



Grant All-Detail Report 2012 - Conservation Drainage

Grant Title - 2012 - Conservation Drainage - Middle Fork Crow River (WSHED)

Grant ID - C13-2903

Organization - Middle Fork Crow River WD

Grant Awarded Amount	\$43,505.00	Grant Execution Date	
Required Match Amount	\$10,876.25	Grant End Date	1/1/2020
Required Match %	25%	Grant Day To Day Contact	Margaret Johnson

Budget Summary

	Budgeted	Spent	Balance Remaining*
Total Grant Amount	\$43,505.00	\$31,720.24	\$11,784.76
Total Match Amount	\$63,592.17	\$58,613.91	\$4,978.26
Total Other Funds	\$503.50	\$503.50	\$0.00
Total	\$107,600.67	\$90,837.65	\$16,763.02

**Grant balance remaining is the difference between the Awarded Amount and the Spent Amount. Other values compare budgeted and spent amounts.*

Budget Details

Activity Name	Activity Category	Source Type	Source Description	Budgeted	Spent	Last Transaction Date	Matching Fund
2012 CWF Drainage Water Quality Improvement BMP Installation	Conservation Drainage	Current State Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)	\$10,339.79			N
2012 CWF Drainage Water Quality Improvement BMP Installation	Conservation Drainage	Local Fund	Landowner Fund	\$482.26			Y

Activity Name	Activity Category	Source Type	Source Description	Budgeted	Spent	Last Transaction Date	Matching Fund
2012 CWF Drainage Water Quality Improvement BMP Installation	Conservation Drainage	Local Fund	MFCRWD & Local In-Kind	\$240.22	\$240.22	12/31/2012	Y
2012 CWF Drainage Water Quality Improvement BMP Installation	Conservation Drainage	Local Fund	MFCRWD Agricultural BMP Incentive Fund - Cash	\$4,496.00			Y
2012 CWF Drainage Water Quality Improvement Grant Administration	Administration /Coordination	Current State Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)	\$2,310.00	\$1,507.96	12/31/2014	N
2012 CWF Drainage Water Quality Project Development	Project Development	Current State Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)	\$7,680.00	\$7,680.00	12/31/2014	N
2012 CWF Drainage Water Quality Project Development	Project Development	Local Fund	Kandiyohi County Ditch Inspector In-Kind	\$44,620.31	\$44,620.31	12/31/2014	Y
2012 CWF Drainage Water Quality Project Development	Project Development	Local Fund	MFCRWD & Local In-Kind	\$4,392.17	\$4,392.17	12/31/2014	Y
2012 CWF Drainage Water Quality Technical Assistance & Engineering	Technical/Engineering Assistance	Current State Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)	\$3,000.00	\$3,000.00	12/31/2012	N
2012 CWF Drainage Water Quality Technical Assistance & Engineering	Technical/Engineering Assistance	Local Fund	MFCRWD - Cash (Houston)	\$6,207.47	\$6,207.47	12/31/2013	Y
Effectiveness Monitoring and Evaluation	Monitoring/Data Collection	Current State Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED..	\$1,564.00	\$921.07	12/31/2014	N
Lilleberg Bioreactor	Conservation Drainage	Current State Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED..	\$18,611.21	\$18,611.21	12/31/2013	N
Lilleberg Bioreactor	Conservation Drainage	Landowner Fund	Landowner Fund	\$903.74	\$903.74	12/31/2013	Y
Lilleberg Bioreactor	Conservation Drainage	Local Fund	Diamond Lake Area Recreation Association - Cash	\$1,000.00	\$1,000.00	12/31/2013	Y
Lilleberg Bioreactor	Conservation Drainage	Local Fund	Kandiyohi County Water Task Force - Cash	\$2,496.50	\$2,496.50	12/31/2013	N

Activity Name	Activity Category	Source Type	Source Description	Budgeted	Spent	Last Transaction Date	Matching Fund
Lilleberg Bioreactor	Conservation Drainage	Local Fund	MFCRWD - Cash	\$1,250.00	\$1,250.00	12/31/2013	Y
Lilleberg Bioreactor	Conservation Drainage	Other Funds	2013 - LWM (NRBG) - Kandiyohi (COUNTY)	\$503.50	\$503.50	12/2/2013	N

Activity Details Summary

Activity Details	Total Action Count	Total Activity Mapped	Size / Unit
747 - Denitrifying Bioreactor	6	2	0 AC
747 - Denitrifying Bioreactor	0	0	0

