



Producers Guide to Livestock Manure Management Systems

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The installation of livestock manure management facilities across North Dakota has increased significantly during the past several years. Increased awareness of the impacts of livestock manure on water quality, as well as state and federal rules, has been the reason for much of this activity. In addition, state and federal agencies have seen a need for water quality improvements and have targeted cost-share dollars and incentive programs specifically to livestock manure management systems.

Unfortunately for producers, educational efforts on the need for livestock manure management systems and information on best management practices to protect water quality have trailed behind emerging regulations and facility installation. The goal of this publication is to inform program facilitators and livestock producers of the process involved in developing a livestock manure management system. Please note that a livestock manure management system does not simply mean facility modifications; it also includes nutrient management planning, manure utilization and facility maintenance.

NDSU
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AUGUST 2005

Initial assessment

The first step in this process is to conduct a site assessment. A site assessment is used to determine if the site is impacting water quality. If the facility is identified as having an impact on water quality, producers have the option of making management changes, updating their existing system or relocating to an area where water quality no longer is a concern.

The NDSU Extension Service and North Dakota Department of Health have developed a publication to help producers determine if their facility is impacting water quality. Publication NM-1284 is titled "Assessment Tool for New or Existing Animal Feeding Operations." This tool is available through their county Extension agent, NDSU livestock nutrient management specialist, watershed coordinator, North Dakota Stockmen's Association environmental services director and the North Dakota Department of Agriculture Dairy Pollution Prevention Program coordinator, or on the Web at www.ext.nodak.edu/extpubs/h2oqual/watgrnd/nm1284w.htm. This publication will give producers a better idea of whether their system has a potential to pollute.

If the facility ranks as a medium or high potential to pollute, producers should contact one of the above-mentioned agencies or the North Dakota Department of Health to determine how to proceed. In some instances, management changes may be sufficient. In others, producers will need to install a livestock manure containment system.

The remainder of this publication outlines the cost-share and incentive programs available to producers, time line for project completion and other pertinent information producers will need to complete a livestock manure management system.

Cost-share/Incentive Programs

Several different cost-share options are available to producers. A part of the initial assessment will include an identification of cost-share or incentive programs for which the producer may be eligible.

The Environmental Quality Incentives Program (EQIP) is a competitive incentive program that uses funds from the U.S. Department of Agriculture. EQIP has "batching periods" throughout the year in which producers can submit an application for assistance. "Batching periods" dictate project cost-share rates, project limits and deadlines. EQIP does not have a continual application process, so a producer must wait for a "batching period" to submit an application.

Once submitted, EQIP projects use a ranking system to determine which producers receive assistance. If funding is awarded, producers must enter into a contract before proceeding with the project. EQIP is the only incentive program that can be used to assist producers who are building or expanding to become a large concentrated animal feeding operation (CAFO).

Several cost-share programs receive their funding from the Environmental Protection Agency. You will hear these referred to as "319" funds. Watershed programs, the Dairy Pollution Prevention Program, the Stewardship Support Program and the Livestock Facilities Assistance Program are some of the "319" programs.

Availability of these funds differs from EQIP in that the programs are not competitive and are available on a continual basis. However, some restrictions do apply. For example, watershed programs are focused on specific, high-priority watersheds in the state. The Dairy Pollution Prevention Program and the Stewardship Support Program are specific to dairy and beef producers, respectively. The Livestock Facilities Assistance Program provides only engineering assistance, not project cost-sharing. In certain situations, producers can combine an application for assistance from both EQIP and "319" funds.

Producer Match

All cost-share or incentive programs require some type of match from the producer. This match can come in two forms, cash and in-kind. Cash match is exactly that. It is the portion of the project that the producer is required to pay in cash. In-kind match allows producers to receive credit for labor or materials they contribute to the livestock manure management system. The value assigned to the labor or materials that the producer contributes is called in-kind.

