

Section 319

**Reducing Runoff from
Southeastern Minnesota Feedlots**

FINAL REPORT

Submitted by

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Southeast Minnesota Water Resources Board

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This project was conducted with a grant from the Minnesota Pollution Control Agency (Contract No. 66693).

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Final 319 Project Report

Reducing Runoff from Southeastern Minnesota Feedlots

Grant Project Summary

Project title: Reducing Runoff from Southeastern Minnesota Feedlots

Organization (Grantee): Southeast Minnesota Water Resources Board

Project start date: 02/01/2014 Project end date: 09/30/2017 Report submittal date: 10/20/2017

Grantee contact name: Bridgette Timm Title: Director

Address: 2212 Campus Drive SE, Suite 200

City: Rochester State: MN Zip: 55904

Phone number: 507-779-8569 Fax: _____ E-mail: Timm.bridgette@co.olmsted.mn.us

Basin: _____ Lower Mississippi River Basin in Minnesota - 07040001 County: Dodge, Fillmore, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Winona and Wabasha

Project type (check one):

- Clean Water Partnership (CWP) Diagnostic
- CWP Implementation
- Total Maximum Daily Load (TMDL) Development
- 319 Implementation
- 319 Demonstration, Education, Research
- TMDL Implementation

Grant Funding

Final grant amount: \$299,964.00 Final total project costs: \$572,743.00

Matching funds: Final cash: \$216,000.00 Final in-kind: \$56,779 Final Loan: \$0

Contract number: 66693 MPCA project manager: Justin Watkins

For TMDL/WRAPS development or TMDL/WRAPS implementation projects only

Impaired reach name(s): Regional project addressing numerous impairments

AUID or DNR Lake ID(s): _____

Listed pollutant(s): _____

303(d) List scheduled start date: _____ Scheduled completion date: _____

AUID = Assessment Unit ID

DNR = Minnesota Department of Natural Resources

Executive Summary of Project

This grant titled “Reducing Runoff from Southeast Minnesota Feedlots” was developed from a basin-wide response to the findings of a Regional Total Maximum Daily Load (TMDL) study approved in 2006 that identified 39 stream reaches of the Lower Mississippi River Basin in Minnesota (the Basin) as posing a risk of human illness from excessive levels of fecal coliform bacteria. The TMDL study found that runoff from feedlots or manure stockpiles without runoff controls comprises an estimated loading of fecal coliform bacteria to streams of 17% during a wet spring and 37% during a wet summer. To achieve water quality standards, the Regional TMDL Implementation Plan calls for reducing bacteria impairments from all major sources by an average of 65%. One of several strategies for reaching this goal includes providing assistance for accelerated compliance with the state feedlot rules.

Waterbody Improved

The regional scale of this project allowed for numerous feedlots contributing fecal coliform to be addressed and pollution loads to be reduced. No one stream was targeted in this project, however, the cumulative effect of the feedlot fixes throughout the region will likely contribute to the mitigation of fecal coliform in the listed reaches in this region. The impaired waters list indicates that fecal coliform-impaired reaches and their contributing watersheds occur in all ten counties that implemented feedlot fixes through this grant.

Project Highlights

A successful strategy used in the Basin to reach runoff reduction goals has been to build local capacity for accelerating producer compliance with state feedlot rules. Employing this strategy in five previous regional feedlot projects, 2,295 producers in the region signed up for the Open Lot Agreement, runoff reduction designs for over 1,500 feedlots have been completed, and 520 projects were completed through the first five feedlot grants with very low 50% cost-share funding of \$1,000 - \$15,000, plus technical assistance. The goal of the Southeast Regional Grant for Water Quality was for 30 open lot feedlots under 500 animal units to reduce their runoff levels to negligible levels through technical assistance and cost-share funding for relatively low-cost solutions. This goal was to be accomplished by the following means:

