Addressing AFOs and CAFOs in Becker County's Comprehensive Land Use Plan and Zoning Ordinances

A Report to the Becker County Board, Zoning Administrator, the County Planning Commission the Comprehensive Planning Consultants and the Public

from

The Izaak Walton League of America's Prairie Woods Chapter

May 22, 2024

Comprehensive Land Use Planning

Most land use decisions are inherently local. In Minnesota local governments create their own "comprehensive plan" for growth and development. The plan establishes the way development occurs in that area. The primary purposes of the plan and the ordinances that implement it is to "promote and protect the health, safety and general welfare" of the public, to "preserve and enhance the quality of surface waters" and to "provide for the wise use of water and related land resources of the County"[1]

Decisions about local planning and zoning, local utilities and other infrastructure are all made pursuant to that plan. State law requires certain minimum elements in the plans but leaves it to localities to develop and implement them through ordinances. The plan is supposed to be reviewed, updated and approved every 10 years.

The Becker County Public Engagement Survey used to gauge citizen priorities for the current land use planning effort found that 70% of Becker County citizens thought more should be done to protect the water quality of lakes and streams. When the nearly 500 respondents were asked to note their top priorities in terms of issues facing the county 83% considered housing one of the three highest concerns. Further over 70% consider Jobs and economic development a key priority and slightly more than 50% see the environment as an issue to be prioritized.

A county's land-use decisions about the livestock and poultry operations (Animal Feeding Operations, AFOs and Confined Animal Feeding Operations, CAFOs) can

[1] Quotes from statement of purpose section 101 in Becker County Zoning Ordinance

have significant effects on the county's water quality, natural resources and human health, and economy, but impacts vary widely depending on sizes and locations of the operations. The impact of a single livestock or poultry project may seem small, but when we look at the bigger picture, the challenges to the environment and human health from both the small and industrial scale agriculture projects added together can be dramatic.

The livestock industry has experienced increasingly adverse conditions attributable to over-crowding; too many large facilities in close proximity increasing animal disease risks, depletion of available clean water supplies, saturation of available crop lands with manure and growing community animosity stemming from nuisance odor, traffic and insect (fly) populations.

Because industrial scale livestock agriculture is a recent arrival in Becker County the current comprehensive plan update is particularly well timed to perform its purpose of protecting the county's water quality, natural resources and human health as well as its economy.

The information provided here will serve to inform the County Board, the Planning Commission, the Zoning staff and the public that allowing industrial scale animal feeding operations to get established and to expand in Becker County will present a very high risk to the public health and welfare of its current and future residents, is highly likely to degrade the value of the county's natural resources and is a threat to the vitality of the County's rural economy.

Filling the AFO/CAFO Information Gap

Conventional wisdom expressed in recent deliberations about these divisions of government responsibility for livestock facilities led Becker County officials to wrongly defer to state and federal laws, permits and standards to protect surface and ground water as well as look after the general welfare and economic well-being of the county's citizens. And county zoning staff and planning commission members neither had the assignment nor the time or resources to fully research the laws or the literature

on large confined feeding operations. Zoning staff stated that no one had alerted them to issues relating to these operations and invited the public's assist in gathering more information.

The Izaak Walton League's Prairie Woods Chapter located in Detroit Lakes, the Becker County seat has offered to help fill these information gaps and provides the following documentation, resources and references.

CAFOs Are Migrating North Into the Lakes Region– Why?

New industrial scale feeding operations have been migrating north from Iowa and southern Minnesota in northwestern Minnesota in order to reduce disease risks and have access to ample clean water.

> *"The number of large concentrated animal feeding operations, or large CAFOs, in Iowa increased nearly fivefold in the past two decades, a new study from Environmental Working Group reveals, with almost all of the growth from big hog-feeding operations.*
>
> *EWG found that in 1990, Iowa had 789 large CAFOs – those housing 1,000 or more animal units – swelling to 3,963 in 2019. The findings are supported by the federal Census of Agriculture, which reported that Iowa, the top hog-producing state, housed more than 22.7 million hogs in 2017, an increase of 8.5 million since 1992.*
>
> *Swine and other livestock raised in Iowa's large CAFOs now produce 68 billion pounds of manure a year – conservatively, 68 times the total amount of fecal waste produced each year by the state's 3.15 million residents.*
>
> *Large hog CAFOs house a minimum of 2,500 pigs each, and the largest hog CAFO in Iowa houses 24,000 animals. In total, more than 60 percent of the animal waste produced by the largest CAFOs in Iowa comes from hogs. The*

mountains of animal waste produced by these facilities pose a serious and growing threat to human health, the environment and water resources in the state.

EWG used satellite and aerial imagery to pinpoint where and when the new large CAFOs appeared in Iowa. The interactive map (found at the link in footnote 2) below shows their locations, the type of facility, the animals housed there and the growth in facilities over the past two decades.[2]

Industry Claims That They Handle Manure Responsibly Don't Hold Up

Industrial farming representatives often claim farmers don't contribute to water nitrate or phosphorus pollution by over-apply fertilizers or manure because these materials cost too much, and it would be wasteful. However, Jeff Mitchell, Laboratory Supervisor for the Des Moines Iowa Water Works has found ever increasing concentrations of nitrates in the Des Moines and Racoon Rivers, primary sources of the city's drinking water over the past 50 years. In an August 2023 webinar entitled "*Nitrate in Drinking Water – Public and Private*" for the Izaak Walton League, Michell presented nitrate concentration trends for the Raccoon River from 1972-2023 shown in the graph below. By multiplying river concentrations by river flow volumes Michell calculated the total amount of nitrogen flowing past the city in 2018 (if applied as anhydrous ammonia would have cost $10 million and could have fertilized 400,000 acres, over 20% of the watershed. Since 1974, he calculated that 1.8 **Billion** pounds of nitrogen had flowed past the city in the river. Using similar calculations Mitchell demonstrated that in 2015, 116,000,000 pounds of nitrogen was lost to the river at a cost of $35,000,000, and as fertilizer it would have treated 800,000 acres (40% of the watershed).[3]