Indicators Summary

Indicator Name	Total Value	Unit
NUTRIENTS (NITRATE)	264.00	LBS/YR

Grant Activity

Grant Activity - 2012 CWF Drainage Water Quality Improvement BMP Installation

Description

BMP Installation will be coordinated by MFCRWD staff, with the Kandiyohi County Ditch Authority, landowners, contractors, and a PE, and will entail the correct installation and correct functioning of the BMPs. The program consists of the installation of at least four woodchip bioreactors on the properties of three different producers; the bioreactors will be installed as retrofits to existing tile lines, and will filter the water from fields ranging from 5-30 acres. In a five acre, a six acre, and a thirty acre field, standard woodchip bioreactor designs will be used (ten linear feet of bioreactors per acre of field drained), while in an eleven acre field, two 15-inch diameter non-perforated tiles filled with woodchips will be placed side by side to treat the drainage water. Rock inlets will also be placed as an alternative to open inlets in four locations. The Kandiyohi County Ditch Authority, Loren Engelby, has attended several seminars on the proposed types of BMPs, and with the assistance of former BWSR staff, has designed and successfully implemented several BMPs of the nature of those proposed under this project. We anticipate having a PE (Houston Engineering, under the supervision of Mark Deutschman, PhD, PE) review plans prior to installation.

Category

CONSERVATION DRAINAGE

Start Date

9-Apr-12

End Date

Rates and Hours

Actual Results

Apr-Dec 2012: The BMP Installation part of this grant has proven to be and will likely continue to be difficult. Of the three property owners who had agreed to install woodchip bioreactors on their respective properties, two of them are no longer convinced they want to install them, and the third owner has a field that upon analysis of survey information, presents additional complexities. We will continue to work hard on this part of the grant to get projects installed as early in the life of the grant as possible. Availability of tiling contractors is of the utmost concern.

Jan-Dec 2013: One woodchip bioreactor was installed in November. The engineered design was completed by Houston Engineering. This reactor is 100ft by 20ft and 4.5ft deep. The installation took several days due to the size of the practice. This will be showcased at the Ag Tour in 2014. We are still working on the landowners that we have for rock inlet installation for the fall of 2014.

Jan - Dec 2014: There were no new installations of ag practices in 2014. Two landowners are very interested and we have project contracts signed and completed, but without available contractors, the projects were unable to be installed in 2014.

Activity Action - Moved			
Practice	747 - Denitrifying Bioreactor	Count of Activities	0
Description			
Proposed Size / Units	0	Lifespan	Unknown
Actual Size/Units		Installed Date	

Grant Activity - 2012 CWF Drainage Water Quality Improvement Grant Administration			
Description	Activities under this initiative will include compliance with all grant requirements, including coordination, financial planning and budget monitoring, report writing/eLINK submittal, and necessary interaction with BWSR staff.		
Category	ADMINISTRATION/COORDINATION		
Start Date	9-Apr-12	End Date	
Rates and Hours			
Actual Results	<p>Apr - Dec 2012: Administrative duties required/expenses incurred during this period were to draft a public hearing notice for adoption of the grant, post with the corresponding counties and local newspaper, and the associated legal & publishing fees. Some time was required to build a budget monitor to track all expenses.</p> <p>Jan - Dec 2013: Administrative duties required/expenses incurred during this period were to gather grant expense documents for the 2013 reporting period.</p> <p>Jan - Dec 2014: Administrative duties required were completed. All expenses incurred during this period were to gather grant expense documents for the 2014 reporting period and report on them.</p>		

