

Community Manure Management
Feasibility Study
Dane County

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267-8815

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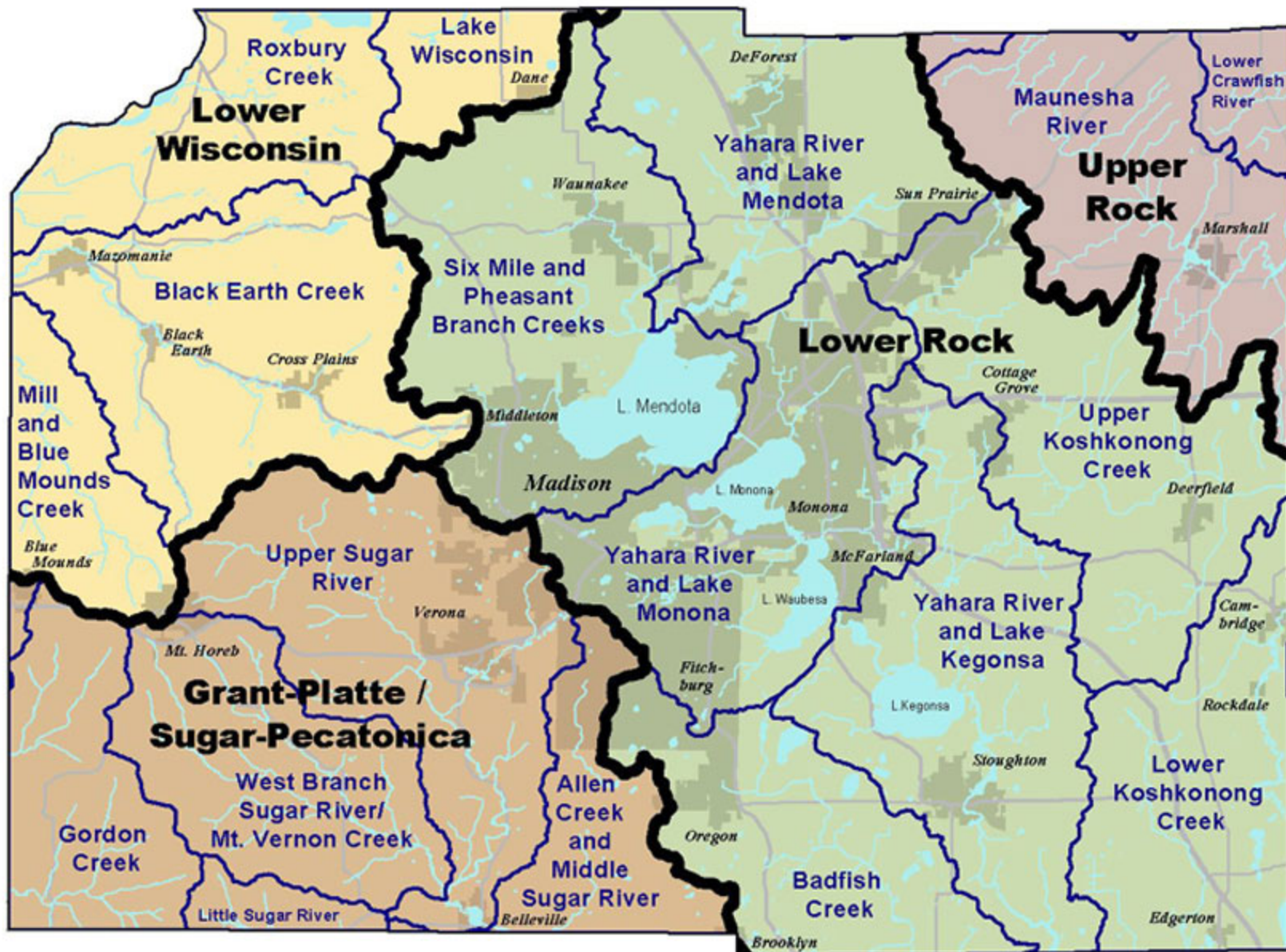