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[2] EWG Study and Mapping Show Large CAFOs in Iowa Up Fivefold Since 1990 – See interactive map at: https://www.ewg.org/interactive-maps/2020-iowa-cafos/

[3] Jeff Mitchell – 2023 Izaak Walton League Clean Water Webinar Series *"Nitrate in Drinking Water: Public and Private"* at: https://www.youtube.com/watch?v=OpSnuGti2k0

These data clearly show that farmers do over-apply both commercial and manure fertilizers at a great economic loss to the farmers themselves and at great expense to municipal water suppliers such as Des Moines to remove that fertilizer again. Nitrate removal has cost the city over $317,000 in 2016 and over $750,000 in 2015.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Number of Days in Operation	76	28	177	65	24	3	9	-	-	20
Number of Vessels Operated	313	96	726	265	72	9	58	-	-	70
Marginal Cost Per Vessel	$1,015	$1,015	$1,038	$1,159	$1,045	$1,090	$1,199	$1,199	$1,199	$1,199
Marginal Cost to Operate Facility	$317,695	$97,440	$753,588	$307,135	$75,240	$9,810	$69,542	$0	$0	$83,930

Public water supplies must meet drinking water standards, are tested often and as shown above, treatment can be effective when nitrate contamination is found, but it is very expensive. On the other hand, private well owners in rural areas lack testing, no standards are enforced and well-owners are “on their own” when contamination comes from their neighbor’s activities.

All Manure Pits and Lagoons Leak

In Wisconsin and other states including Minnesota, manure pits and lagoons are designed to limit leakage to less that 500 gallons/acre/day. This means that a three-acre lagoon is allowed to leak 1,500 gallons per day and could total over one half million gallons per year into the groundwater below. This has cause major problems for rural well owners.

A USDA study in Wisconsin examined this problem and found that not only nitrates were reaching private drinking water wells but that fecal coliform bacteria from the manure pits were traveling over three miles from the source.[4]

> *Borchardt's study found that the No. 1 risk factor for contamination was the proximity of a well to a manure storage pit. Borchardt said the closest well in the study was 150 feet from a manure pit, but even wells three miles away still have some risk of being contaminated with coliform.*
>
> *Borchardt called coliform an "indicator bacteria" for the presence of other bacteria and pathogens.*
>
> *According to state regulations, manure lagoons are allowed to leak 500 gallons per acre, per day. Borchardt said contamination of nearby wells may be due to leakage from the lagoon, as well as the tendency of farmers to spread liquid manure close to the location of their pits.*
>
> *According to a spreadsheet of permitted manure storage pits in Kewaunee County from 2017, some of the largest pits for which dimensions were listed span more than 4 acres. Borchardt said there are around 270 manure pits in the county.*
>
> *"(The findings give) policy makers and other stakeholders interested in working on solutions the information they need to think about solutions, instead of just saying 'Hey, your wells are contaminated,' " Borchardt said.*

The Minnesota Pollution Control Agency's construction standards for manure pits and lagoons are "theoretical" rather than practical. This means that if construction standards are followed the pits "should not leak more than allowed but need not demonstrate that they are indeed not leaking. Pits and lagoons are allowed to leak slightly less than 500 gal/acre/day leakage but is generally understood to be 500 non-the-less.

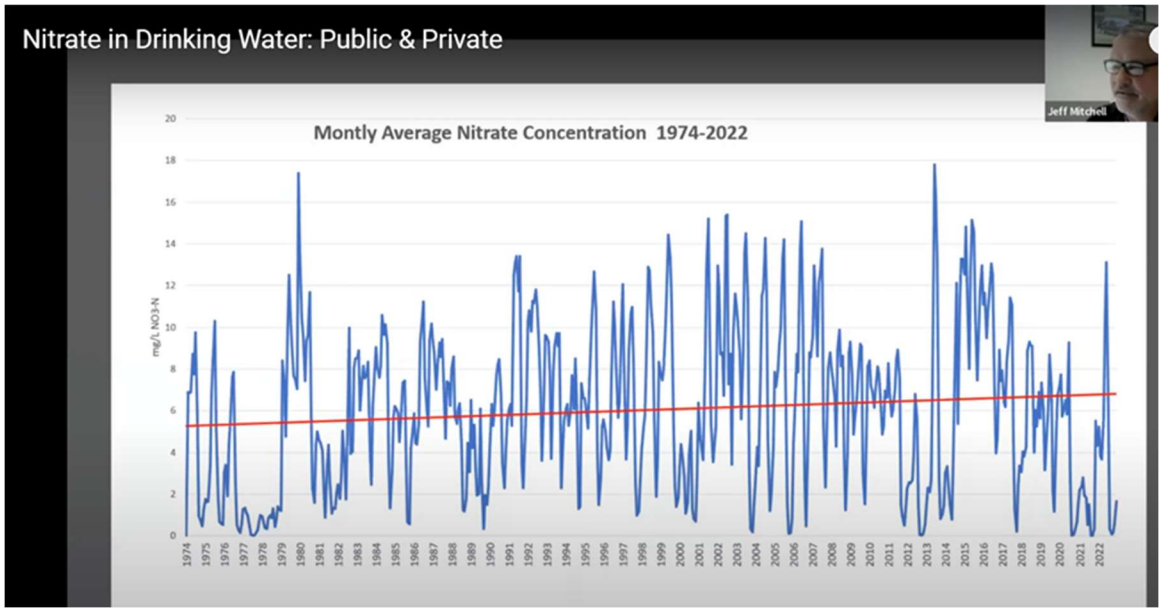
> "Minn. R 7020 requires that non-concrete liners for LMSAs be designed to achieve a theoretical seepage rate of no more than 1/56 of an inch per day. The required seepage standard is routinely considered to be approximately 500 gal/acre/day; however, this is slightly more than the actual 485 gal/acre/day allowed by the rule. Long-term protective

[4] **New research indicates tainted Kewaunee County wells tied to manure pits –** March 4, 2019 – Green Bay Press Gazette at: https://www.greenbaypressgazette.com/story/news/investigations/2019/03/04/tainted-kewaunee-county-drinking-water-wells-tied-manure-pits/3054018002/

and maintenance measures are required to meet this limit throughout the life of the structure."[5]

This maximum leak-rate standard applies to manure storage facilities no matter what kind of liner is provided including concrete, clay, Geotech (bentonite) or petroleum (plastic) liners.

