

Livestock Producers Environmental Assistance Project



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COOPERATIVE EXTENSION

UNIVERSITY OF NEBRASKA-LINCOLN



"ALTERNATIVES ARE OUR SPECIALTY"



LIVESTOCK PRODUCERS ENVIRONMENTAL
ASSISTANCE PROJECT
NEBRASKA ENVIRONMENTAL TRUST

Partners

- Nebraska Environmental Trust Fund
- Natural Resources Conservation Service
- Nebraska Department of Environmental Quality
- Central Platte Natural Resource District
- Little Blue Natural Resources District
- Nebraska Cattlemen
- Nebraska Farm Bureau
- Nebraska Pork Producers Association
- University of Nebraska Cooperative Extension

Each Partner has 1 seat on oversight committee

Role of LPEAP

- Design and construct new alternative practices for livestock waste control through a small cost share program
- Direct the project to small and medium livestock operations that currently have no program financial and technical assistance
- Conduct outreach through these demonstrations to other small producers in Nebraska
- Conduct outreach programs to private consultants and government agencies on effective design and construction of these practices

LPEAP Practices / Projects

- Low Water Stream Crossings
- Livestock Waste Control Structure Abandonment
- Constructed Wetlands for Treatment
- Clean Water Diversions
- Sprinkler VTA or low cost/low maintenance mechanical distribution across VTA's
- Filter Treatment Areas for treatment of runoff
- Infiltration Basins
- Small Pumping Systems
- Debris basins and containment when in conjunction with one of the above practices
- Other alternative practices

Criteria for LPEAP

- Operation must be under **300 AU's** or exempt from the livestock waste permit program
- Practice will minimize their environmental risk
- Assurance that practice will be sustained
- Entirely Voluntary

Nebraska Facts

Nebraska has:

- 24,000 miles of rivers and streams
- Number Unknown: Lakes, wetlands, and swamps
- The largest underground water reserve in the United States
- 1.7 million residents
- 1.9 million cow/calf pairs
- 4.8 million feeder calves

Nebraska Cattle & Calves Operations and Inventory

January 1 Inventory - Million Head



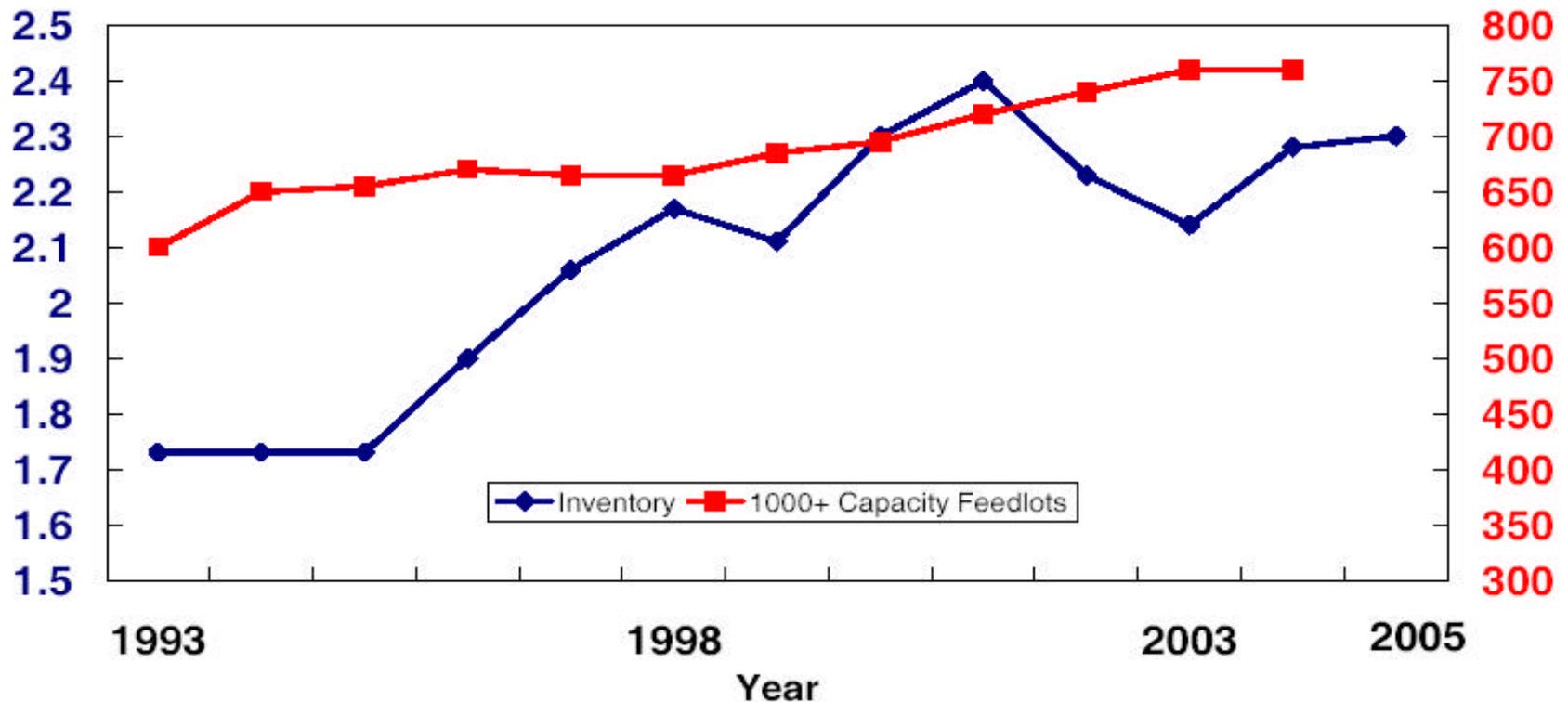
Source: USDA NASS Nebraska Field Office - January 31, 2005