Some examples of in-kind are the value of labor to remove and reinstall fence, the value of gravel from the producer's land, seeding abandoned areas or the value of labor to remove trees. Some producers also have done their own trenching for water lines and poured concrete heavy-use pads using forms they own.

In-kind contributions can include a large amount of manual labor and time. A producer still will incur expenses when making in-kind contributions; however, those expenses most likely will be less than hiring a contractor. Contact your project coordinator to determine what other practices may be eligible for in-kind contributions.

See Table 1 for some general comparisons of cost-share/incentive programs.

Nutrient Management Plans

Nutrient management is best defined as management practices used to monitor and control the flow of nutrients in and out of any livestock operation. A nutrient management plan documents the practices that are necessary to manage and use nutrients in a way that protects surface and ground water quality and is agronomically and economically beneficial. Permit applications to the North Dakota Department of Health require a nutrient management plan.

Listed below is an outline of the type of information in a nutrient management plan:

1. Type of livestock, number of days per year on site and estimated manure production
2. Description of manure-handling practices
 - a. Livestock area cleaning frequency
 - b. Manure storage location
3. Maps
 - a. Aerial maps with field information (section, township, range)
 - i. Identify acres available for manure application
 - b. Soils map
 - i. Identify fields where manure will be applied during frozen conditions
 - ii. Identify possible spreading restrictions

Table 1. Cost-share/incentive programs available to North Dakota producers for assistance with livestock manure management systems.

Program	Agency	Type of Assistance	Producer Match
Environmental Quality Incentives Program (EQIP)	USDA/NRCS	Engineering Technical* Financial	Cash
319 Watershed Funds	Soil Conservation Districts/Water boards/County commissions/RC&D	Technical* Financial	In-kind Cash
Stewardship Support Program (SSP)	North Dakota Stockmen's Association (Beef)	Technical* Financial	In-kind Cash
Livestock Facilities Assistance Program (LFAP)	Dakota West and Dakota Prairies RC&D	Engineering	Cash
Dairy Pollution Prevention Program (DP3)	North Dakota Department of Agriculture (Dairy)	Technical* Financial	In-kind Cash
NPS-BMP Team	Sheyenne James RC&D	Engineering	Cash

* Technical assistance may include development of nutrient management plans, assistance with permit application and other associated paper work.

4. The form of manure and expected frequency of application
5. Current and/or planned crop production or crop rotation
6. Complete nutrient budget for nitrogen and phosphorus for the rotation or crop sequence
7. Analysis results
 - a. Soil tests
 - b. Manure analysis
 - c. Plant
 - d. Water
 - e. Other nonmanure nutrient credits
8. Quantify all nitrogen and phosphorus sources
9. Recommended nitrogen and phosphorus rates, timing and method of application for crop and rotation needs
10. Precautions that will be used to prevent manure from impacting surface water
11. The name of the individual who developed the nutrient management plan and the organization with which the person is affiliated
12. Other information that may be included:
 - a. Emergency response plan
 - b. Mortality management

Course of Action

The amount of time required to complete a livestock manure management system varies for each operation. Some systems require minor changes while others require relocating the facility or starting from scratch. Producers are encouraged to do as much research as possible on livestock manure management systems before committing to a new or revised system. Effort spent researching livestock manure management systems can save time for the producer, project coordinator and the engineer. In addition to saving time, a prepared producer will be able to save money and will be the most satisfied with the final product. The easiest way to determine the best system is to visit with other producers who have updated their systems. Most producers are happy to visit with you and provide an opportunity to tour their facility. (See Sample Course of Action on page 4.)

Other Considerations

Remember that there is more to livestock manure management than a containment system. Containment systems keep facility run-off from reaching the state's waters; however, manure mismanagement also is a significant source of water quality impairment. For more information, refer to NDSU Extension publication NM-1281, "Unintended Impacts of Fertilizer and Manure Mismanagement on Natural Resources." A complete livestock manure management system addresses the facility and the use of manure, the coproduct that livestock produce.