Partners and Evaluation

- **Technical Assistance:** SEMWRB, partnering with the SE SWCD Technical Support JPB (SE SWCD JPB), Counties and SWCD’s will provide 30 livestock producers with technical assistance to design and implement low-cost fixes to control polluted runoff.
- **Cost-Share:** SEMWRB will manage cost share funding in coordination with Counties and SWCD’s. This partnership is set up and ready to go, and through this project will provide 50% cost share, typically at or under \$15,000 per fix, for small livestock producers (under 500 animal units) to implement feedlot runoff treatment.
- **Engineering Technical Assistance;** SE SWCD JPB has 14 years of experience coordinating regional grants for feedlot engineering assistance in Southeast Minnesota. These engineers provide needed support to local feedlot staff in the design of small feedlot fixes. SEMWRB will partner with SE SWCD JPB to retain one primary engineer and two additional regional engineering technical staff to provide enhanced engineering assistance for feedlot design.
- **Evaluation;** The average before and after percent drop in the amount (mass) of fecal coliform in MinnFARM examples from 4 feedlots in Winona County was calculated at approximately 98%. The following additional reductions were expected through this project based on the average reductions from 4 feedlots in Winona County: 70,900 lbs/year COD, 1,270 lbs/year P, 3,890 lbs/year N, and 15,780 lbs/year BOD.

Results

County/SWCD staff and regional engineers worked with livestock producers of under 500 animal units, providing technical assistance to design, plan and implement feedlot runoff controls. SE SWCD Technical Support Joint Powers Board had 3 engineering staff working primarily on Feedlot Runoff Control Projects in coordination with the this grant throughout the 10 Counties covered by this grant and providing assistance to local feedlot staff for design and construction of larger fixes. Weather delayed a few

A total of 25 different feedlot fixes were completed because of this project. These specific fixes resulted in an annual Fecal Coliform reduction of 1.55E+16 based on MinnFarm reductions estimations. This is a total reduction of 95% from original estimates. There was an average Fecal Coliform reduction of 83% per feedlot fix with a majority of fixes reducing over 96%. Additional annual pollutant reductions associated with these fixes according to MinnFarm calculations include

906.26 lbs. of phosphorus, 2,2234.59 lbs. of Nitrogen, 29,473.9 lbs in Chemical Oxygen Demand and 16,547 in Biological Oxygen Demand

Picture

See attached – Project examples

Acronyms

OLA – Open Lot Agreement

SWCD – Soil and Water Conservation District

CFO – County Feedlot Officer

BWSR – Board of Water and Soil Resources

SE Tech Support JPB – Southeast Technical Support Joint Powers Board

TMDL – Total Maximum Daily Load

SEMWRB – Southeast Minnesota Water Resources Board

LGU – Local Government Unit

Partnerships

Project partners include the Counties and/or SWCD's of Dodge, Fillmore, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, and Winona. County Feedlot Officers in these counties were sub-contracted to complete the project goals.

Area engineering staff through the SE Technical Support JPB assisted Feedlot Officers with design and installation of the more complicated fixes.

Body of Main Report

Section I – Work Plan Review

Approved Work Plan Changes:

The original work plan and budget had one amendment and one change order occur during the grant period, however, the overall project costs never changed. The grant amendment was approved to move \$49,379 from the cost-share objective to the technical assistance objective. The project timeline was also extended from August 2017 to September 2017.

A change order was approved in September 2017 to allow for funds to be moved from cost-share to technical assistance objectives. Landowners for two projects required more time to finalize their feedlot fixes and canceled their project contracts. Because of the limited time to find new projects to utilize the remaining funds, \$10,553.00 was moved from the cost share objective and distributed to the technical assistance objective and project management objective.

Objective 1: Technical Assistance; Local Governmental Units (LGUs) will provide feedlot producers of fewer than 500 AU's with technical assistance in designing low-cost fixes to correct and treat polluted runoff.

Sub-recipient agreements were developed with Counties and SWCD's for encumbering cost share dollars. Initial agreements were developed with the assistance of the Olmsted County Attorney. Allocations were made using the county's final number of small feedlot owners as a guide. At the end of the first sub-recipient agreement period, remaining funds were redistributed based on need and demonstrated ability to use the funding. In the final months of the project, funds were again reallocated from counties that were not able to complete projects to other counties that showed a need and ability to spend funds appropriately. Local Government Units (County and SWCD) managed their cost share allocations and developed cost share contracts with landowners to implement feedlot fixes. LGU's submitted semi-annual reports of assistance provided, runoff reduction estimates and invoice documentation.

A total of 25 producers were provided technical assistance to complete pollution reduction projects. Numerous other landowners were provided technical assistance and education on pollution abatement for potential projects to be cost-shared in the future.