Dane County Livestock Background

Approximately 400 dairy farms with 50,000 milking cows (125,000 cattle) – declining slowly

- a cow produces ca.120 pounds of manure a day
- only 10 farms with more than 500 cows
- 3 with 1,000 or more
- concentrated in the Lake Mendota Watershed

Approximately 80 farms with 20,000 hogs – declining rapidly





History of this Effort

For many years, the County has worked with farmers to improve their management of manure

Fish killed due to manure runoffs

Manure management task force established spreading standards

Dane County Board adopted a resolution for a feasibility study of a community system



What We Have Done

Feasibility study advisory committee appointed in Spring 2006


In the spring of 2007, the County hired a firm to do a feasibility study for the management of livestock manure, covering two test areas.

Study looked at systems both at the community and the individual farm level.



Study Goals

The County has multiple goals that it wants met in the management of manure as well as numerous issues that need to be considered when meeting the goals.



The main goal is to both strengthen the livestock industry in Dane County, while protecting water quality, as related to manure management, including the N, P and K nutrient management requirements for land application.

Reduction of phosphorus to our water bodies is essential.



Technologies Studied

The County identified 23 categories of possible technologies, and selected four that, at a minimum, are to be included in the report:

- Advanced solids separation and recovery (two levels)
- Phosphorus removal and recovery
- Anaerobic digestion with methane recovery
- Combustion; could include pyrolysis or gasification



Information Developed by Study

Survey of farms and current practices and interest

Technology description and review

Additional materials that could be handled by the system

Transportation requirements (truck or pipeline)

Recovered products

Solids – bedding, compost, fertilizer, fiberboard, composite plastics, horticultural containers, other

Liquids – irrigation, flush or wash down water

Energy – methane for electricity, fuel



Information being Developed (cont'd)

Economics

- Current manure costs of farms
- For the systems under study (w/sensitivities)
- Estimates of future challenges and costs

