

# Benton Soil & Water Conservation District

## Benton SWCD Feedlot Management and Manure Management

### Water of Concern

Elk River Watershed  
Little Rock Lake Watershed

### Impairment

Biological Impairment, Nutrient Impairment, Fecal Impairment

CWL Funding by Category	
<b>Technical Assistance Funds</b>	
SSTS Funds	\$0.00
Professional Development	\$0.00
Hired Positions	\$120,000.
Total TA Funds	\$120,000.
<b>Implementation Funds</b>	
AgBMP Loans	\$0.00
CWAG Funds	\$75,000
Landowner Match	\$29,137.50
Total Imp. Funding	\$104,137.50
<b>Total CWL Funding</b>	<b>\$224,137.50</b>

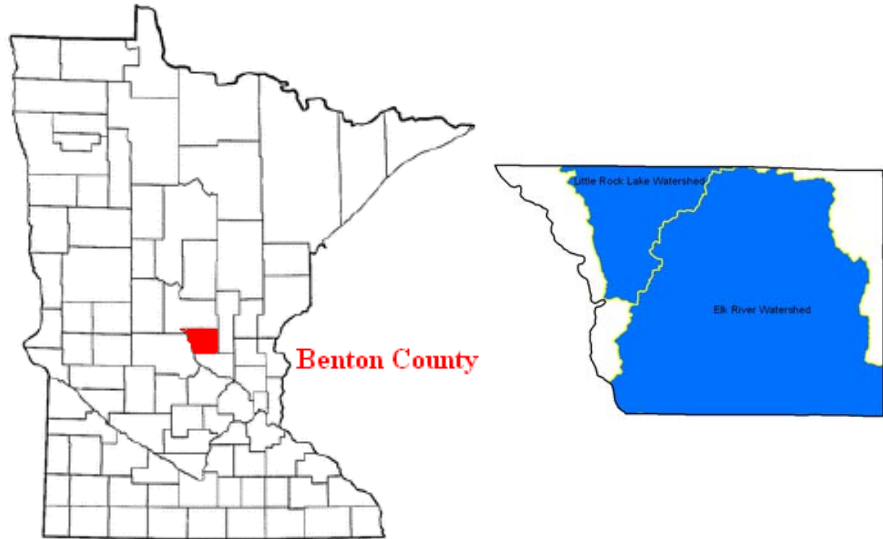
### PROJECT CONTACT

Mike McMillin  
320-968-5300 ext 3.

### BWSR Contact

Jeff Hrubes  
218-241-8608

Project Number:  
7P11



### Overall Project Description (abstract)

This program provided feedlot and manure management assistance to Benton County farmers. Assistance was available to all farmers in the County, but was focused on the watersheds identified as impaired by MPCA. That included Little Rock Creek and Mayhew Creek Watersheds. Focus was also placed on the 72 registered feedlots that signed the Open Lot Agreement. CWL money was used to complete manure management test plots outside of the Elk River Watershed while a separate 319 grant was used for inside the watershed.

Feedlot evaluations were completed for the owners who wished to have them done. If there was a runoff problem a low cost plan for eliminating or reducing the runoff was designed and the owner had the choice to go ahead with the work or do nothing. 75% cost-share was available to owners as well as a \$150 incentive payment for the feedlot evaluation and a \$150 incentive payment for installing an approved practice.

Manure management test plots were completed with farmers who were looking to cut back on the amount of manure or fertilizer they applied per acre. Farmers received a \$150 incentive payment for their time, while the costs for manure testing, soil testing and plant tissue analysis were covered by the grant and the District completed chlorophyll testing once a week during the growing season.

*Prepared by Board of Water and Soil Resources  
Fiscal Year 2007-2009 Clean Water Legacy Project*

## Conservation Practices Implemented

Name of Conservation Practice(s) Installed	Number or Linear Feet Installed	Estimated Pollutant Load Reduction (include units)	Total Cost
Rain Gutters	1108'	P - 68 lbs.	\$15,960.43
Diversions	1325'	P - 21 lbs.	\$27,533.20
Buffers	1090'	P - 109 lbs.	\$24,707.61
Abandon Dirt Lots	2.72 acres	P - 33 lbs.	\$628.78
Test Plots	384.8 acres	P - 2,025 lbs.	\$6900.05

## Conservation Planning Activities

Name of Plan(s) Written	Number of Landowners Contacted	Number of Plans Written	Total Cost	Types of Practices Identified	Number of Practices Identified	Number of Practices Implemented
BMP Test Plots	60	29	\$6,900.05	Nutrient Management	29	29
Feedlot Evaluations & Projects	56	28	\$49,415.41	Rain Gutters, Diversions, Underground Outlets, Filterstrips	28	16