Objective 2: Small feedlot owners receive cost-share funding to assist with low-cost fix implementation. The individual LGU determines the level of cost-share funding (with a maximum of typically less than \$15,000) to offer producers that will be most effective in their area.

Local feedlot technical staff or contractors, with the assistance of regional engineering support staff, designed low-cost fixes to correct and treat polluted runoff on feedlots under 500 animal units. Engineering staff of the SE SWCD Technical Support JPB provided necessary professional engineering assistance to completed site investigations, surveys, develop cost estimates for BMP alternatives that fit the sites, design BMPs, and assist with construction of feedlot runoff control practices.

LGU's and Engineers submitted semi-annual reports of progress, including landowner name, number of animal units, type of assistance provided, the level of fix completed, before and after runoff model numbers, itemization of grant funds for reimbursement and in-kind documentation. Design and technical assistance led to pollution reduction on 25 feedlots. Individual projects varied depending on site specific needs and included such fixes as manure storage, milk house waste systems, buffers, stacking slabs and clean water diversions.

Objective 3: Project Management

The Executive Director of the Southeast Minnesota Water Resources Board (SEMWRB) was the project manager. The project manager developed terms of sub-recipient agreements with counties and SWCDs for cost share and technical assistance, revised semi-annual county reporting forms to determine that counties met their contract obligations, provided coordination between all project partners, and reported progress to the SEMWRB

joint powers board and project partners on a regular basis. The project manager also maintained the project budget and account, procured an annual audit of financial records and reimbursed counties on a semi-annual basis. Semi-annual reporting requirements to the grantor were met.

Section II – Grant Results

Measurements

To evaluate the success of all feedlot fixes, a unified reporting form was developed and maintained to track implementation fixes utilizing cost-share funds. Each county submitted their progress via the Unified Reporting Form biannually along with invoices for project reimbursements. The report includes fields for the name of the producer served through grant funds, type of fix implemented, whether the fix was in a priority area, the number of animal units, and the before and after MinnFarm runoff reduction results for each lot. The cumulative report of completed fixes compiled for this grant and past grant cycles is attached: FL_Unified Reporting Form_cumulative.xlsx. The total load reductions for all feedlot fixes in this grant cycle are listed in the table below.

Overall load reductions for this Feedlot grant run with the MinnFARM model:

<u>MinnFarm</u>* (annual load model)	Goal	Reductions
Annual COD (lbs.)	70,900	29,473.94
Annual Phosphorus (lbs.)	1,270	906.29
Annual Nitrogen (lbs.)	3,890	2,234.59
Annual Fecal (cfu)	98%	1.55E+16 (95%)
Annual BOD5 (lbs.)	15,780	16,547

Products

Products and documents that have been produced through this grant include the following attachments:

Unified Reporting Form (FL_Unified Reporting Form_cumulative.xlsx)
 Project example with photos (Project example write up – TSA Engineer)

Public outreach: Public outreach was not part of the workplan.

Long-term results:

The methods employed in this grant were designed to build local capacity to meet the challenges of polluted feedlot runoff from small livestock farms in southeast Minnesota. An existing partnership among the county and SWCD feedlot managers was strengthened through partnership with the SE Technical Support JPB to provide engineering support for more complicated fixes. The results of this project include improved regional collaboration and technical knowledge of local staff to identify and prioritize needs and to find appropriate solutions given landscape constraints of steeply sloped lands of SE Minnesota and economic constraints of small livestock producers. The success of this local collaboration will

enhance the ability to implement runoff reduction fixes in the long-term and demonstrates the capacity and capability of project partners to work on a regional project scale for future grant projects related to feedlot pollution abatement. The continued success of this project has proven worth the on-going efforts by all grant partners. This project will continue with assistance from a MPCA Federal 319 grant for an additional four years with the project titled *Reducing Bacteria from SE MN Feedlots*. This phase has a goal to provide technical and cost-share assistance for 30 feedlots fixes to mitigate fecal coliform bacteria pollution in run-off from open-lot feedlots. Additional targeting of open lot feedlots in priority areas identified in local WRAPS and TMDL reports will occur at the start in order for local feedlot staff to better prioritize their cost-share projects.