It is important to note that while the MPCA rule requires this leak rate be maintained throughout the life of the pit or lagoon there are no requirements for demonstration that the structures are not leaking more than this rate at the time of construction or with aging over time.



As part of the same Izaak Walton League webinar Jesse Campbell, Private Well Coordinator for the Midwest Assistance Program, shared information the Iowa Environmental Council had gathered about the presence of nitrate in groundwater and the challenges faced by private well users in avoiding nitrate contamination. In a 2019 Water and Land News report Campbell revealed that "more than 6,600 private wells (12% of those tested) had nitrate averages at or above the EPA's legal limit (10 ppm) for drinking water systems and more that 12,330 wells (22%) had nitrate levels at or

[5] **Liquid Manure Storage Areas MPCA guidelines for design, construction, and operation of all types of liquid manure storage areas** – p 30 of 60, found at: https://www.pca.state.mn.us/sites/default/files/wq-f8-04.pdf

above 5 ppm. Natural background nitrate levels in Iowa ground water are generally less than 1 ppm.

Becker County, like most other rural counties, does not have private well protection strategies in policy or ordinances other than well setbacks from on-site sewer systems. And private well owners seldom, if ever have their wells tested to see if drinking water standards are being met. If a neighbor's CAFO should contaminate a private well, the well-owner has little recourse and will only have the choices of continuing to drink the contaminated water, purchase bottled water or drill a deeper well.

Economic Impact of CAFOs on Rural Communities

Dr. John Ikerd[6], who holds a PhD in Agricultural Economics, now retired from University of Missouri-Columbia, in a Freshwater Futures May 15, 2024 webinar presentation entitled *"Economic Fallacies of CAFOs*[7]*,* presented the following conclusions from multiple studies[8]:

- 2008 Review: Reams of research dating to the 1940's shows local economies suffer economically and socially from industrial agriculture;
- 2001 Study: Many CAFO counties are forced to raise taxes to offset increased costs of repairs to rural roads and bridges;
- 2008 Study: Lower income, greater income inequality, more poverty, less active "Main Street", fewer stores, and less retail trade in CAFO counties;
- 2015 Study: Property values up to 7 miles from CAFO lowered by 3.1% to 26%; properties next to CAFOs down 88%;

[6] Dr. John Ikerd - University of Missouri-Columbia, in a Freshwater Futures May 15, 2024 webinar presentation entitled *"Economic Fallacies of CAFOs*

[7] **Freshwater Futures' Great Lakes HABs & CAFO Manure Conference Series** May 9, 2023. YouTube Recordings from the Conference can be found at: https://www.youtube.com/playlist?list=PL_JsLZuTdlRu96Q1tarJmgjsWOHEdoIYv

[8] Studies referenced by Dr. Ikerd are attached to the cover email transmitting this report to Becker County Planning Consultants, to the County Board and to the Zoning Administrator.

- 2022 Study: Personal incomes dropped 8% from 1982 to 2017 in Iowa counties with most CAFOs. Other rural counties rose 41%.

Dr. Ikerd, in his paper entitled: *Economic Realities of CAFOs* draws the same conclusions and more. He includes an extensive list of reference publications that support his findings.[9] Below are some excerpts from that paper on rural community impacts:

> *"Economic Reality of CAFOs and Rural Communities.*
>
> *"Defenders claim that regardless of the need for CAFOs to meet the needs of consumers, CAFOs are necessary for the economic survival of many farming communities. They point specifically to community economic benefits from local investments in CAFOs, local sales of animals and animal products, and local employment in CAFOs and related local industries. However, decades of socioeconomic research and actual experience in CAFO communities reveal something very different. Whatever CAFOs contribute to local tax bases is more than offset by increased costs of maintaining rural roads and bridges that were not built to accommodate the heavy truck traffic associated with CAFOs. Also, local CAFOs operators typically source construction materials and labor from outside their local communities. Feeder animals, feed, and other supplies are shipped in from elsewhere. Even animal health care is typically provided by corporate veterinarians. Few of the economic benefits from CAFOs remain in local communities.*
>
> *The most frequent claim for community benefits is probably that CAFOs will increase local employment, which is sorely needed in many farming communities. However, the economic reality is that CAFOs employ far fewer people per dollar invested or unit of production than do the independent family farms they inevitably displace. The first research I personally did on this subject was an evaluation of CAFOs as a rural economic development strategy. I evaluated the employment implications of PSF's planned operation in north Missouri. My conclusion was that if PSF came into Missouri,*

[9] *Economic Realities of CAFOs- Dr. John Ikerd, May, 2020 at:* https://ikerdj.mufaculty.umsystem.edu/presentation-papers/factory-farms-cafos/economic-realities-of-cafos

