

1.0 PROJECT PROPOSAL SUMMARY SHEET

PROJECT NAME: North Dakota Stockmen's Association - Environmental Services Program Phase VII
NAME, ADDRESS, PHONE & E-MAIL OF LEAD PROJECT SPONSOR/SUBGRANTEE:

North Dakota Stockmen's Association
407 South 2nd Street
Bismarck, ND 58504

CONTACT PERSON: Scott Ressler, Environmental Services Director
Phone: 701-223-2522
Fax: 701-223-2587
E-mail: sressler@ndstockmen.org

STATE: North Dakota

WATERSHED: Statewide

PROJECT TYPE: Statewide financial and technical assistance for animal waste systems

WATERBODY TYPES: Lakes/Reservoirs, Rivers/Streams/Wetlands

NPS CATEGORY: Agriculture

PROJECT LOCATION: Statewide

SUMMARIZATION OF MAJOR GOALS:

Beef cattle represent the largest livestock industry in North Dakota, with more than 8,500 producers owning 1.5 million head of cattle. Cattle feeding is not a large segment of the beef industry in North Dakota but the interest in cattle feeding is expanding and the potential for growth is encouraging. The Environmental Services Director has close ties with the Feeder Council, which is comprised of a large percentage of cattle feeders in the state and provides a great contact for the director.

This is a continuation of Phase VII of the successful North Dakota Stockmen's Association (NDSA) Environmental Services Program (ESP). These funds are directed to BMP's. The major goal is to maintain a statewide program that will reduce potential water quality impairments associated with livestock concentration areas by increasing producer understanding of the current state and federal rules and regulations and assisting them with the identification and implementation of cost-effective solutions that will improve manure management. Beef producers will voluntarily incorporate management techniques, improve facilities and increase the utilization of manure as a valuable resource.

PROJECT DESCRIPTION:

The Environmental Services Director will assist 20 beef producers per year.

1. Identify financial needs of producers that are necessary for Best Management Practices (BMP) and compliance measures.
2. Assist producers in developing and identifying BMP's to improve their feeding operation to reduce possible environmental hazards.
3. Encourage voluntary participation in BMP's.
4. Assist producers with the evaluation of current manure management practices and alternative management measures for their facilities. Make referrals to engineers, experts, etc.
5. Assist in filing the necessary documentation for planned facilities to obtain approval from the North Dakota Department of Environmental Quality.
6. Assist in identifying potential problems with an existing facility and recommending solutions or people who can assist in resolving their problems.
7. Identify potential sources of cost-share dollars to match 319 funds and other funds available that will lighten producers' financial burden to the producers.
8. Document the benefits of applied BMP's and project efforts.

FY 2022 319 funds requested: \$425,000

non-federal match: \$283,333

TOTAL PROJECT BUDGET: \$708,333

2.0 STATEMENT OF NEED

The ESP was started in 2001 and has been implemented through several phases. Since the initiation of the current phase the NDSA has been one of the leaders in promoting BMP's while addressing livestock waste runoff on animal feeding operations (AFO's). The NDSA Environmental Services Director has been invited on several hundred beef cattle operations across the state to assess individual AFO's and to determine how that operation's fit into the state and federal regulations for AFO's. There have been 76 Stewardship Support Program (SSP) and 58 Environmental Quality Incentive Program contracts developed for cost-share on the installation of animal waste systems. The location of the NDSA SSP systems installed through these contracts are shown in **attachment 5**. Phase VII will simply continue the work on addressing nutrient reduction of nutrient loading on beef cattle animal feeding operations in North Dakota. To date the environmental services program has reduced nitrogen by 245,548 lbs and phosphorus by 118,002 lbs. Additionally there have been 134 comprehensive nutrient management plans developed.

The ESP has been successful in locating outside money to help defray some of the out-of-pocket costs for the producers. North Dakota Legislature allocated \$50,000 per biennium to support project staff in 2021. In addition, a \$50,000 grant from the North Dakota Water Commission in 2021 was committed for producer engineering expenses as well. Additionally, the NDSA signed a cooperative agreement with the USDA NRCS for \$200,000 for administration and engineering. The annual NDSA Feedlot Tour continues to allow interested beef cattle producers the opportunity to see first-hand what conservation practices are involved in a permitted beef feedlot. The tour recently finished its 19th year with more than 85 interested cattle producers attending.