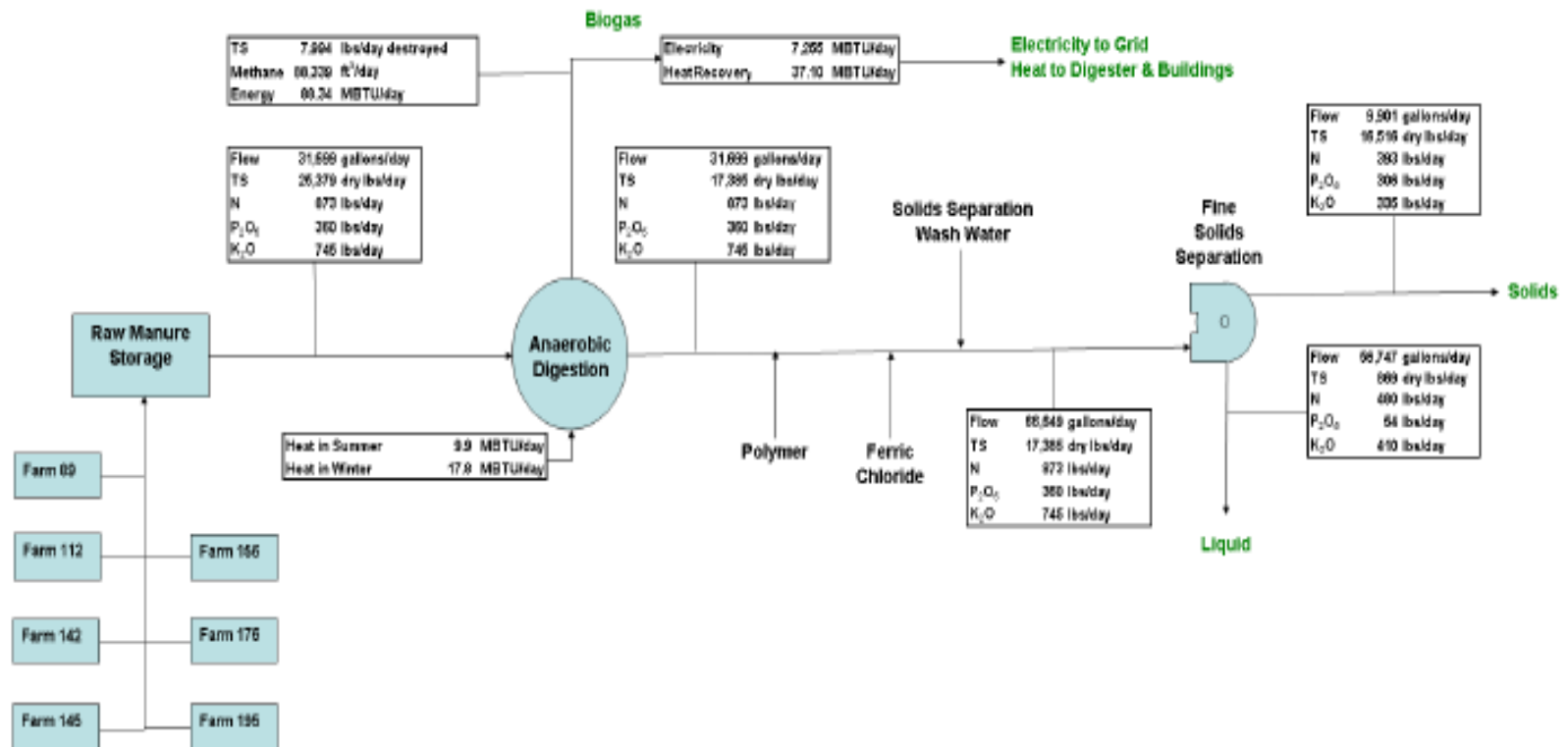
Potential financial assistance

Non-monetary impacts

Alternative business structures

- there is no pre-conceived ownership or business structure

Example Schematic





Project Status

Final drafts done

Advisory committee agendas, minutes,
background papers and draft chapters are on the
Internet



Some Results

Can remove 45-85% of the P with advanced solids separation, with or without AD; combustion can remove nearly 100% P. This is equal to 273,000 to 320,000 pounds of phosphorus per year from our two example clusters.

Pipelines reduce costs of transportation considerably in dense clusters

Capital costs are \$1,000 - \$4,000 per A. U. -- joint systems can reduce costs by as much as 50% per A. U.



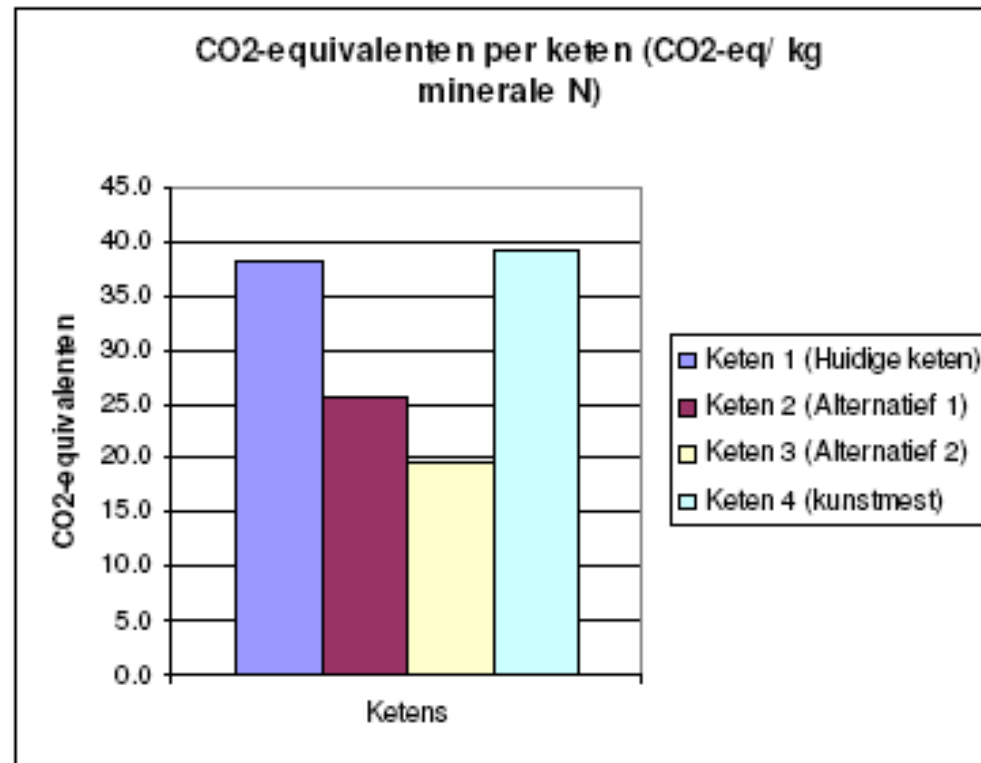
Some Results (cont'd)