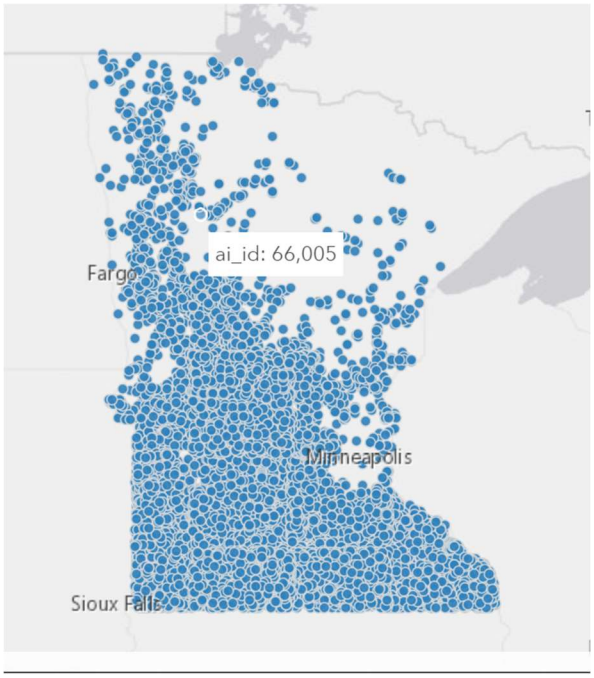
their CAFOs would displace up to three independent Missouri hog farmers for every job they created.[26] CAFOs came to Missouri, and Missouri lost more than 90% of its independent hog producers. I doubt that the number of workers employed in CAFOs in Missouri exceeds more than one-third of the independent hog farmers they displaced.

In the case of CAFOs, once livestock and poultry production became specialized, previously diversified family farms became specialized producers of either livestock or crops. Livestock and poultry were major sources of farm income that had made many diversified family farms economically viable. So, farmers who specialized in grain production were forced to farm more acres of land than before to maintain adequate family incomes. Larger crop and livestock operations meant fewer economic opportunities for farmers. With the industrialization of agriculture, the percentage of the U.S. labor force employed in agriculture dropped from 4.4% in 1970[27] to less than 1.5% in recent years.[28] Even in the communities where they locate, CAFOs do not actually create jobs. They simply relocate and concentrate fewer lower-paying jobs in CAFO communities than had previously existed on family farms elsewhere.

In addition, this loss of farm families cannot be offset by people moving into rural communities from elsewhere. No one really wants to move to a CAFO community. A 2015 study reviewed thousands of assessed property values for residences located up to 7 miles distant from CAFOs. The review concluded: "Overall, the new studies confirm the [negative] valuation impacts reported in earlier studies, as they range from 3.1% to 26% losses depending on multiple factors, and that properties immediately abutting an AO [CAFO] can be diminished as much as 88%."[29] It takes people, not just production, to support rural communities. It takes people not only to buy farm supplies and equipment but also to shop on Main Street for cars, clothes, shoes, and haircuts. It takes people to send their kids to local schools, to attend local churches, and to serve on volunteer fire departments and local town councils. When independent family farmers are displaced by CAFOs, it's not just a matter of losing employment; it's a matter of losing the essence of what it takes to be a viable rural community."[10]

10

The map below suggests the northerly progression of large feeding operations (CAFOs) into Minnesota stretching to the far northwestern corner of the state. [11]



These realities highlight the importance of using local land use plans and ordinances for proper siting, inspection and monitoring of large livestock facilities where the public can have greater confidence that pollutants are not and will not enter surface or groundwaters without detection. Becker County has set an important protective precedent by requiring water sampling for large feedlots needing conditional use permits. But the water sampling regime lacks sufficient sophistication to assure the monitoring would accomplish the intended purpose.

Industrialized Food System Engenders CAFOs.

Over the last 250 years, almost every sector of the American economy has become dominated by a handful of corporations. The forces that drove that trend have also come together to transform the most important sector of the American economy: the

[11] Source: MPCA on-line, data may not be current: https://hub.arcgis.com/datasets/mpca::feedlots-2/explore?layer=3&location=45.932764%2C-92.791165%2C6.00

food system. The way in which the United States produces and distributes is food has a profound effect on worker rights, animal welfare, air quality, water quality, the landscape, rural communities, public health, international trade, and the global climate. Livestock and poultry DNA are now owned, manipulated and sold to American farmers by a handful of corporations. Four companies control 66 percent of the hog genetics; three companies control 95 percent of the broiler chicken genetics; two companies control 99 percent of turkey genetics.[12]

Iowa Select Farms employes more than 7,400 people, including contractors, and brings about five million pigs to market annually. Since Iowa Select was founded in 1992, the states pig population has increased more than 50 percent while the number of hog farms has declined by over 80%. Pigs now outnumber human residents by a ratio of more than seven to one, and they produce a volume of manure equivalent to the waste of nearly eighty-four million people, more than the populations of California, Texas and Illinois combined.[13] One expert estimated that each confinement facility produces "the same amount of waste as a city of 90,000 to 150,000 people," spread over 640 acres with no sewage system.[14]

State and federal laws do regulate some environmental impacts of livestock operations but other than prohibiting siting in flood plains and wetlands, these regulations do not control the location of this particular agricultural land use. Recent findings by a federal agency show that Minnesota's regulations are inadequate to protect surface and groundwaters from nitrate pollution (more details on these findings are found later in this document). Therefore, without local government playing its role for proper siting of livestock facilities the government's protective network is not only incomplete but has been shown to be ineffective. This means that local governments must exercise their authority and responsibility for deciding if and where large

[12] From forward by Eric Schlosser in **Barons – Money, Power, and the Corruption of America's Food Industry –** by Austin Frederick-Island Press 2024

[13] CNBC Interview with Warren Buffet, Feb 27, 2017 quoted in "BARONS" by Fredrick – See footnote #1 above

[14] Natalie Gagliordi, "Walmart CEO outlines Omnichanel Retail Strategy to Stakeholder Associates", SDNET, June 5, 2015 as cited in BARONS by Fredrick – See footnote #1 above.

livestock facilities are located in their county in order close this loophole in the state and federal regulatory scheme.