Sample Course of Action*

- A. Meet with agency personnel. Discuss producer needs, facility limitations, pollution potential, nutrient management, assistance programs, management strategies, etc.
- B. Complete "Assessment Tool for New or Existing Animal Feed Operations," NDSU Extension publication NM-1284
- C. Make plans on how to proceed. Options would be:
 - a. No potential to pollute (need consultation from North Dakota Department of Health)
 - b. Changes in management to minimize or eliminate pollution potential
 - c. Containment system
 - d. Do nothing (may be in violation of state law)

When proceeding with a livestock containment system:

- D. Identification of assistance options
 - a. Government assistance
 - i. Environmental Quality Incentive Program
 - ii. 319
 - 1. Watershed programs
 - 2. Livestock Facilities Assistance Program
 - 3. Stewardship Support Program
 - 4. North Dakota Dairy Pollution Prevention Program
 - 5. NPS BMP Team
 - b. Private engineer
- E. Visit with other producers who have updated their facilities
- F. Contact local county or township officials regarding existing ordinances for animal feeding operations
- G. Contact lending agency
 - a. Involvement and cooperation from a lending agency will be beneficial in most situations. Consider securing a short-term loan for 100 percent of construction costs. Once the project is completed, the loan can be converted to a long-term loan. The long-term loan would be for producer's portion of the project, not 100 percent of the project cost. Including your project coordinator in discussions with your lending institution may be beneficial.
- H. Site Survey
 - a. Some individuals may want to contact the North Dakota Department of Health before conducting a survey to ensure that they need to take action.

- I. Initial site design
 - a. Can be made by producer, agency personnel, engineer, etc. Should consider animal flow, equipment type and size for feeding and cleaning of lots, manure storage, snow removal, etc.
 - b. Discuss information on the value of "in-kind" and the minimum requirements for compliance
- J. Finalizing design and budget development
 - a. May require several meetings of producer, engineer, coordinator, other agency individuals
 - b. May involve more than one program (EQIP and 319)
- K. Initial development of nutrient management plan
- L. Submittal of application for cost-share assistance
 - a. EQIP applications are dependent on deadlines
 - b. 319 applications are taken continuously

Note: A permit from the North Dakota Department of Health is not required when submitting an application for cost-share dollars; however, if approved, a permit from the NDDH is required before construction can begin. A permit application to the NDDH should be submitted a minimum of 60 days prior to the planned construction date.
- M. Tax implications
 - a. If funding is awarded, you should contact a tax accountant as cost-share may be viewed as income (IRS form 126; www.fourmilab.ch/ustax/www/t26-A-1-B-III-126.html).
- N. Submit permit application to North Dakota Department of Health
 - a. Requires completed design with construction specifics and a nutrient management plan
- O. Develop and distribute bid packets
 - a. Producer is responsible for contacting contractors and negotiating prices
 - b. Engineer and project coordinators may recommend contractors

WARNING!! The number of skilled contractors may be limited or some may be unavailable. Make sure to check references and solicit contractors with the equipment and ability to shoot grades and read grade stakes.
- P. Construction
 - a. Design and permit approval from North Dakota Department of Health must be obtained before starting construction
 - b. May depend on weather, contractor availability and funds

WARNING!! Producers should consider finding alternative locations for livestock until construction is complete. Removing fences, corrals and other structures traditionally used to house or handle livestock may be necessary.
- Q. Submittal for reimbursement

* This is only a guide and cannot take into account all foreseeable events.

Contact information

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North Dakota Department of Health

www.health.state.nd.us/wq/
AnimalFeedingOperations/AFOPProgram.htm

North Dakota Watershed Projects

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Natural Resources Conservation Service

www.nd.nrcs.usda.gov/programs/

Soil Conservation Districts

www.nacdnet.org/

Notes

For more information on this and other topics, see: www.ag.ndsu.edu