and other public forums were likewise used to inform and educate the public about the project. Attendance at public meetings was very poor.

ASPECTS OF THE PROJECT THAT DID NOT WORK WELL

It was noted that producers in the watershed were not willing to participate in the Lake Pocasse/Lake Campbell Watershed Implementation Project due to the low per-acre compensation they would receive for excluding livestock from the riparian area of Spring Creek and the high cost of implementing an AWMS. Figures 2 and 3 below illustrate how Spring Creek typically floods in the spring and engulfs large parcels of pasture and cropland.

Figure 2: Spring Creek Main Channel Flooding

Figure 3: Spring Creek Main Channel Flooding

For most landowners in the watershed, protecting the riparian area of Spring Creek would require enrollment of a large number of acres into the CP30 and RAM programs to adequately prevent fences and other structures from being washed away during spring floods. Payments given to the landowners as compensation for excluding livestock from these acres is not competitive with the profits that could be made by raising livestock or crops on these same acres. The payments are not competitive with current rent prices for this type of land in Campbell County. Producers that were contacted were reluctant to participate in the project due to the loss in profit through enrolling their land into the programs.

Providing an alternative water source was another problem that hindered the success of the project. The local rural water system, WEB Water Development, is currently not allowing any

new connections to their rural water pipelines. Any producers interested in pursuing livestock exclusion from Spring Creek would have no viable option for implementing pipelines and tanks for an alternative water source.

The high cost of alternate feedlot construction and Animal Waste Systems were also an issue with many livestock producers. Though there was adequate cost-share available through the project for these types of structures, the matching funds that the producer would be responsible for to match the Federal 319 dollars was too significant for the producers.

FUTURE ACTIVITY RECOMMENDATIONS

The local conservation district as well as the NRCS should continue to educate and work with local producers to install BMPs in the Spring Creek watershed. Hopefully, through funding and education, producers will one day begin to understand the need for proper BMPs to assure clean water in their local lakes and streams.

APPENDIX A

SPRING CREEK WATERSHED PROJECT EXPENDITURES BREAK DOWN

Spring Creek Implementation Project

Project Information

Project Officer:	Barry McLaury	Coordinator:	Casey Eisemann
Project Type:	Implementation	Control Number:	2009-53
Start Date:	1/5/2009	End Date:	6/30/2010

Grants

Fund Name	Category	Year:	Amount:
319	Incremental	2005	$36,773.13
319	Incremental	2006	$66,951.87
Total			**$103,725.00**

Advances

Fund Name	Total	Amount Used	Amount Remaining
Total	**$0.00**	**$0.00**	**$0.00**

Funds Allocated

Fund Name	Source	Reimbursable	Matching	Total Amount	Amount Allocated	Amount Used
319	Federal	Y	N	$103,725.00	$100,000.00	$22,439.40
Campbell County Conservation District	County	N	Y	$15,500.00	$15,500.00	$11,193.34
Con. Com.	State	N	Y	$5,000.00	$5,000.00	$0.00
EQIP	Federal	N	N	$37,375.00	$37,375.00	$0.00
Local cash	Local	N	Y	$56,500.00	$56,500.00	$0.00
Local In-kind	Local	N	Y	$3,750.00	$3,750.00	$1,983.60
Other Federal	Federal	N	N	$0.00	$0.00	$12,505.33
Total				**$221,850.00**	**$218,125.00**	**$48,121.67**

BMP Funding Information

BMP		Allocated	Used	Available
Objective 1-Task1-Construction - Ag Waste System	319	$25,000.00	$0.00	$25,000.00
	Con. Com.	$5,000.00	$0.00	$5,000.00
	Local cash	$9,000.00	$0.00	$9,000.00
Objective 1-Task1-Design - Ag Waste System	319	$12,375.00	$0.00	$12,375.00
	Local cash	$3,500.00	$0.00	$3,500.00
	Local In-kind	$625.00	$0.00	$625.00
Objective 1-Task2 - Riparian Restoration/Protection	319	$19,500.00	$2,975.40	$16,524.60
	Campbell County Conservation District	$1,500.00	$0.00	$1,500.00
	Local cash	$21,000.00	$0.00	$21,000.00
	Local In-kind	$0.00	$1,983.60	($1,983.60)
	Other Federal	$0.00	$12,505.33	($12,505.33)
Objective 1-Task3 - Grazing Management	Campbell County Conservation District	$1,500.00	$0.00	$1,500.00
	EQIP	$37,375.00	$0.00	$37,375.00
	Local cash	$13,000.00	$0.00	$13,000.00
	Local In-kind	$2,125.00	$0.00	$2,125.00
Objective 1-Task4 - Critical Area Planting	319	$11,000.00	$0.00	$11,000.00
	Local cash	$10,000.00	$0.00	$10,000.00
	Local In-kind	$1,000.00	$0.00	$1,000.00
Objective 2-Task5 - Information & Education	319	$3,125.00	$0.00	$3,125.00
	Campbell County Conservation District	$2,000.00	$0.00	$2,000.00
Total For All BMP's		**$178,625.00**	**$17,464.33**	**$161,160.67**

BMP Milestone Information

BMP	Unit	Total Expected	Total Implemented
Ag Waste System	AWMS Constructed	1	0
Ag Waste System	AWMS Designs	1	0
Critical Area Planting	ac Cropland Buffers	20	0
Critical Area Planting	ac Grassed Waterways	20	0
Grazing Management	Ac Livestock Shelter-belt	6	0
Grazing Management	Planned Grazing Systems	4	0
Information & Education	Informational Mailings	2	0
Information & Education	Informational meetings	4	0
Information & Education	News Releases	4	0
Information & Education	Presentations	20	0
Information & Education	Tours	3	0
Riparian Restoration/Protection	Ac Livestock Shelter-belt	6	0
Riparian Restoration/Protection	ac Riparian Area Management	0	46.5
Riparian Restoration/Protection	Alternative Water sources	4	0

Non-Salary Information

Category		Allocated	Used	Available
Contingencies	Campbell County Conservation District	$500.00	$310.70	$189.30
Equipment	Campbell County Conservation District	$1,500.00	$317.16	$1,182.84
Shipping and Supplies	Campbell County Conservation District	$1,000.00	$68.90	$931.10
Travel	Campbell County Conservation District	$6,000.00	$6,699.94	($699.94)
Total		**$9,000.00**	**$7,396.70**	**$1,603.30**

Salary Information

Category		Allocated	Used	Available
Coordinator	319	$28,500.00	$19,464.00	$9,036.00
	Campbell County Conservation District	$0.00	$2,446.64	($2,446.64)
Administration	319	$500.00	$0.00	$500.00
	Campbell County Conservation District	$1,500.00	$1,350.00	$150.00
Total		**$30,500.00**	**$23,260.64**	**$7,239.36**