Under the Federal Clean Water Act, direct discharge of manure to surface waters from livestock holding pits and lagoons is prohibited for large Confined Animal Feeding Operations (CAFOs are over 1000 animal units). However, the controls on land spreading of manure from both the larger CAFOs or smaller AFOs (animal feeding operations under 1000 animal units) for disposal or fertilizer use are strictly voluntary. Manure management plans, whether for CAFOs or AFOs, generally adopt what is known as best management practices (BMPs) for manure spreading based on so-called agronomic rates of application. Such agronomic rates are designed to maximize efficiency of manure application while allowing maximum application for crop production purposes alone and have no scientific basis for surface or groundwater protection. These BMPs have been demonstrated to be ineffective, not only in Minnesota but in a number of states and watersheds around the country.

Once surface and groundwaters are degraded by concentrated livestock feeding operations or other sources little can be done to reverse these impacts. Given the county's location in the heart of the lake country's tourism region, degraded surface water quality has potential significant economic consequences. Therefore, Becker County officials can benefit greatly from the experience in other states and regions by taking a "no-regrets" planning approach.

The League has researched several other states and another region of Minnesota to gather the experience of others with industrial scale agriculture beginning with Chesapeake Bay in Massachusetts.

Chesapeake Bay-

Over forty years ago, bay watchers and state officials noticed significant water quality and aquatic life deterioration. In 2004 studies investigating severely degraded water in the bay revealed the primary causes were increased nitrogen and phosphorus from intensifying livestock agriculture.

"The Chesapeake Bay is choking on nutrient pollution from a myriad of sources – from urban runoff, industry, automobiles, and human sewage, but the largest source is agriculture and, increasingly, from the manure produced by livestock, which now outnumber the watershed's human population by 11 to 1. Most of that manure is spread on the surface of nearby cropland, and studies show that within two years as much as half of its nutrient pollution washes out of the soil and into rivers and streams or seeps into groundwater. Both of these pathways lead to pollution in local waterways and, ultimately, in the Bay.

"Of the nitrogen and phosphorus that reach the Bay, agriculture is the largest source and animal manure is the largest agricultural component. Chemical fertilizers and airborne pollutants such as ammonia gas—a common manure by-product – make up the rest of the agricultural sources. This makes animal manure not only the largest source of nitrogen and phosphorus deposited on the land, but also the second largest source that reaches the Bay, behind sewage, which is deposited directly into the water. Animal manure is a major source of the Bay's pollution and must be addressed swiftly and comprehensively.[15]"

After 40 years of intensive, watershed wide efforts to restore water quality after severe degradation by non-point pollution Chesapeake Bay maybe only holding its own because crop and farm animal sources of nutrients have proven difficult to cure:

"Controlling agricultural runoff, the largest source of nutrients, has turned out to be more complex. Significant regionwide reductions have proven difficult. Data suggest, though, that efforts over the last 15 years have held the line, despite increases in crop production and growing numbers of chickens and other farm animals."

Now, as the Bay Program celebrates its 40th anniversary, its partners are contemplating what comes after 2025, the deadline for meeting most of the 31 outcomes set in its 2014 agreement. Of those, 15 are on track, 10 are off-

[15] **Manure's Impact on Rivers, Streams and the Chesapeake Bay- Keeping Manure Out of the Water, A Report by the Chesapeake Bay Foundation** July 28, 2004 at: https://www.cbf.org/document-library/cbf-reports/0723manurereport_noembargo_7567.pdf

course and the status of four others is unclear. Nutrient goals will be missed by a large margin."[16]

Maumee River in Ohio and Western Lake Erie in Michigan

Lake Erie water quality improved greatly in the 1980s-90s when point sources of nutrient pollution were remedied by the Clean Water Act but recent expansion of intensive crop and animal agriculture (factory farms) have reversed these gains and frequent toxic algae blooms have once-again become the norm.

> *"The Maumee River, overloaded with fertilizer and manure, is the single largest source of the phosphorus that triggers blooms of toxic algae in Lake Erie. Over half of the manure in the Maumee River watershed comes from an exploding number of unregulated factory farms, a new EWG and Environmental Law & Policy Center investigation reveals.*
>
> *Outbreaks of toxic algae, fueled by pollution from manure and fertilizer from farm fields, are increasing in frequency and severity across the U.S. In 2014, a toxic bloom in Lake Erie imperiled the drinking water of 500,000 residents in Toledo, Ohio. The Lake Erie outbreak, now an annual event, is getting much worse.*[17]

Tim Boring, a sixth-generation farmer and Director of Michigan's Department of Agriculture and Rural Development has bad news about Michigan's efforts to curb the farm pollution that fuels Lake Erie's toxic green algae. He finds that farm programs designed to protect water quality aren't working and that "factory-sized megafarms" are detrimental to the traditional farm economy.[18]

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[16] **After 40 years, Chesapeake Bay Program Yields Mixed Results** – Bay Journal at: https://www.bayjournal.com/news/pollution/after-40-years-chesapeake-bay-program-yields-mixed-results/article_4af88180-92b0-11ee-9d06-ab0f3bb0d72f.html

[17] **Explosion of Unregulated Factory Farms in Maumee Watershed Fuels Lake Erie's Toxic Blooms** at:

https://www.ewg.org/interactive-maps/2019_maumee/

[18] Michigan farm czar: Our fight against Lake Erie pollution isn't working: https://www.bridgemi.com/michigan-environment-watch/michigan-farm-czar-our-fight-against-lake-erie-pollution-isnt-working

Lake Erie's phosphorus pollution problems have grown worse amid decades of consolidation in farm country. Diverse family farms have been steadily gobbled up by massive operations that primarily grow either cattle feed such as corn, or cows — and not on the same piece of land. The corn grown on one megafarm is shipped to a separate factory-sized livestock operation, which produces huge amounts of manure yet lacks the cropland on which cow poop becomes a valuable fertilizer.

The corn farm, in contrast, has plenty of acreage but no cows to fertilize it. So the farmer resorts to chemical fertilizers.