The need and interest for permitted, contained animal waste systems continues to be requested from beef cattle producers in North Dakota. Primarily, the project will address nutrients such as nitrogen, phosphorus, and *E. coli* bacteria. The project plans to reduce annual concentration of nitrogen and phosphorus as well as the nutrient loading by 79% per system installed by the NDSA ESP. With 200 lakes and reservoirs and 56,027 miles of rivers and streams in North Dakota, the need for this project to address water quality is great importance. Severe water quality impacts are associated with poor manure management. With 4,194 miles of rivers and streams affected by animal feeding operations there remains a need to address the lack of manure management. With construction of clay-lined holding ponds, beef cattle producers today are implementing containment animal waste systems and preventing excess runoff of nitrogen, phosphorus, and *E. coli* bacteria. The project benefits are two-fold; the beef producer and the environment both win when a needed animal waste system is constructed and properly maintained. The current state and federal animal feeding regulations continue to drive the interest from beef cattle producers.

One of the greatest successes has been the opportunity to provide information on the AFO-CAFO regulations to interested producers across the state, through a monthly column in the *North Dakota Stockman* magazine which reaches over 3,000 cattle producers in North Dakota.

3.0 PROJECT DESCRIPTION

Most of the program focus will be one-on-one producer contact. The NDSA Board of Directors has established a process to schedule the delivery of technical and financial assistance. **(See attachments 2 and 3)** This assessment and evaluation process will be used to prioritize the delivery of technical and financial assistance to producers outside of approved EPA 319 watershed priority areas. The criteria will focus on those beef cattle operations that may be viewed as contributing more to an environmental problem based on location and size up to 1,000 animals. The actual site will be viewed by the Environmental Services Director and the producers to make a preliminary evaluation of potential problems and compile potential solutions. Rancher-to-rancher links can be established to demonstrate that solutions are available. A concerted effort will be made to accomplish a practice in a least-cost fashion. The ESP will continue to utilize the AFRRIW to estimate annual nitrogen and phosphorus loadings. The worksheet was modeled after the State of Utah's worksheet. **(See attachment 4)**

3.1 PROJECT COMPONENTS

Goal: Maintain a statewide program that will reduce potential water quality impairments associated with livestock concentration areas by increasing producer understanding of the current rules and regulations and assisting them with the identification and implementation of cost-effective solutions that will improve manure management. Producers will voluntarily incorporate management techniques, improve facilities and increase utilization of manure as a valuable resource.

Objective 1: Increase producer awareness and understanding of current/pending rules and regulations addressing manure management, as well as potential solutions to water quality impacts associated with their livestock facilities.

Task 1. Employ an Environmental Services Director to deliver the program and complete project tasks.

Product: Environmental Services Director

Cost: This cost includes salary, fringe, travel, supplies, rent, utilities, telephone, postage, equipment, staffing and support. The associated costs can be found on part 2 of budget.

Task 2. Disseminate information on the compliance requirements and potential penalties associated with current or pending rules and regulations focusing on manure management in the state.

Product: Direct mailings, 20 contacts/year, 11 articles/year, 3 public presentations/year and 1 feedlot tour/year.

Cost: Included in Task 1.

Task 3. Assist producers with evaluations and assessments of their facilities to identify potential water quality concerns and the type of BMP's that could be implemented to improve their current feeding operations and downstream water quality.

Product: 20 animal feeding operation evaluations and ranch assessments and North Dakota animal feedlot runoff risk index worksheet per year. **(See attachment 2, 3, and 4)**

Cost: Included in Task 1.

Task 4. Promote the voluntary implementation of BMP's designed to improve manure management within concentrated livestock feeding areas.

Product: 20 one-on-one contacts per year. Site-specific BMP recommendations based on the ranch assessments.

Cost: Included in Task 1.

Task 5. Provide cooperating producers with preliminary cost estimates for recommended BMP and potential sources for financial assistance.

Product: List of private/local/state/federal funding sources for manure management systems and three site-specific cost estimates per year.

Cost: Included in Task 1.

Objective 2: Provide financial and technical assistance to support the voluntary installation of 2 manure management systems.