## Contributing Partners: (List or copy from restoration implementation plan)

Partner	Description	Project Contribution	Leveraged Funds
Natural Resource Conservation Service		Equipment & Time	
Elk River Watershed Association		Equipment	

## Project Informational/Educational Activities

Type of Activity	Newsletters, Brochures, Posters, Etc.	Work with Kid Groups	Tours, Demos, Etc.	Presentations Given	Presentations by guest speakers	Other
0	8	0	1	3	1	5

Two presentations were given to farmers on nutrient management, test plots, and feedlot cost-share in the spring of 2009. Included in the presentations were the results of the test plot program for the last 5 years, how the test plots work, BMP's for manure and nutrient applications, new corn recommendations for corn, PCA's rule for feedlots and manure management, and an overview of the cost-share program for feedlots that used CWL money.

Presentation to Palmer Township Advisory Committee on feedlots and manure management being done in the Elk River Watershed in Benton County

Several news articles were done over the past 2 1/2 years on nutrient management and feedlots.

Several mailings were sent out to farmers letting them know about feedlot cost share and nutrient management assistance that was available through the CWL grant and EQIP.

"Water Quality Improvement Project" signs and brochure boxes were placed along the roadside where test plots could be seen from the road. In the brochure boxes were descriptions of the test plots and information on the test plot program.

### Project Outcomes: detail specific project outcomes that work towards meeting Restoration (total maximum daily load studies) and Protection (local water plans) water quality goals

56 feedlot evaluation were completed during the grant period, 24 were in compliance with PCA's feedlot rules, 28 had plans for low cost improvement designed, 16 installed low cost improvements which included rain gutters, filter strips and sediment basins, clean and dirty water diversions, and abandoning and seeding down dirt lots. Four other feedlots have installed or are in the planning process to install manure storage with State or Federal Cost-Share. Total nutrient reductions for the feedlot improvements are 261 lbs of phosphorus and 793 lbs of nitrogen.

29 manure and nutrient management test plots were completed where farmers compared the over or under application of manure or commercial fertilizer to the U of M recommended rates for corn, corn silage, oats, hay, and soybeans. Chlorophyll sampling was completed once a week from mid June through the middle of August and tissue samples were taken at silking to see what the plant was actually absorbing. The test plots covered 384.8 acres and total nutrient reductions for the test plots are 2,025 lbs of phosphorus and 6,904 lbs of nitrogen,

With the rising cost of commercial fertilizer more farmers have been looking at ways of cutting back on fertilizer and better utilizing the manure they have. Farmers have been looking at how much they can cut back on manure and fertilizer per acre before they start affecting the yields.

During the Spring of 2009 the District sent out surveys to all the farmers who had feedlot evaluation done, did some cost-share work or participated in the test plot program. 56 surveys were sent out and 29 were returned, overall people were happy with what was done and what they learned while working with our office. Copies of the surveys and results are at the end of the report.

## Project Photos, Additional Maps, or Conservation Practice



Rain gutters installed on a cattle shed with a snow guard attached to the roof.



Before (left) and after (right) of a feedlot buffer strip. A small ditch was reshaped into a graded filter strip to get the needed sheet flow.



Before (left) and after (right) of a clean water diversion. An old building was removed and channel was shaped to prevent yard water from entering the lot and to carry water from rain gutters on the far machine shed



2009 test plot comparing commercial fertilizer ( left side) vs. manure ( right side)



Before (left) and after (right) of a feedlot where diversions were added to keep manure and runoff on feedlot until it could reach a sediment basin and filter strip that could handle the runoff



Pictures of a dirt lot that was seeded down into grass

## Feedlot Evaluation Survey Questions & Results

1 = Poor — 5 = Excellent	1	2	3	4	5	Yes	No
Overall, how effective was the feedlot evaluation in letting you know where your livestock operation is in regards to potential pollution problems?	1		2	10	7		
Were the forms and information that our office provided easy to understand?			1	11	8		
How knowledgeable was the office staff that worked with you? Were they able to completely explain the information provided to you?				7	13		
Was participating in the feedlot evaluation worthwhile in regards to your time?		1		9	10		
Would you recommend others participate in this program?						18	2
After completing the feedlot evaluation, do you have a better understanding of how feedlot evaluations work and rules regarding feedlots?						19	1
Is the incentive payment that is provided through the program necessary to participating in feedlot evaluations?						12	7
How did you hear about the Clean Water Legacy Program?	Benton SWCD Staff When I got the call to set up an appointment SWCD From the SWCD office. FSA & local paper Benton County News Had to comply with MN Pollution Control Agency open lot agreement. Was checking on feedlot regulations Phone call I didn't. I was at the office in Foley, there I was told of the program Through the EQIP program and I am on the WRAC. We were contact by your office.						
Additional Comments:	Keep up the good work. Thank you for the program. Keeping up with regulations is difficult, but the friendly staff made it easier. Keep up the good work. The work done really changed the water runoff. The incentive payment isn't completely necessary but very helpful.						