"It's not the problem that we have too much manure, it's that we have manure in all the wrong places," Boring said. Boring sees the state playing a bigger role in protecting small farms, which tend to grow more diverse crops while also raising livestock, and helping them succeed without expanding their acreage.

In doing so, he said, Michigan can bolster rural communities that rely on farming and food processing jobs.

Freshwater Futures based in Petroskey Michigan recently hosted a day-long conference on CAFO manure impacts on surface and groundwater and especially their contributions to harmful algae blooms (HABs) on Western Lake Erie. The conference was recorded and featured technical experts in all fields of concern, an attorney and a local politician. The whole recording of individual speakers and their Power Point slides can be accessed at the links below:

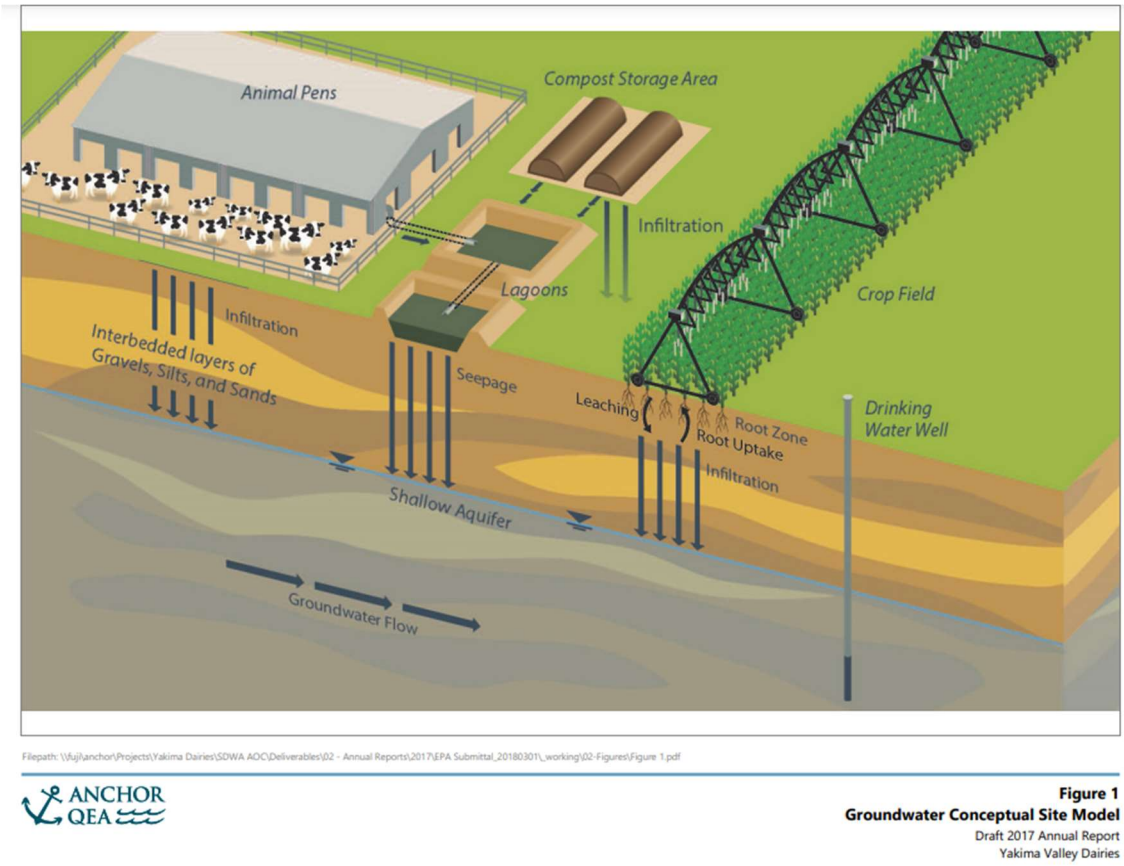
Great Lakes HABs & CAFO Manure Conference Series.[19]

- Great Lakes HABs & CAFO Manure Conference Recording
- Speaker Presentations - Power Point Slides

For additional questions and concerns on the conference or speakers please contact Sandy Bihn (sandylakeerie@aol.com) or Alexis Smith (alexis@freshwaterfuture.org) Jill M. Ryan, Executive Director, Freshwater Futures.

[19] This webinar, while useful to disclose the wide variety of environment, human health and economic problems with CAFOs may not be suitable for comp plan content. It may be better suited for a series of public education events for the Becker County Board, Planning Commission members and the public. Citizens, once well informed on CAFOs by these means can build fact-based support for the County's leaders taking appropriate actions.

The conference presenters used the graphic below to illustrate pathways for manure nutrients to reach groundwater. With permission, this graphic could be included in the pertinent section of Becker County's Comprehensive Plan.



EPA Intervenes to Protect Southeast Minnesota's Ground and Surface Water – Orders Permit and Guideline Improvements

In April, 2023, citizens petitioned the U.S. Environmental Protection Agency, saying nitrate in the groundwater in southeast Minnesota's karst region — largely from fertilizer and manure applied to crop land — poses an imminent danger to human health. They asked the Federal Environmental Protection Agency (EPA) to use its emergency authority under the Safe Drinking Water Act to intervene. [20]

[20] EPA says 'further actions' needed to protect human health from nitrate in southeast Minnesota Kirsti Marohn - November 8, 2023 at: https://www.mprnews.org/story/2023/11/08/epa-says-further-actions-needed-to-protect-human-health-from-nitrate-in-southeast-minn

In response to the citizen's petition, in August 2023 letter to four Minnesota State agencies the EPA stated that the MPCA's permit and manure management requirements for CAFOs were inadequate and needed to be "more protective" of sensitive groundwater resources. The federal agency says state agencies need to take additional steps to protect drinking water in southeast Minnesota from nitrate contamination.