Task 6. The NDSA Environmental Services Program to utilize a prioritization process for the delivery of financial and technical assistance for the installation of manure management systems. It will be consistent with the statewide prioritization process.

Product: Identify 3 priority AFO's per year (**See attachment 2, and 3**)

Cost: Included in Task 1.

Task 7. Provide technical assistance for the development of manure management plans for priority facilities and the acquisition of the engineering assistance to complete construction designs. Potential sources for engineering assistance include NRCS, Nonpoint Source Best Management Team, or private consultants.

Product: Two system designs per year.

Cost: Included in Task 1. (If applicable, private consultant engineering costs will be included in the system implementation costs.)

Task 8. Provide Section 319 financial assistance available through the NDSA Stewardship Support Program (SSP) and/or assist the producer in applying for other state/federal funds to install the priority manure management systems.

Product: 2 funded through SSP.

Cost: \$708,333 (\$425,000 in FY 2022 section 319 funds and \$283,333 in match) for SSP.

Task 9. Complete annual project reports per the Environmental Protection Agency and North Dakota Department of Environmental Quality requirements and final report at the end of the project.

Product: Two annual reports and one final report

Cost: Included in Task 1.

Objective 3: Facilitate improved grazing management on beef cattle operations across North Dakota

Task 10 - Compile information on the local/state/federal organizations providing financial and/or technical support to plan and install grazing management practices/systems in ND.

Product: Compendium of organization programs; type of assistance; location; and contact person(s)

Costs: Included in Task 1

Task 11: Utilize existing organization social media outlets, web site and magazine as well as direct interaction with ND ranchers to connect them with potential sources of financial and technical assistance to improve grazing management on their operations.

Product: Web page; magazine articles and social media posts highlighting the various sources

Costs: Included in Task 1

3.2 PROJECT SPONSOR

The NDSA will be the lead project sponsor. North Dakota Department of Environmental Quality (NDDEQ) staff has expressed a need for a front-end salesperson. The Environmental Services Director would have credibility with producers because the association is viewed as non-regulatory. The Environmental Services Director will be rancher-friendly and can direct producers to the right people by giving information, contact people and advice to producers who will not initially contact government agencies directly. We will depend on Extension for educational information and the Department of Environmental Quality for regulatory information. NRCS, soil conservation districts, water resource districts, 319 engineering teams and private engineers will be called on for technical advice when appropriate. A network of producers and feeders with experience in various areas of expertise will also be utilized to increase the comfort level for producers needing to implement various environmental practices.

3.3 MILESTONE TABLE (See attachment 1)

3.4 PERMITS

Specific requirements for cultural resource inventories, ND Pollutant Discharge Elimination System and Approval to Operate permit will be determined on a case-by-case basis. In addition, 404 permits will be obtained, when needed. Operation and maintenance plans will be developed by the engineer for the livestock management systems during the design phase as well as after construction.

4.0 COORDINATION PLAN

The Environmental Services Director will coordinate with others to prevent duplication. In most cases, we see the position as being the first contact (a friendly face) for producers who would not feel comfortable approaching others with regulatory authority. Communicating ideas, needs and producer concerns to others will create an opportunity to find solutions as a group.

The NDSA Environmental Services Director will work closely with the North Dakota State University (NDSU) Nutrient Management Advisory Committee. The NDSA Environmental Services Director is part of the advisory committee to give direction and coordinate efforts. The committee is made up of the following organizations: U.S. Department of Agriculture Natural Resources and Conservation Services (NRCS), North Dakota Department of Environmental Quality, North Dakota Stockmen's Association, North Dakota Department of Agriculture (NDDA), NDSU Extension Service, NDSU Soil Science Department. This committee is expected to meet twice a year to, 1) provide overall program direction to the NDSU Extension livestock environmental management program, 2) identify additional research needs in this area, and 3) provide a conduit for effective communications and coordination among livestock groups and agencies working with livestock environmental management.

There will be involvement from various agencies and organizations to deliver the program. The NRCS will provide financial assistance through EQIP when appropriate. The NDDEQ will provide financial assistance to the NDSA through Section 319 funds. Local Section 319 dollars in prioritized watershed will be used when appropriate. The section 319 funded NPS BMP Team will provide engineering support to the ESP for facilities being planned throughout the state.