Revenues can exceed O&M costs in some situations

For the AD system with advanced solids separation (85% P removal), there are three net revenues streams:

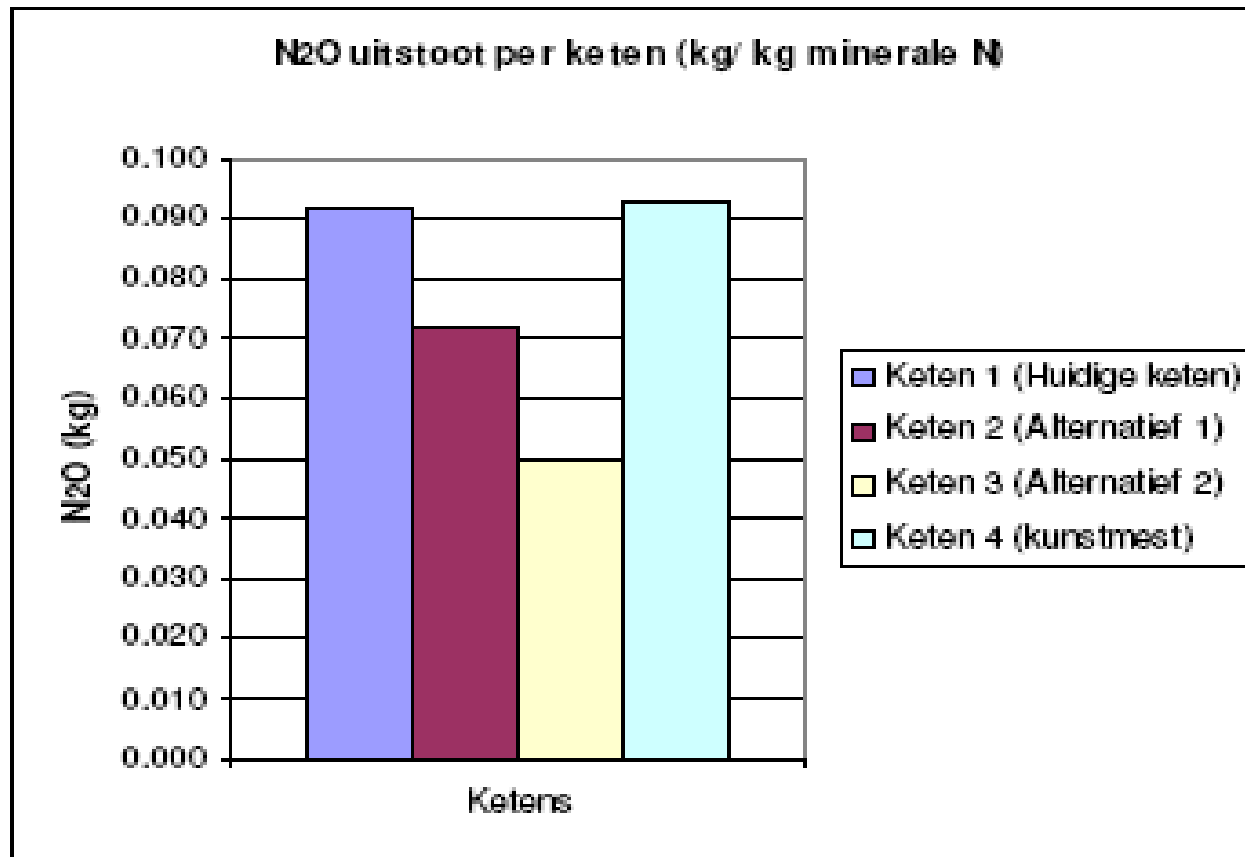
- Over 60% is from the sale of solids
- Next largest (~30%) are the renewable energy credits and GHG emission credits. GHG credits are two thirds of this revenue
- Lowest (11%) is the net value of the electricity.