> *"While this letter is largely focused on addressing immediate health concerns regarding nitrate contamination in drinking water in the Karst Region, Minnesota must also develop and implement a long-term solution to achieve reductions in nitrate concentrations in drinking water supplies. Developing a complete understanding of potential sources of nitrate contamination is an important immediate step for the state. A risk analysis of current and future nitrate contamination of the impacted groundwater will be critical for determining long-term solutions, and such analysis should incorporate the latest science and technologies. Minnesota has tools to effect reductions in nitrate concentrations through the National Pollutant Discharge Elimination System (NPDES) and State Disposal System permit programs, including development and implementation of more protective NPDES/SDS CAFO permits. In addition, Minnesota should consider adopting monitoring requirements in NPDES/SDS permits related to (1) subsurface discharges from manure, litter, and process wastewater storage, as well as (2) discharges from land application, similar to those proposed by EPA as modifications to* **the EPA-issued CAFO general permit for Idaho: https://www.epa.gov/npdes-***permits/npdes-general-permitconcentrated-animal-feeding-operations-cafos-idaho. We also encourage Minnesota to consider modifications to the state's Technical Standards for Nutrient Management with regard to land application of manure, litter or process wastewater, and any Minnesota guidelines for land application of commercial fertilizer, specific to Karst areas.*[21]

A similar petition to EPA has recently been filed by citizen groups in the Northeast corner of Iowa where identical topography and groundwater sensitivity exist. Private wells and public

[21] US Environmental Protection Agency August 2023 Letter to Minnesota Agencies found at: https://www.epa.gov/system/files/documents/2023-11/ao-rmod-reponse-letter_20230510-508.pdf

water treatments systems in this and other parts of Iowa as described above, have experienced rapidly increasing nitrate concentrations in both ground and surface waters.

> ***"The state's failure to regulate industrial agriculture pollution has steadily eroded Iowans' right to clean drinking water. For decades, Northeast Iowa residents have been exposed to dangerous levels of nitrate contaminated water. As the state reckons with high cancer levels and ongoing pollution regulation rollbacks, federal action is needed to safeguard the right to clean water. EPA must exercise emergency authority to hold polluters accountable and deliver safe drinking water in Iowa."***[22]

With this information and the additional reference material below, Becker County can learn from other's experience and hopefully take effective planning and zoning actions to avoid the predictable outcome of welcoming industrial agriculture into the county without the necessary safeguards and monitoring in place.

Becker County's sensitive surface and groundwater regions include its eastern Becker County sand plain areas with its high value trout streams, its highly developed central lakes area and its western agricultural areas served by extensive patterned drain tile and drainage ditch systems. Having sufficient, pre- and post-CAFO project construction ground and surface water monitoring in place can be a useful tool for holding industrial agriculture accountable for its operations and providing the assurances Becker County citizens need to keep from reliving the regretful experience of others.

These realities highlight the importance of using local land use plans and ordinances for proper siting, inspection and monitoring of large livestock facilities where the public can have greater confidence that pollutants are not and will not enter surface or groundwaters.

Importance of Water Sampling and Monitoring

[22] https://www.foodandwaterwatch.org/2024/04/16/iowa-environmental-groups-petition-epa-for-emergency-action-on-iowa-drinking-water/

The feedlot industry persistently claims that manure management plans limited to "agronomic rates" of application are sufficient to protect surface and groundwaters. One of the best strategies to test the performance of such plans is to actually monitor the water. New Mexico began requiring performance monitoring for large confined dairy operations as early and the 1990's. During the first six years of monitoring significant increases in ammonia and nitrates were found in groundwater.

> "*Feedlot milk production has increased dramatically in New Mexico in the past decade, along with the potential for groundwater contamination from animal wastes. State statutes require animal feedlots to maintain groundwater-monitoring wells and report water quality analyses quarterly to the New Mexico Water Quality Control Commission. This preliminary study analyzed six years of groundwater quality data from seven dairy feedlots and found elevated levels of nitrate, ammonia, chloride, total Kjeldahl nitrogen, and total dissolved solids. Samples were obtained from groundwater-monitoring wells located around dairy wastewater lagoons that were lined with clay, concrete, or synthetic membranes. Mean nitrate concentrations were significantly higher in groundwater samples taken in the vicinity of lagoons with clay liners. Lagoons with synthetic liners produced the lowest mean groundwater concentrations of ammonia and nitrate. Mean concentrations for all contaminants tended to increase as the size of dairy herds increased. Nitrate was the only groundwater contaminant measured that showed a consistently increasing trend from 1992 to 1997.*
>
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produced the lowest mean groundwater concentrations of ammonia and nitrate. Mean concentrations for all contaminants tended to increase as the size of dairy herds increased. Nitrate was the only groundwater contaminant measured that showed a consistently increasing trend from 1992 to 1997. [23]

In 2015, the state adopted the Dairy Rule, which requires dairies to monitor groundwater impacts and to line waste lagoons. The rule came following a 2009 study by NMED's Groundwater Protection Division that found 60 percent of the state's dairies were polluting groundwater. [24]

The Public Engagement Survey used to gauge citizen priorities for the current land use planning effort found that 70% of Becker County citizens thought more should be done to protect the water quality of lakes and streams.

Becker County has already set an important protective precedent by requiring water sampling for large feedlots needing conditional use permits. But the water sampling regime lacks sufficient sophistication to assure the monitoring would accomplish the intended purpose.

The comprehensive plan could present guidelines or suggest qualified consultants for designing appropriate ground or surface water monitoring regimes to clearly gauge the effectiveness of manure lagoons or pits and manure management plans to protect waters of the county.