4.1 LOCAL SUPPORT

The NDDEQ, North Dakota State Legislature, North Dakota Governor, NDSU Extension Service, NRCS, North Dakota Ag Department, soil conservation districts and producers have all expressed an interest in this position. The NDSA has secured \$50,000 of state funds in the 2021 legislative session. The encouragement and feedback from legislators are a positive sign for the project.

The proactive approach taken by the NDSA has led to many positive comments from producers requesting assistance. The producer feedback mainly focuses on the fact that producers trust and appreciate the NDSA'S help on this sensitive issue.

There are numerous producer comments appreciating the confidentiality of the assistance provided from the NDSA. In addition, the producers have commended the organization for being the only non-governmental, non-regulatory organization providing professional consultation on livestock waste issues.

4.2 LETTERS OF SUPPORT

Project has always received strong support from the livestock community as well as legislative support.

4.3 COORDINATION

- NDSU Nutrient Management Specialists – The NDSA Environmental Services Director works closely with them on follow-up with beef producers who have implemented animal containment systems.
- NRCS – The NDSA Environmental Services Director works with the district conservationist when beef producers are interested in constructing animal containment systems through EQIP. The NDSA takes the lead on implementation of the project. In addition, EQIP provides funds for the development of the comprehensive nutrient management plans which are used to develop on the ground projects. This funding source is a contribution agreement between NRCS and NDSA. This agreement will provide immediate funds to support beef producers develop CNMP's.
- NDDA - The NDSA Environmental Services Director works with the livestock pollution prevention program coordinator in identifying beef cattle operations that need to come into compliance. Duplication and/or completion is prevented between the two programs.
- Non-point source best management practice team, soil conservation district and local non-point source watershed projects - The NDSA Environmental Services Director works with these groups and agencies in identifying operations that are requesting engineering and financial cost share assistance.

5.0 EVALUATION PLAN

Evaluations, on-site surveys and statistics of contacts, projects and results will be compiled. The more producer contacts and referrals made will be a strong indication of success through acceptance of the program. As producers visit with each other and word of the benefits of contacting the NDSA travels, we

will be able to inform more producers of the benefits of a properly managed waste system. We will also be able to evaluate systems and compile statistics on facilities that comply but may not necessarily be permitted. A list of specific activities is included in objectives 1 and 2.

In addition, each permitted facility will be evaluated before and after with the aid of the AFRRIW (**see attachment 4**). This worksheet will be used to estimate annual nitrogen and phosphorus load reductions for each manure management system. The information needed from each operation is as follows: lot description, lot size, surface type, animal type, number of animals, average weight, and days confined. In addition, the specific feedlot features needed for input are distance to water, percent slope in pen, type of vegetation outside the pens and whether the feeding operation has a clean water diversion.

The understanding is that the information collected through the project will be used to assist producers with personal decisions related to manure management. This information will be maintained by the Environmental Services Director. If there are requests for this information, approval will need to be obtained from the project sponsors and the appropriate producer(s) before it can be provided to the parties requesting the information.

6.0 BUDGET

The budget is detailed in the two budget tables. Part 1 details funding source by year. Part 2 is a more detailed line-item budget.

PROJECT IMPLEMENTATION PLAN BUDGET

Part 1 Budget: Funding Sources

<u>Funding Source</u>	<u>State Fiscal Year Budgets</u>			<u>TOTAL</u>
	<u>2022</u>	<u>2023</u>	<u>2024</u>	
EPA Funding				
FY 2022 EPA Requested Funds	\$141,666	\$141,666	\$141,666	\$425,000
State/Local Match				
State Funding		\$50,000		\$50,000
Producer Contribution	\$94,445	\$48,444	\$94,444	\$233,333
Subtotal	\$94,445	\$98,444	\$94,444	\$283,333
Total	\$236,111	\$240,110	\$236,110	\$708,333