Nebraska Cattle on Feed

1000+ Capacity Feedlots

January 1 Inventory - Million

Number of Feedlots



Source: USDA NASS Nebraska Field Office - January 31, 2005

Small Livestock Producers Challenges

- Diversified farms (Irrigation, ranching, feedlot, town job, etc.)
- Young families (Most of our producers have children in school)
- Time commitment to waste control minimum
- Producers not in touch with their livestock waste regulations and responsibilities

Vegetative Treatment Areas as a Livestock Waste Control Facility



Why VTA's

- Simple to operate and manage
- Financial return from VTA hay production
- Minimal loss of productive land
- Function in all NE climates (Especially the arid west)
- Cheaper and quicker to build

VTA Function

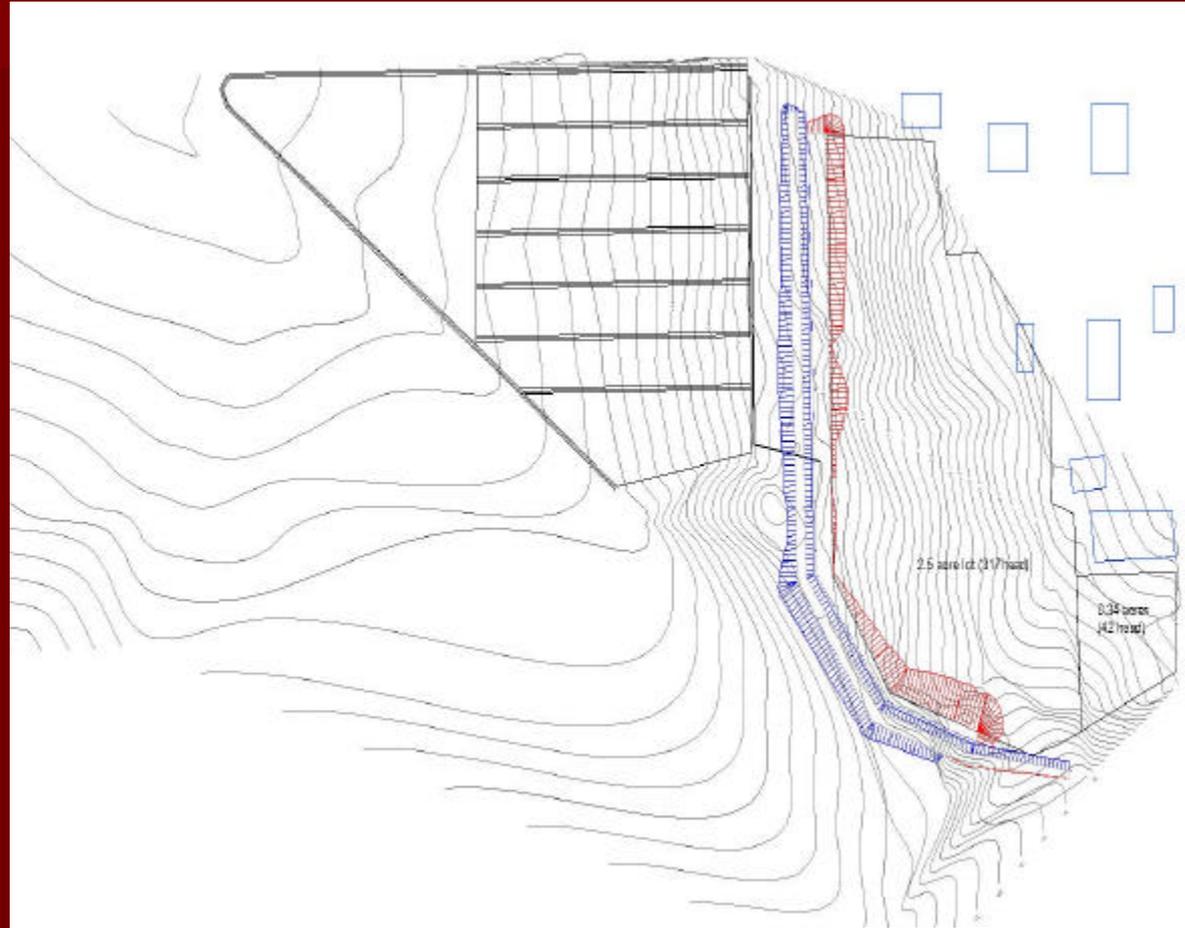
- Designed with sediment basin and diversions
- VTA engineered with the sediment basin to control 25 yr 24 hr storm
- Designed to distribute the storm uniformly across VTA
- Designed to utilize the nutrients in feedlot runoff (Minimize or eliminate ground water contamination and surface discharge)

Types of VTA's

- Sloped VTA
 - Gravity
 - Pump
- Level VTA or Infiltration Basin
- Terrace System
- Constructed Wetlands
- Sprinkler Filters
- Tree Systems
- Multiple Systems
 - Combination of Alternatives
(Constructed Wetland with a Sloped VTA)

Open Lot Beef Feedlot Gravity VTA Design

- 400 head beef feedlot in York County (East Central NE)
- 4 acre open lot that drained into stock dam