GHG Impacts of Alternative Manure Management Systems

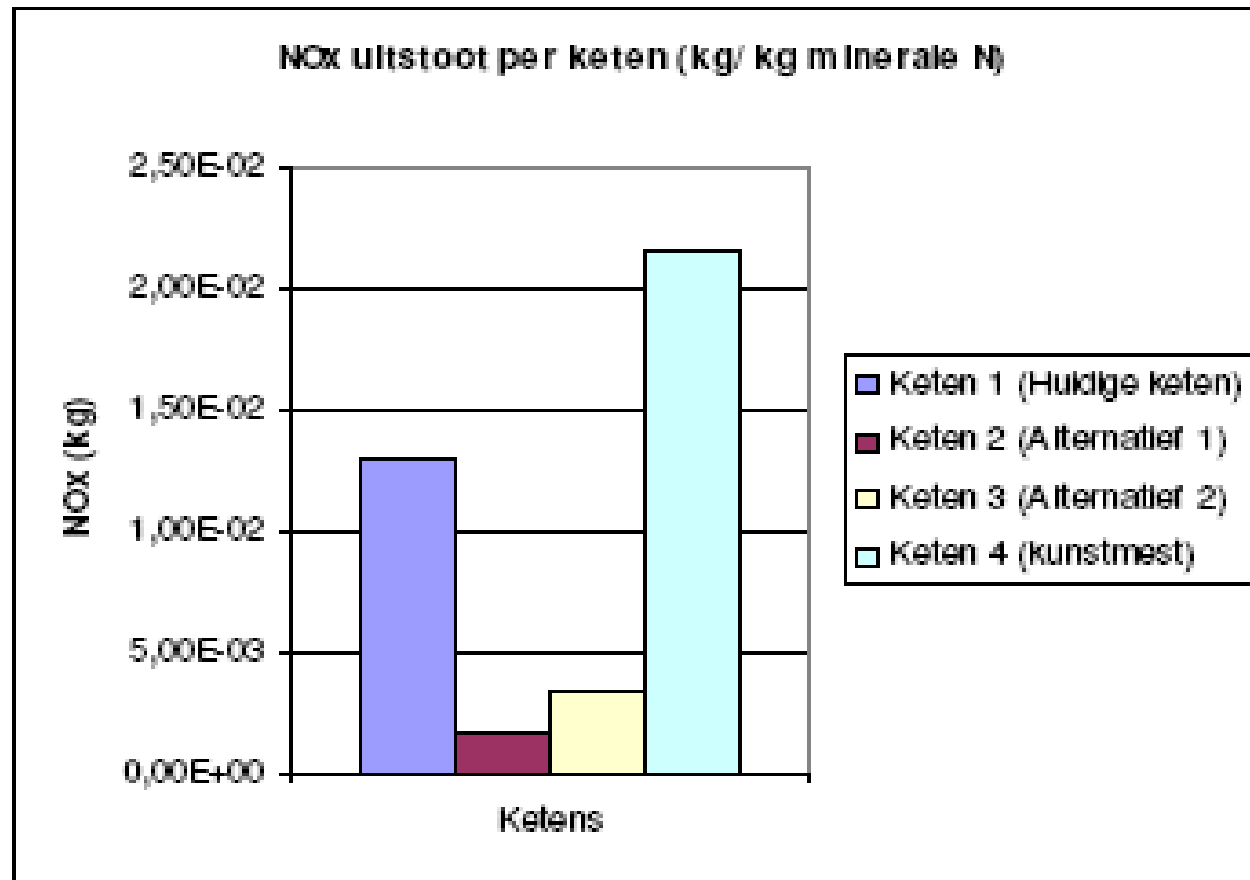


Source: Kwantitatieve analyse van de milieubelasting