Part 2 Budget: Estimated Annual Section 319 & Local Match Expenditures

<u>Cost Category</u>	<u>State Fiscal Year Budgets</u>			<u>TOTAL</u>	<u>Cash/Inkind Match</u>	<u>319 Funding</u>
	<u>2022</u>	<u>2023</u>	<u>2024</u>			
Salary (1FTE)	\$49,312	\$50,791	\$52,314	\$152,417	\$60,967	\$91,450
Fringe	\$9,400	\$9,600	\$9,800	\$28,800	\$11,520	\$17,280
Travel	\$6,666	\$6,666	\$6,666	\$20,000	\$8,000	\$12,000
Supplies	\$388	\$388	\$388	\$1,166	\$466	\$700
Rent/Utilities	\$1,111	\$1,111	\$1,111	\$3,333	\$1,333	\$2,000
Telephone/Postage	\$666	\$666	\$666	\$2,000	\$800	\$1,200
Equipment	\$0	\$0	\$0	\$0	\$0	\$0
BMP	\$166,666	\$166,666	\$166,666	\$500,000	\$200,000	\$300,000
Other	\$0	\$0	\$0	\$0	\$0	\$0
Administrative	\$205	\$205	\$205	\$616	\$246	\$370
Total	\$234,414	\$236,093	\$237,816	\$708,323	\$283,332	\$425,000

MILESTONE TABLE NDSA ENVIRONMENTAL SERVICES PROGRAM-Phase VII

TASK	OUTPUT	YEAR 1	YEAR 2	YEAR 3
Task 1 Employ Environmental Services Director to deliver program	1	1	1	1
Task 2 Disseminate information on the compliance requirements with current regulations	60 contacts, 33 articles, 9 presentations, 3 feedlot tour	20 contacts, 11 articles, 3 presentations, 1 feedlot tour	20 contacts, 11 articles, 3 presentations, 1 feedlot tour	20 contacts, 11 articles, 3 presentations, 1 feedlot tour
Task 3 Assist producers with evaluations and assessments of animal feeding operations	60 animal feeding operations evaluations	20	20	20
Task 4 Promote voluntary implementation of BMP's	60 contacts	20	20	20
Task 5 Provide cost estimates	9 estimates	3	3	3
Task 6 Prioritization Process	9 AFO's	3	3	3
Task 7 Technical assistance for management plans	6 systems	2	2	2
Task 8 Provide financial assistance	2 systems	1	1	
Task 9 Annual reports	3 reports	1	1	1
Task 10 Grazing program information	1	1	1	1

ATTACHMENT 1

Attachment 2

**North Dakota Stockmen's Association
Environmental Services Livestock Feeding Assessment**

For each issue listed in the left column, read across to the right, determine the appropriate risk factor and place that number (1-10) in the far-right column. Next, add the numbers in that column and then refer to the table below to determine your relative environmental risk

Assessment Categories	Risk Factor										Your Risk Factor
	Lower 1	3	5	7	9	10	Higher				
What is the animal unit capacity of the animal feeding operation?	<50	50-99	100-299	300-499	500-699	>700					
What is the pen slope in percent?	<1	1-1.9	2-2.9	3-3.9	4-4.9	>5					
What is the slope from the pen to the nearest protected surface water body* in feet?	<1	1-1.9	2-2.9	3-3.9	4-4.9	>5					
What is the distance from the pens to the nearest protected surface water body* in feet?	>4,000	2,000-3,999	1,000-1,999	500-999	250-499	<250					
How many months each year will the facility contain animals?	0-2	3-4	5-6	7-8	9-10	11-12					
What kind of soil is between the pens and the nearest protected surface water body*?	Sand	Sandy loam	Silt loam	Silty clay loam	Clay loam	Clay					
What kind of vegetative cover grows in the buffer area below the pens?	Tall, dense grass cover	Short or thin grass	Cropland >50% residue	Cropland 30-50% residue	Cropland 10-30% residue	No crop <10% residue					
How does the size of the buffer area below the feedlot pen compare to the size of the feedlot?	6x	5x	4x	3x	2x	1x					
How much extraneous drainage (other areas that drain through the lot) exists compared to the size of the pens?	1x	2x	3x	4x	5x	>6x					
What is the average annual rainfall in inches?	<20	20-24	25-29	30--35	36-40	>40					
What is the maximum 25-year, 24 hour rainfall in inches?	<4	4	5	6	7	>7					

* Creek, pond or lake

Score **Potential Environmental Risk**

- 20 or less Feedlot operation poses minimal pollution risk.
- 21-40 Some changes in feedlot management may be necessary to reduce pollution risk.
- 41-60 Operation may have acceptable pollution risk, however, any change in site size or management may result in a significant, additional pollution risk.
- 61 or greater Feedlot operation is likely to be a significant pollution risk.