Project development and accomplishments were shared with the Southeast Minnesota Water Resources Board (SEMWRB), SE MN Water Resources Advisory committee (WRAC) and MPCA staff. Pollution reductions achieved through this grant will be shared with SEMWRB and WRAC along with local county feedlot staff and SWCD staff to inform them of regional accomplishments and provide discussion of best management practices for future feedlot fixes. A detailed historical analysis of pollution reductions achieved over the life of this and past grant activities is planned to occur during the 2018-2021 grant cycle.

Section III – Final Expenditures

Budget -Expenses

The total amount expended from each budget object is outlined below. For further details please see the attached Expense Report: FLVI cash and in-kind expenses.xls

Objective	Total Expense	Budgeted	Remaining
Technical Assistance	\$49,951.60	\$50,000.00	\$48.40
Cost Share Funding	\$218,670.84	\$218,826.00	\$155.16
Project Management	\$30,941.00	\$31,138.00	\$197.00
Total Project	\$299,563.44	\$299,964.00	\$400.56
In-Kind Match	\$32,387.29	\$56,779.00	\$24,391.71
Cash Match	\$357,712.39	\$216,000.00	-\$141,712.39
Total Match	\$390,099.68	\$272,779.00	-\$117,320.68

Final project budget

Cost Category	Unit Cost	Quantity	Quantity Amended	Quantity Change Order	In-Kind	In-Kind Amended	Match Cash	Match Cash Amended	Grant Cash Amended	Grant Cash Change Order	Total Budget Amended	Total Budget Change Order
OBJECTIVE 1 - TECHNICAL ASSISTANCE												
LPT Staff	40.00 /hr.	2,625	1,535	hrs.	45,000.00	20,779.00			40,621.00	50,000.00	61,400.00	70,779.00
Landowner Time	15.00 /hr.	2,400			36,000.00	36,000.00					36,000.00	36,000.00
OBJECTIVE 1 - TOTAL					51,000.00	56,779.00	0.00	0.00	40,621.00	50,000.00	97,400.00	106,779.00
OBJECTIVE 2 - BMP COST SHARE FUNDING												
Landowner Cost-Share									229,379.00	218,826.00	229,379.00	218,826.00
Landowner Cash Match							200,000.00	210,000.00			210,000.00	210,000.00
OBJECTIVE 2 - TOTAL					0.00	0.00	200,000.00	210,000.00	229,379.00	218,826.00	439,379.00	428,826.00
OBJECTIVE 3 - PROJECT MANAGEMENT												
Project Manager - SEMWRB	44.00 /hr.	681		708 hrs.					29,964.00	31,138.00	29,964.00	31,138.00
Office Space - Winona State University (WSU)							6,000.00	6,000.00			6,000.00	6,000.00
OBJECTIVE 3 - TOTAL					0.00	0.00	6,000.00	6,000.00	29,964.00	31,138.00	35,964.00	37,138.00
ITEMIZED BUDGET												
OBJECTIVE 1 - TOTAL					51,000.00	56,779.00	0.00	0.00	40,621.00	50,000.00	97,400.00	106,779.00
OBJECTIVE 2 - TOTAL					0.00	0.00	200,000.00	210,000.00	229,379.00	218,826.00	439,379.00	428,826.00
OBJECTIVE 3 - TOTAL					0.00	0.00	6,000.00	6,000.00	29,964.00	31,138.00	35,964.00	37,138.00
GRAND TOTAL	FTE	0.93			51,000.00	56,779.00	206,000.00	216,000.00	299,964.00	299,964.00	572,743.00	572,743.00

Final Gantt Chart

PROJECT NAME: REDUCING RUNOFF FROM SOUTHEAST MINNESOTA FEEDLOTS																																																Revised Attachment A CR 7007_SWIFT 66693																																															
Year 2014												Year 2015												Year 2016												Year 2017																																																											
F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D																																																	
OBJECTIVE 1: TECHNICAL ASSISTANCE																																																																																															
Task A Technical Assistance																																																																																															
Sub-task 1 Develop Sub-agreements with LGUs																																																																																															
Sub-task 2 LGU's Complete designs and installations																																																																																															
Sub-task 3 LGU's submit reports and invoices for TA																																																																																															
Timeline: February 2014 to August 31, 2017 <u>September 30, 2017</u>																																																																																															
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OBJECTIVE 3: PROJECT MANAGEMENT																																																																																															
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