van drie organische mestketens en kunstmest, September 2006

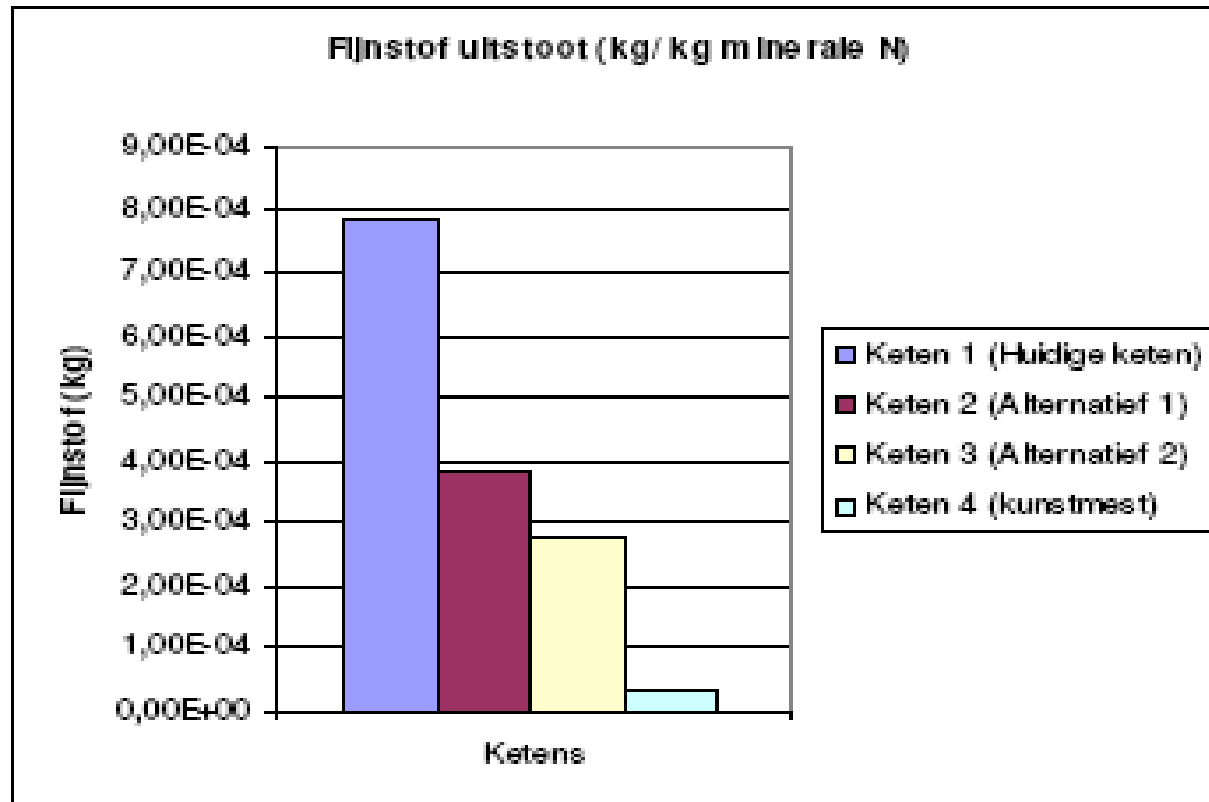
N₂O Emissions from Alternative Manure Management