- Gravity fed 3.8 acre VTA with Infiltration Basin
- Construction Cost \$6,300
- Fencing Cost \$5,000





Before



Before



After



After

VTA Layout



Sprinkler VTA

- LPEAP has been developing a pump direct to a sprinkler system on VTA
- Pump directly out of the settling basin and on a VTA
- Use an intake strainer, dry well pump station, inline filter, and sprinkler system
- Can use solid set, lateral move (side rolls), or pivot sprinkler systems
- Pressure / sprinkler systems have the most uniform application of runoff
- Works well for high infiltrations soils, high water tables, and uneven terrain

Solid Set Sprinkler Pump Station



Pump Intake Strainer and Sprinkler Installation



Other LPEAP Practices and Applications

Dairy Parlor Water Application through a VTA



Constructed Wetlands for Beef Open Lot and Confinement Dairy



Low Water Stream Crossings



Waste Structure Abandonment when Solid Sludge is Greater than 50% DM



Waste Structure Abandonment when Solid Sludge is at Less than 50% DM



Waste Structure Conversion to Wetland Habitat



Completed Wetland



Available from LPEAP

- Waste Structure Abandonment Publication
- Web site that describes each project,
<http://lpeap.unl.edu>
- Demonstration feedlot tours
- Working on a design tool for VTA design
- Working on expanding the application of VTA construction
- Developing better and easier construction methods and materials

Questions?

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<http://LPEAP.unl.edu>