Attachment 3

**ND Stockmen's Association Farm/Ranch Inventory
Animal Waste System**

Date: _____

Name of Farm/Ranch: _____

Name of Farmer/Rancher _____

Address: _____

Township: _____ Range _____ 1/4 of _____

Phone Number(s): _____

General Information

Livestock Type: _____

Breed(s): _____

No. Of Mature Animals: _____ Average weight: _____

No. of Animals 0-3 months: _____ Average weight: _____

No. of Animals 4-6 months: _____ Average weight: _____

No. of Animals 7-24 months: _____ Average weight: _____

No. of replacements/feeders purchased/yr: _____ Average weight: _____

Numbers & other types of livestock: _____

Has the number of animals in your herd changed by more than 10% in the last year?
_____ increased _____ decreased _____ stayed about the same

If herd size changed, please explain: _____

Do you have any plans to change size of operation in the future? _____ yes _____ no

Explain possible expansion or downsizing plans, if any: _____

How many months of the year is feedlot used? _____ months

Do you pasture your livestock? _____ yes _____ no If yes, how many months of the year? _____ months

Land Base

Total acres owned: _____

rotated cropland _____

continuous cropland _____

permanent hay _____

pasture/rangeland _____

woodland _____

other _____

Total acres rented: _____

rotated cropland _____

continuous cropland _____

permanent hay _____

pasture/rangeland _____

woodland _____

other _____

Do you have a gravel source(pit) on your property? ____yes ____no

List the types of crops/forage grown:

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Soil Testing ____yes ____no

Equipment

Manure spreader(rear, side discharge, slurry tank) _____

Capacity _____

Earth moving equipment (scraper, backhoe, trucks, etc.) note size _____

Feeding System

Where are the forages stored? (list dimensions of all that apply)

bags _____

gas-tight upright silos _____

bunk or pit silos _____

conventional upright silos _____

hay barn _____

other (please specify) _____

Do you feed potato waste, beet tailings or corn silage? ____yes ____no

Is waste water from these feeds contained or refeed? ____yes ____no

Water Supply

What is your livestock water source? well cistern pond stream
 rural water spring municipal supply
 multiple sources (please specify): _____

How deep is your well? _____ feet

Is the house water source separate from the livestock source? yes no explain: _____

If other than municipal water, is any treatment method used? yes no If yes, explain: _____

Has your water been analyzed for any of the following?

Salinity Coliform bacteria Pesticide residues
 Chlorine Nitrates & phosphates Heavy metals
 Not analyzed

If water has been analyzed, how recently? _____

How far is your water source from your household septic system? _____ feet
 Don't know Don't have septic tank Have municipal sewage system

Is your water source uphill from this area? yes no

How far is your water source from your concentrated livestock areas? _____ feet don't know