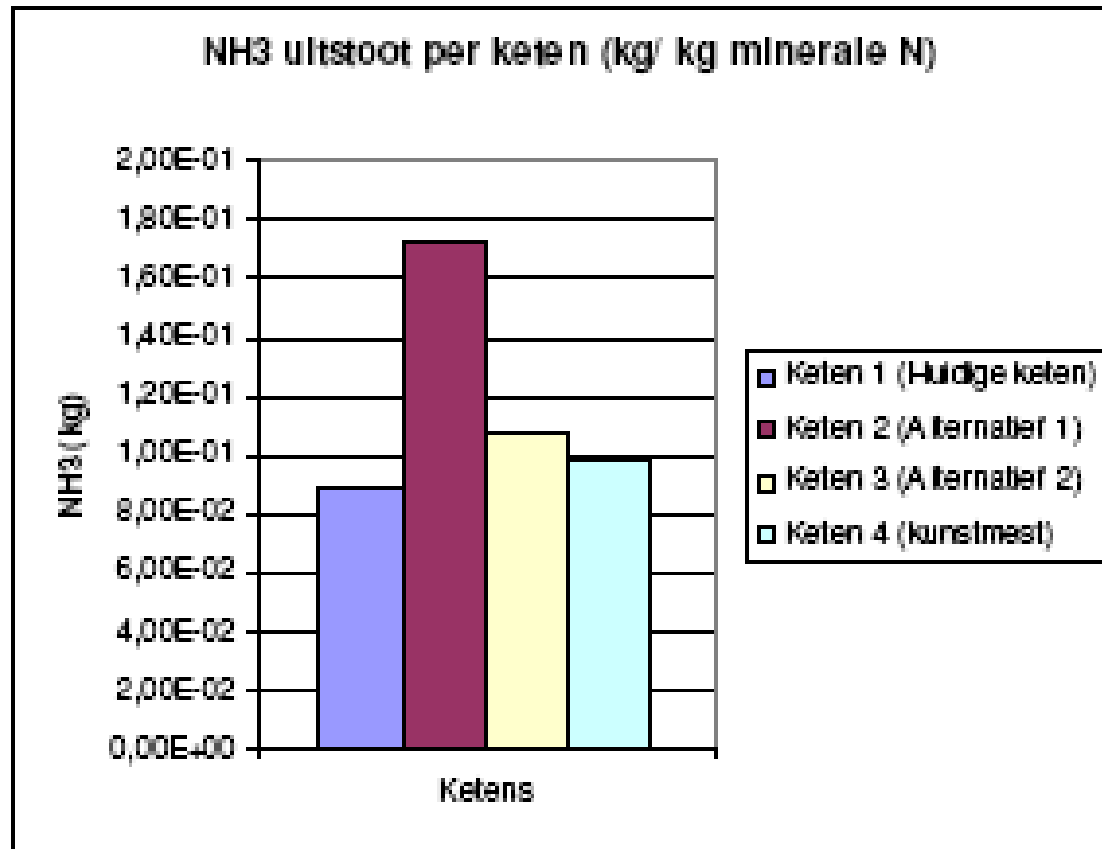
NO_x Emissions of Alternative Manure Management



Fine Particles Emissions of Alternative Manure Management



Ammonia Emissions from Alternative Manure Management





Some Results (cont'd)