Grant Activity - 2012 CWF Drainage Water Quality Project Development

Description	Activities under the Project Development Initiative include civic engagement, public outreach, initial contacts/actions/activities with landowners and/or partners, preliminary info gathering, conservation marketing, etc. This initiative includes the development of all proposed outputs, including BMP development (Wood Chip Bioreactors and Rock Inlets), Ag BMP Tour, and Effectiveness Monitoring).		
Category	PROJECT DEVELOPMENT		
Start Date	9-Apr-12	End Date	
Rates and Hours			
Actual Results	<p>Apr-Dec 2012: Property owners who had expressed interest in the program during proposal development were contacted to reconfirm interest. Initially, all were still on board, but two of them had changes of heart and are now reconsidering. The third property owner is on board, but analysis of survey data collected shows that the project will be much more complex and a neighboring owner will have to agree to the project. BWSR staff didn't care for the designs that local partner L. Engelby put together, and recommended the District use a NRCS certified designer or a PE...an expense that wasn't planned for at project outset. A lot of time was put into educating, planning, meeting, and coordinating all the moving pieces of this project. The \$1,755 spent under this initiative is all for staff time spent on project development.</p> <p>Jan - Dec 2013: Staff is working on new landowners in regards to the installation of one more bioreactor. Staff is also putting together contracts for the rock inlets. All practices set for construction in the fall of 2014. There will be a tour set as well to showcase these new BMPs.</p> <p>Jan - Dec 2014: An Agricultural Tour was completed on July 10, 2014. The tour included speaker Dave Legvold a conservation farmer in the metro area. The tour took property owners and interested residents around the area to view and discuss local agricultural practices including a woodchip bioreactor and an animal exclusion project in the northern part of the watershed. The landowners with the bioreactor and the rock inlets are still in conversation and hoping for a summer to fall installation.</p>		

Grant Activity - 2012 CWF Drainage Water Quality Technical Assistance & Engineering

Description	<p>This initiative includes the costs for activities associated with the technical review of the plans drawn by Loren Engelby, Kandiyohi County Ditch Authority. Mr. Engelby has attended several seminars on the proposed types of BMPs, and with the assistance of former BWSR staff, has designed and successfully implemented several BMPs of the nature of those proposed under this project. Mr. Engelby will design the BMPs, and a PE (Houston Engineering, under the supervision of Mark Deutschman, PhD, PE) will review, comment and mark-up plans in a quality assurance review to be conducted prior to installation. Houston Engineering will also provide a final inspection of installed BMPs to confirm installation took place according to plans.</p>	
Category	<p>TECHNICAL/ENGINEERING ASSISTANCE</p>	
Start Date	<p>9-Apr-12</p>	<p>End Date</p>
Rates and Hours	<p></p>	
Actual Results	<p>Apr-Dec 2012: The District was advised by BWSR staff that either NRCS staff certified to design bioreactors or a PE design the project. We were stuck with hiring a PE, which was an expense that was not budgeted for. We were able to leverage other grant funds to help with the design, which was done by Houston Engineering. Unfortunately, following the completion of the designs, the farmer has decided that he may or may not proceed with the project. The \$3000 was spent on the bioreactor design.</p> <p>Jan - Dec 2013: All funds for engineering costs are spent. We will be working with a different technical service agency for the final designs and this cost will be paid for by the District's General Fund.</p> <p>Jan - Dec 2014: WCTSA was contacted for the final designs, they have completed designs for a bioreactor and will be provide the designs to contractors for a bid price. The activities in this category are paid now by District fund because we have run out of grant dollars.</p>	

Description

Effectiveness monitoring will be conducted at the largest woodchip bioreactor site (30 acre drainage) and at one of the experimental sites. Monitoring will consist of samples collected and analyzed for nitrate-N, dissolved phosphorus, total phosphorus, and total suspended solids.

Start Date

1-Jan-13

End Date

Actual Results

January 2013 - December 2013: Monitoring took place for the Lilleberg Bioreactor. We were able to sample summer 2013 before the install allowing us data to compare once we sample summer 2014.

Concentrations are as follows (there is also an attached document containing all of this information): 5/7/13 - 14.7 mg/L, 6/4/13 - 19.4 mg/L, 6/25/13 - 26.5 mg/L, 7/9/13 - 16.5 mg/L

Phosphorus Concentrations: 5/7/13 - 0.075 mg/L, 6/4/13 - 0.086 mg/L, 6/25/13 - 0.088 mg/L, 7/9/13 - 0.079 mg/L

Total Suspended Solids Concentrations: 5/7/13 - 6mg/L, 6/4/13 & 6/25/13 <1, 7/9/13 - 3 mg/L

January 2014 - December 2014: After one summer monitoring the Lilleberg Bioreactor, we were able to compare the results with those of 2013 (one year prior to installation).