Is your water source uphill from these areas? yes no

How far is your water source from your manure storage areas? _____ feet

Is your water source uphill from these areas? yes no

Manure Handling

Method of Manure Handling: Daily Spreading _____ Storage _____

Temporary Storage's _____ Composting _____

Is runoff from manure piles contained? yes no

How long is manure stockpiled for? _____ months _____ years

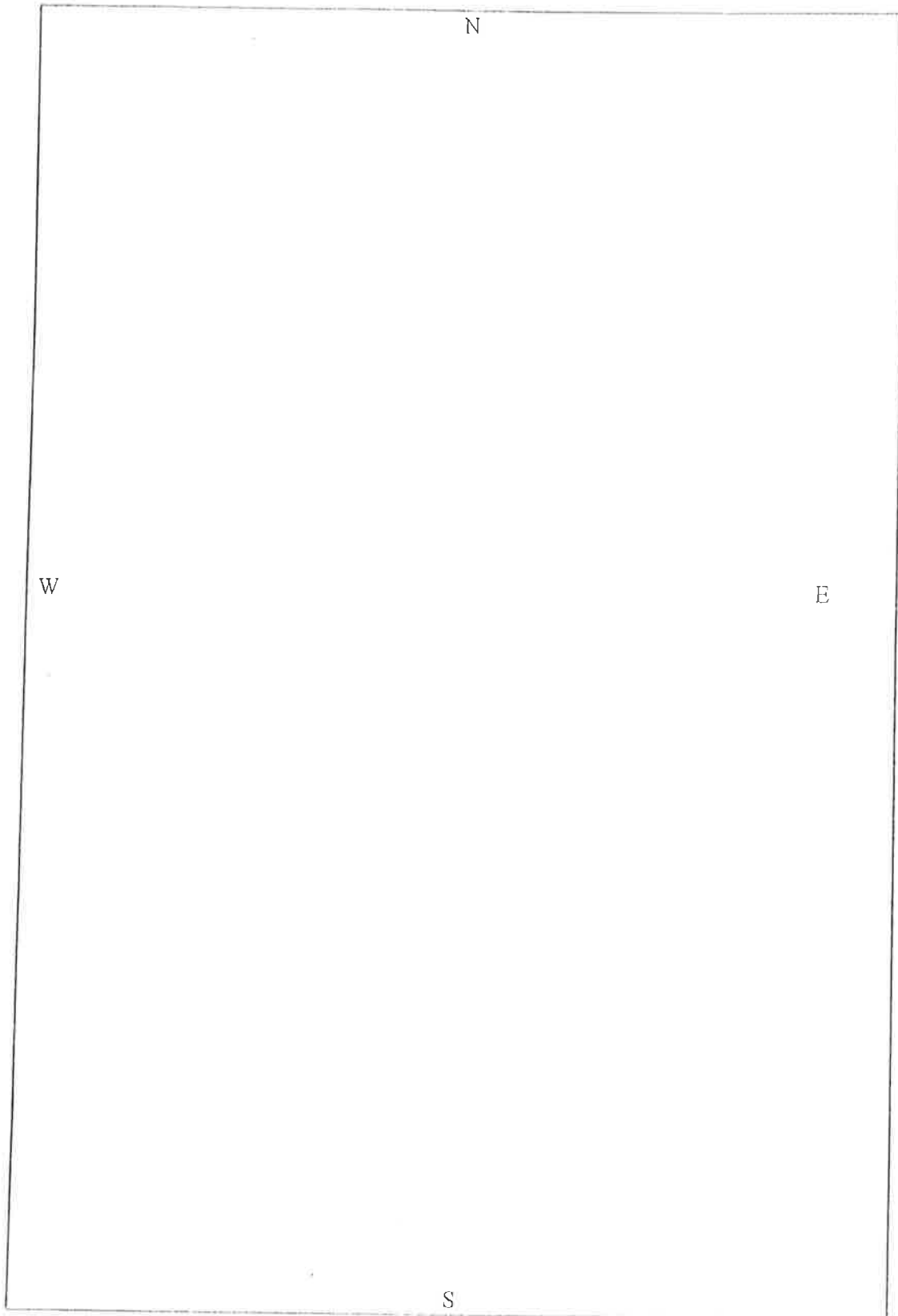
Is stockpiled manure routinely mixed? yes no

Type of Handling System: Liquid _____ Non liquid _____

Type of Storage Facility: Lagoon _____ Concrete pad _____ Roofed Structure _____
Concrete structure _____ Other (describe) _____

Percentage applied to: Corn _____ Hay _____ Small Grains _____ Pasture _____
Other crops _____