Received	20
Sent	37

## Feedlot Improvement Survey Questions and Results

1 = Poor — 5 = Excellent	1	2	3	4	5	Yes	No	Maybe
Were the plans that our office provided to you for your feedlot project easy to follow and understand?						4		
Was the cost-share amount that was provided through the program adequate for completing feedlot improvement projects?						4		
How effective were the changes that you made in reducing runoff and/or improving your feedlot?			1			3		
What changes, if any, would you suggest for conducting feedlot improvement projects?	More money in the program.							
How did you hear about the Clean Water Legacy Program?	Through the Benton SWCD/NRCS office, talked to Mike and Pat SWCD Checking on feedlot regulations. From the SWCD office.							
Would you have completed feedlot improvements on your own without the assistance of SWCD staff?						1	1	2
Would you have completed feedlot improvements on your own without the assistance of SWCD cost-share?						1	1	2
Additional Comments:	Working with Mike M. was excellent, he listened to what we wanted to accomplish I would have done some feedlot improvements but not as much without SWCD involvement. Thank you for the help.							

Received	4
Sent	8

## Test Plot Questionnaire & Results

1 = Poor — 5 = Excellent	1	2	3	4	5	Yes	No
Overall, how effective was the program in helping you better utilize the manure from your livestock operation?			1	1	3		
How useful were the various components in the manure/nutrient management plans that you were provided:							
Calibration of manure spreader equipment to determine actual application rates.			1		4		
Analysis of livestock manure to determine actual N, P, and K content.				4	1		
Soil testing to determine pH, organic matter, and fertility levels of cropped fields.				3	2		
Tissue analysis results that determined the nutrient content in the crops.			2	1	1		
Crediting of nitrogen from legumes (alfalfa, clover, and soybeans) in the rotation.				4	1		
Tables showing nutrients available the same crop year that manure is applied, as well as tables showing nitrogen (N) available the crop year following manure application.				3	2		
Field specific nutrient management plans that show the amount of N, P, and K available needed for the planned crop.				2	3		
Were the forms and information that our office provided easy to understand?				4	1		
Did you use the Chandler manure spreader that is owned by the Benton Soil and Water Conservation District?						2	3
If you answered "yes" to the question above, do you feel this was a worthwhile purchase by the District to assist landowners?				1	1		
How knowledgeable was the office staff that worked with you? Were they able to completely explain the information provided to you?				2	3		
Was participating in the nutrient/manure management test plots worthwhile in regards to your time?			1	1	3		
Would you recommend others participate in this program?						5	
How useful will the information that you received through this program be in future crop years?			1	1	3		
As a result of the information that you gained through participation in this program, have you or do you expect to change your fertilizer use or methods of manure application?						4	1

## Test Plot Questionnaire & Results Continued

<p>If you answered “yes” to the above question, how will/did you change your fertilizer use or methods of manure application? <i>Example: I have reduced my manure application rate from 20 Tons/acre to 5 Tons/acre.</i></p>	<p>Have reduced manure tons per acre by 30% on some fields.</p> <p>We are giving much more consideration to the nutrients that are available in the manure.</p> <p>I have purchased my own chandler spreader for faster, more precise application of poultry manure.</p> <p>Won't put on manure at a high rate, more of a middle rate range.</p> <p>I never put large amounts on a field less and put it on more land is better</p>
<p>Is the incentive payment that is provided through the program necessary to participating in nutrient/manure management test plots?</p>	<p style="text-align: right;">3                      2</p>
<p>What changes, if any, would you suggest for conducting nutrient/manure management test plots?</p>	<p>The weather is always a factor, but I think the program is OK the way it is.</p> <p>I think that more GPS mapping across both the control and the test plot to see any inconsistencies across the field</p> <p>More information on how you can save on fertilizer if you have to buy.</p>
<p>Additional Comments:</p>	<p>Try to get the people that put 3 or more coats on the fields that are close to the barn to stop and spread it on other fields also.</p> <p>I think more farmers should be involved in this because it shows the different values of manure applications and if they would see this it would change the way they apply manure.</p> <p>A very good useful program that has long term benefits. The incentive payment isn't necessary but it helps by getting paid for the extra time it takes.</p>