Concentrations are as follows (Excel Spreadsheet Attached - 2014 Lilleberg Bioreactor Monitoring)

NO3 -- mg/L

4-10-14, IN 30.4 OUT 1.96

5-9-14 IN 32.8 OUT 20.2

5-20-14 IN 28.6 OUT 14.8

6-3-14 In 27.4 Out 17.8

6-17-14 IN 17.1 OUT 10.2

7-2-14 IN 32.7 OUT 11.8

7-17-14 IN 29.9 OUT < 0.03

8-7-14 IN 0.126 OUT < 0.03

8-19-14 IN 5.42 OUT < 0.03

TP -- mg/L

4-10-14 IN 0.861 OUT 1.33

5-9-14 IN 0.464 OUT 0.342

5-20-14 IN 0.659 OUT 0.497

6-3-14 IN 0.235 OUT 0.104

6-17-14 IN 0.5 OUT 0.298

7-1-14 IN 0.14 OUT 0.173

7-17-14 IN 0.112 OUT 0.361
 8-7-14 IN 0.417 OUT 2.32
 8-19-14 IN 0.898 OUT 2.06

TSS -- mg/L
 4-10-14 IN 1100 OUT 160
 5-9-14 IN 111 OUT 12
 5-20-14 IN 266 OUT 1
 6-3-14 IN 29 OUT <1
 6-17-14 IN 119 OUT 6
 7-1-14 IN 64 OUT 128
 7-17-14 IN 4 OUT 60
 8-7-14 IN 34 OUT 736
 8-19-14 IN 588 OUT 260

Grant Activity - Lilleberg Bioreactor

Description	Installation of a woodchip bioreactor. The bioreactor will be installed as a retrofit to existing tile lines, and will filter the water from a 30 acre field. Standard woodchip bioreactor design will be used (ten linear feet of bioreactor per acre of field drained).		
Category	CONSERVATION DRAINAGE		
Start Date	9-Apr-12	End Date	31-Dec-13
Rates and Hours			
Actual Results	Woodchip bioreactor was installed in November 2013. The engineered design was completed by Houston Engineering. This reactor is 100ft by 20ft and 4.5ft deep. The installation took several days due to the size of the practice. This will be showcased at the Ag Tour in 2014.		

Activity Action - Lilleberg Bioreactor

Practice	747 - Denitrifying Bioreactor	Count of Activities	1
Description	Bioreactor dimensions are 100' x 20' x 4.5'. Treats 30 acres of tile drainage which drains to Bass Lake in the Diamond Lake subwatershed.		
Proposed Size / Units	0 AC	Lifespan	15 Years
Actual Size/Units	0 AC	Installed Date	18-Nov-13

Final Indicator for Lilleberg Bioreactor			
Indicator Name	NUTRIENTS (NITRATE)	Value	264
Indicator Subcategory/Units	WATER POLLUTION (REDUCTION ESTIMATES) LBS/YR	Calculation Tool	Literature Value
Waterbody	Diamond Lake		

Grant Attachments

Document Name	Document Type	Description
2014 Lilleberg Bioreactor Monitoring	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
40% Payment Authorization (3-10-14)	Journal	Journal Dated - 03/10/2014
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 03/04/2015
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 02/13/2015
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 01/27/2015
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 03/10/2014
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 03/10/2014
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 03/03/2014
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 01/30/2014
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 01/29/2014
Amendment	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
Bioreactor Voucher	Progress	Progress Dated - 01/17/2014
Budget Monitor	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
Budget Monitor 2014	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
FY12 Cons Drain Interim Financial Report (3-4-14)	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
Gen Mailing Voucher 2014	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
Houston Invoice 1/14/14	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
Houston Invoice 12/4/13	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
In-kind Mileage	Progress	Progress Dated - 01/17/2014
Kandi Drainage In-kind	Progress	Progress Dated - 01/17/2014
Kandiyohi Co Invoice 2014	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
Lilleberg Bioreactor Design	Progress	Progress Dated - 01/17/2014
Lilleberg Voucher 2014	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
Mileage 2014	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
Monitoring Results 2013	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)

Document Name	Document Type	Description
RMB Invoice 2014	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
Reporting Review email (2-13-2015)	Journal	Journal Dated - 02/13/2015
Reporting Review email (3-4-2015)	Journal	Journal Dated - 03/04/2015
Staff Hours	Progress	Progress Dated - 01/17/2014
WQ Monitoring	Progress	Progress Dated - 01/17/2014
grant_app_general-added.rpt	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)
grant_app_general.rpt	Grant	2012 - Conservation Drainage - Middle Fork Crow River (WSHED)