Farm/Ranch Headquarters Site



Attachment 4

*North Dakota Animal Feedlot Runoff Risk Index Worksheet

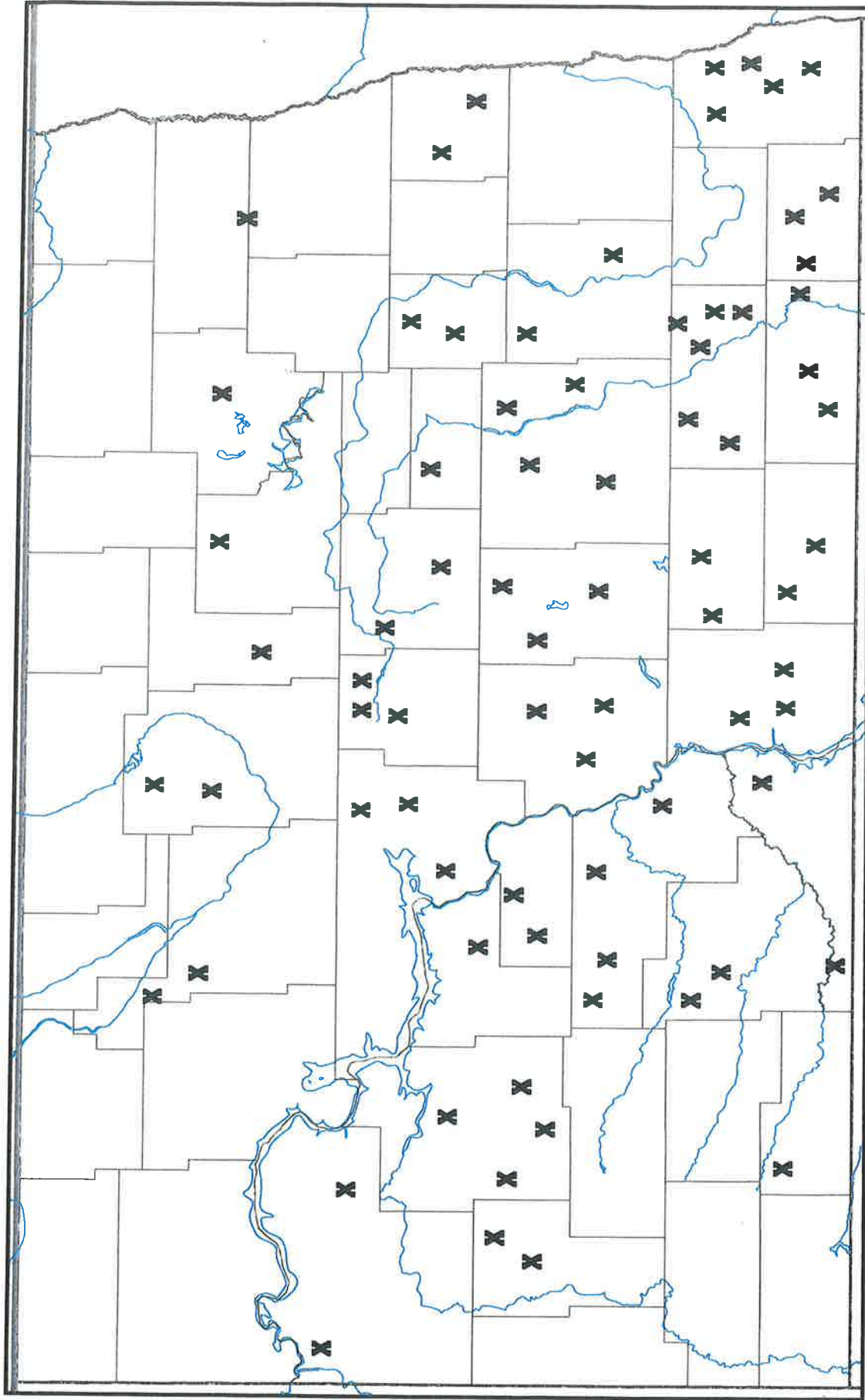
Landowner:
 Location:
 Planner:
 Date:

Weather Station:
 HUC:
 Precipitation:

Lot Description:				
Planning Scenario:	Before	After	Before	After
Lot Size (Sq. Ft.):				
Surface Type:				
Animal Type:				
No. of Animals:				
Avg. Weight:				
Days Confined:				
Sq.Ft./Animal:				
Feedlot Features				
Runoff Containment				
Distance to Water				
% Slope				
Vegetation				
Clean H ₂ O Diversion				
Index and Risk Level				
Index:				
Risk Level:				
Manure Management and Conservation Practices				
Haul/Scrape Frequency				
Practices to be implemented				
Loading Calculations				
Fresh Manure (tons)				
Total N Available (lbs)				
Total P Available (lbs)				
Total BOD ₅ Available (lbs)				
Precipitation Factor				
Lot Surface Factor				
Risk Factor				
Total N Loading (lbs)				
Total P Loading (lbs)				
Total BOD ₅ Loading (lbs)				

*Modified from Utah to fit North Dakota. Individual high risk features should be evaluated and conservation practices applied where possible. All runoff from a 25-year, 24-hour storm event must be contained on the lot.

Attachment 5



NDSA Animal Feeding Operations

X = 2002-2021 (76)