Received	5
Sent	11

## Installed Feedlot Projects by Type— Cost-Share, Total Cost, Amount Installed, Nutrient Reductions

Rain Gutters	C/S w/Incentives	C/S w/o Incentives	Cost	% C/S	Feet	Lbs of P	Lbs of N
CWL - 56	\$2,059.90	\$1,759.90	\$2,346.53	75%	120	2	5
CWL - 58	\$1,341.37	\$1,041.37	\$1,388.49	75%	80	1	1
CWL - 64	\$1,131.49	\$1,066.94	\$1,422.59	75%	120	2	5
CWL - 55	\$1,145.84	\$845.84	\$1,127.79	75%	96	19	54
CWL - 8	\$2,555.89	\$2,255.89	\$3,780.89	60%	234	19	70
CWL - 7	\$705.20	\$405.20	\$1,430.20	28%	38	6	20
CWL - 44	890.36	856.12	\$1,501.79	57%	100	37	109
CWL - 49	\$1,330.94	\$1,030.94	\$1,374.59	75%	80	2	5
CWL - 65	\$182.15	\$164.85	\$219.79	75%	20	1	2
CWL - 66	\$1,325.83	\$1,025.83	\$1,367.77	75%	220	9	27
	\$12,668.97	\$10,452.88	\$15,960.43		1,108	98	298

Clean Water Diversions	C/S w/Incentives	C/S w/o Incentives	Cost	% C/S	Feet	Lbs of P	Lbs of N
CWL - 30	\$4,770.00	\$4,500.00	\$15,234.18	30%	200	8	23
CWL - 41	\$5,300.00	\$5,000.00	\$8,344.02	60%	1025	9	24
CWL - 65	\$2,977.12	\$2,694.42	\$3,955.00	68%	100	4	10
	\$13,047.12	\$12,194.42	\$27,533.20		1325	21	57

Buffer	C/S w/Incentives	C/S w/o Incentives	Cost	% C/S	Feet	Lbs of P	Lbs of N
CWL - 30	530.00	500.00	1,682.69	30%	120	21	61
CWL - 21	444.38	144.38	250.19	58%	175	2	7
CWL - 64	5,780.87	5,545.42	7,393.89	75%	180	2	6
CWL - 5	4,326.02	4,026.02	5,368.02	75%	85	16	46
CWL - 14	4,044.25	3,778.49	6,672.82	57%	350	51	149
CWL - 39	1,843.00	1,558.00	3,340.00	47%	180	17	50
	16,968.52	15,552.31	24,707.61		1090	109	319

Abandon Feedlot	C/S w/Incentives	C/S w/o Incentives	Cost	% C/S	Acres	Lbs of P	Lbs of N
CWL - 39	\$97.00	\$82.00	\$160.00	51%	1.86	0	0
CWL - 6	\$633.78	\$333.78	\$468.78	71%	0.86	33	119
	\$730.78	\$415.78	\$628.78		2.72	33	119

<b>Totals</b>	<b>\$43,415.39</b>	<b>\$38,615.39</b>	<b>\$68,830.02</b>			<b>261</b>	<b>793</b>
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## Test Plot Reductions

### 2007 Test Plots

Name	Acres	N	Reductions - Total lbs	
			P	K
CWL - 1	8.9	180	0	0
CWL - 2	11	215	33	33
CWL - 3	5.4	180	207	419
CWL - 4	1.78	88	182	97
Total	27.1	663	422	549

### 2008 Test Plots

Name	Acres	N	Reductions - Total lbs	
			P	K
CWL - 34	6.5	283	0	0
CWL - 36	4.6	0	0	0
CWL - 37	2.4	12	43	0
	8.3	206	102	346
CWL - 18	9.0	113	0	0
	32.4	641	0	0
CWL - 32	0.9	16	3	3
CWL - 31	9.3	116	24	46
	8.4	168	0	0
CWL - 35	43.1	927	0	0
	6.4	62	179	166
Total	131.3	2544	351	561

### 2009 Test Plots

Name	Acres	N	Reductions - Total lbs	
			P	K
CWL - 68	1.1	13	3	3
CWL - 69	2	135	50	225
	9	93	0	0
CWL - 70	9.2	288	207	138
	17.9	33	81	382
CWL - 71	5.6	114	42	84
	6.6	165	238	327
	8.6	17	357	168
	12.9	0	0	0
CWL - 72	14.2	544	0	0
	5.8	122	274	433
CWL - 73	20.3	508	0	0
	59.3	672	0	0
	53.9	993	0	0
Total	226.4	3697	1252	1760

Test Plot Totals	Acres	N	Reductions - Total lbs	
			P	K
2007	27.1	663	422	549
2008	131.3	2544	351	561
2009	226.4	3697	1252	1760
<b>Total</b>	<b>384.8</b>	<b>6904</b>	<b>2025</b>	<b>2870</b>