Depending on capital recovery factors (time frame, interest rate), the cost of several community systems is less than current costs for manure management, plus producing a higher level of environmental protection



Next Steps

Advisory committee, County Executive, consultant and farmers met to discuss the report and possible next steps

Report will be widely publicized for use by anyone

County Budget for 2008 includes funding for working with farmers to move forward



Prospects for Success

There is a high level of interest in this issue as shown by the response to this summer's demonstration of a sand and solids separation system at the Ripp Diary Farm and by the number of contacts to our web page when we announce significant steps of progress

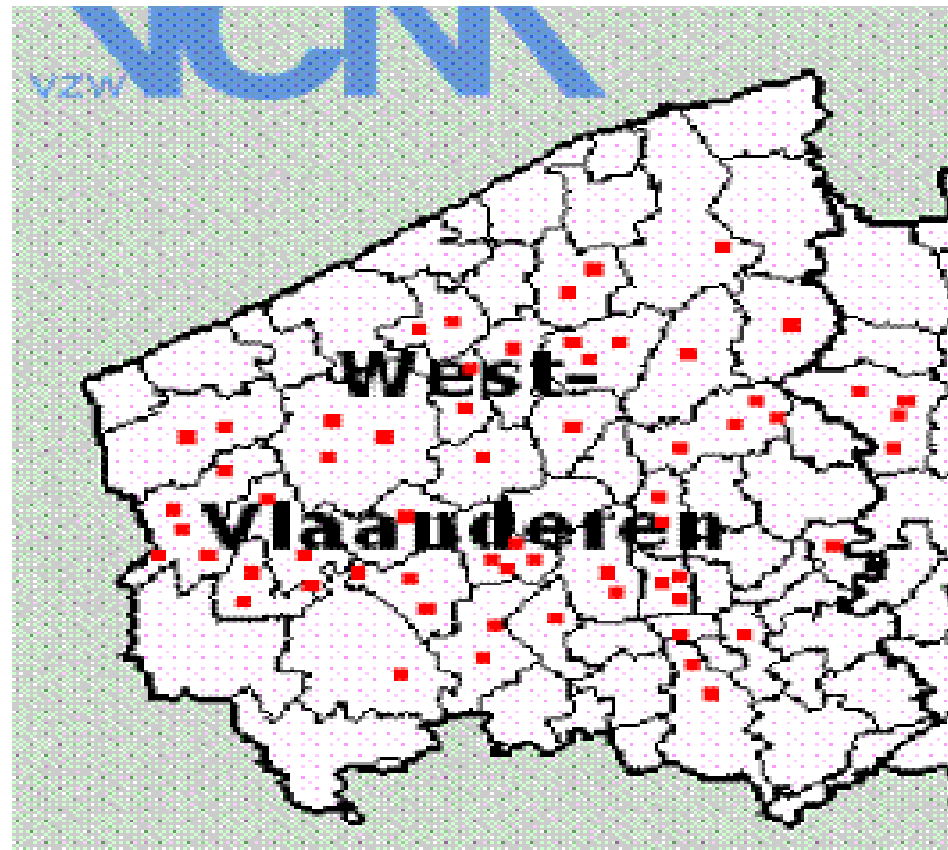
As an optimist, I see the West Flanders area of northern Belgium as an example of what can be accomplished



Comparative Data

	Dane Co.	West Flanders
Area	3,084 km ²	3151 km ²
Cattle	125,000	415,000
Swine	20,000	3,140,000
Population	460,000	1,130,000
Manure treatment systems	1	> 70

Manure Management Systems in West Flanders





Prospects for Success (cont'd)

As a realist, I also understand that not only is Dane County different than West Flanders, but that it will take time, effort, new technologies, and ultimately, money, to achieve changes.

I believe that the study that is being finished for Dane County is just one step in a long process and that future solutions could be dramatically different from what we see today.



For More Information

www.danewaters.com

select

‘Management Issues and Activities’

or contact

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