Ordinary Small Farmers Can Get Financially Trapped and Even Puntished by the Industry

Conventional scale (small) farmers are not at fault or in any way to be blamed for being attracted to the offers from the industry representatives. With persistently narrow profit margins it makes

[23] **Dairy Feedlot Contributions to Groundwater Contamination - A Preliminary Study in New Mexico** – Sept, 1999. At: https://go.gale.com/ps/i.do?id=GALE%7CA55884900&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=00220892&p=HRCA&sw=w&userGroupName=anon%7Ee4bab884&aty=open-web-entry

[24] **New report looks at dairy operations in NM** -March 29, 2022 https://nmpoliticalreport.com/news/new-report-looks-at-dairy-operations-in-nm/

a lot of sense to scale up and grow overall profits even though margins remain slim. But once "in the contract system" farmers all too often discover they are on a financial treadmill that is extremely difficult to escape. Some who try unsuccessfully to escape have suffered retribution from the industry. Some farmers who once were "contract farmers" are speaking out to alert others of the risks and their efforts to transition back out. Modern Farmer's on-line ezine published one farmer's story.

> *When Paula and Dale Boles took over Dale's father's farmland in North Carolina, they thought that poultry farming would be a good way to work the land until they were ready to pass it on to their children. They obtained a contract with Case Farms, eventually switching over to Tyson, and built two poultry barns to company specifications, going $300,000 in debt to do so. It seemed like a good situation, though—as long as they could make their annual mortgage payment of $40,000, they'd be able to pay it off within 10 years.*
>
> *But soon, other expenses started getting tacked on. Tyson required a new computer system to control the temperature in the barns. This was another $70,000. Their propane bill averaged around $25,000 per year. Not making the updates wasn't really an option—no matter how much time and money you invested to be a farmer for the company, they could cut your contract at any time.*
>
> *And the income wasn't quite what they expected. Companies like Tyson pay their farmers in what's called a tournament system. There's a base pay, but whoever raises the best flock and has the best "feed conversion"—the biggest birds for the least feed— makes the most money, and payment decreases the further you go down the ladder. This essentially pits all the regional farmers against each other.*
>
> *"While contract farming, or "factory farming," has been exposed in the media for being exploitative of animals, the farmers who sign contracts with companies like Tyson, Perdue or other big players in animal agriculture also find themselves backed into a financial corner. But, over the last several years, there has been a wave of efforts to find ways to support farmers transitioning out of factory farming.*
>
> *"The way that the current structure of factory farming is designed is that the steps that carry with it the most risk and the most debt and the most liability are transitioned to the farmers," he says. "And so what you have is you have farmers building these extremely expensive facilities at the very specific direction [and] design of the company that they're working for. But they don't own the animals.*[25]

[25]**They Once Worked in Factory Farming. Not Anymore.** Modern Farmer, May 07, 2024 at: https://modernfarmer.com/2024/05/they-once-worked-in-factory-farming-not-anymore/

Antibiotic Resistence Linked to Feedlots

Becker County may not have the authority to address or curb the contribution of large animal feeding operations to antibiotic resistance but the Comprehensive Plan could provide or suggest tools to educate the public about the problem. This in turn could influence policy-makers at the appropriate level of authority to take remedial steps.

> *A **report** in 2020 by the Natural Resources Defense Council (NRDC), reveals that US cattle producers use more than 40% of all medically important antibiotics—those that are also used in human medicine—sold for use in US livestock, and use them three to six times more intensively than many of their European counterparts.*
>
> *NRDC says this overuse of antibiotics is a strategy used by the beef industry to offset heightened disease risks in feedlots, where cattle are routinely fed antibiotics to prevent disease whether or not they are ill, a practice that the World Health Organization discourages and that the European Union will no longer allow starting in 2022.*
>
> *The reports also argues that there is little transparency or accountability in the beef industry regarding its use of medically important antibiotics, and little urgency to rectify the problem.*
>
> *"Many infectious disease and antibiotic resistance experts believe such use is improper and helps contribute to reservoirs of drug-resistant bacteria on farms that can spread easily to humans through consumption of meat, exposure to soil or water contaminated with manure containing antibiotic-resistant pathogens, or contact with animals. They also worry that it reduces the effectiveness of antibiotics that are needed to fight infections in people."*[26]

The Izaak Walton League's Prairie Woods Chapter members have also compiled other authoritative reference materials including video interviews with groundwater experts, lawyers,

[26] https://www.cidrap.umn.edu/antimicrobial-stewardship/report-slams-beef-industry-overuse-antibiotics

and citizens from Minnesota and neighboring states that provide testimonials on their knowledge and experience with AFOs and CAFOs. Some of the content includes discussion of local economic impacts and local units of government adopting plans and ordinances to address industrial scale feedlots. Interactive MPCA maps of feedlot locations in Minnesota are also provided.

Other Confined Animal Feedlot Operation Resources and Video Links

Izaak Walton League Chapter Produced Videos with CAFO experts and Citizen Testimonials at:
https://drive.google.com/file/d/17fEX-Wfztuq39zN4T4uXgnFkLOzasGNf/view

Freshwater Futures' Webinar - Great Lakes HABs & CAFO Manure Conference Series | May 2, 2024 Freshwater Future
https://www.youtube.com/playlist?list=PL_JsLZuTdlRu96Q1tarJmgjsWOHEdoIYv

Explosion of CAFOs in Iowa and its Impact on Water Quality and Public health at:
https://roadactivist.org/wp-content/uploads/2018/01/Explosion-of-CAFOs-in-Iowa-and-Its-Impact-on-Water-Quality-and-Public-Health.pdf

Economic Realities of CAFOs – Dr. John Ikerd - University of Missouri-Columbia at:
https://ikerdj.mufaculty.umsystem.edu/presentation-papers/factory-farms-cafos/economic-realities-of-cafos

Antibiotic Use in Animal Medicine and Antibiotic Resistance.
https://www.cidrap.umn.edu/antimicrobial-stewardship/study-predicts-global-increase-antimicrobial-use-food-producing-animals
https://www.cidrap.umn.edu/antimicrobial-stewardship/report-slams-beef-industry-overuse-antibiotics