Comments on the Environmental Assessment Worksheet for the West River Dairy Expansion

May 7, 2026

INTRODUCTION

Agribusiness giant Riverview, LLP ("Riverview") is the largest dairy farming company in Minnesota, the second largest in the United States, and the fifth largest in the world.[1] Riverview's proposed West River Dairy Expansion project (the "Expansion Project") in Stevens County would be the largest dairy Concentrated Animal Feeding Operation ("CAFO") in Minnesota, if approved. The Expansion Project would swell the existing West River Dairy 7,855-cow facility by adding 11,000 dairy cows to a total of 18,855 dairy cows (26,397 animal units). The 15,400 animal units added by the Expansion Project—standing alone—would be the second largest CAFO by total animal units in Minnesota. The expanded West River Dairy would be the largest CAFO in the State.[2]

There are multiple reasons why the Minnesota Pollution Control Agency ("MPCA") should conclude that Riverview's Expansion Project has the potential for significant environmental effects. First, the Environmental Assessment Worksheet ("EAW") acknowledges that the Expansion Project would add at least 72,000 tons of greenhouse gas ("GHG") emissions annually to the existing West River Dairy facility.[3]

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[1] MILICA KOCIC & TORSTEN HEMME, IFCN DAIRY RSCH. NETWORK, IFCN TOP-10 LIST: DAIRY FARMING COMPANIES WORLDWIDE 2020 (2020), https://ifcndairy.org/wp-content/uploads/2020/02/IFCN-Top-10-List-Dairy-Farming-Companies-Worldwide-2020.pdf [Exhibit 1] (listing Riverview as the fifth largest dairy company worldwide by number of cows and fourth largest by production of raw milk); *see also* Ana Sofia Santos, *Global Dairy Production: Top 10 Largest Dairy Farms in the World*, CEVA SANTÉ ANIMAL (Jan. 21, 2026), https://ruminants.ceva.pro/global-dairy-production [Exhibit 2] (ranking Riverview as the fifth largest dairy farming company worldwide by raw milk production and the largest in the United States).

[2] Minn. Pollution Control Agency (MPCA) & Minn. Geospatial Commons, *Feedlots in Minnesota*, https://gisdata.mn.gov/dataset/env-feedlots (last visited May, 5, 2026).

[3] The original Environmental Assessment Worksheet (EAW) for the Expansion Project estimated a total of 66,324 tons of greenhouse gas (GHG) emissions annually—about 9% less than the current estimate. The revised estimate likely increased because the revised feedlot GHG calculation applied MPCA's standard dairy-cow manure-calculation liveweight of 680 kg/head, or about 1,500 lb/head, rather than the 1,200 lb/head average weight reflected in West River Dairy's Manure Management Plan. *Riverview's EAW for West River Dairy*, *infra* note 17, at Attachment 23. Because manure CH_4 and N_2O calculations scale directly with animal liveweight under MPCA's methodology, the manure-related emissions increased 5,886 tons CO_2e/year. The revision demonstrates that the EAW's GHG estimate is highly sensitive to animal liveweight assumptions. However, the EAW contains inconsistent liveweight assumptions—approximately 1,500 lb/head in the revised GHG calculation, 1,400 lb/head in animal-unit accounting, and 1,200 lb/head in the Manure Management Plan. MPCA should require Riverview to reconcile these assumptions, disclose the expected actual average liveweight of the Holstein–Jersey crossbred herd, and confirm that manure generation, nutrient loading, storage capacity, land-application acreage, enteric methane, and fertilizer-offset calculations are all based on consistent livestock characterization. Given that a single assumption change increased annual emissions by nearly 6,000 tons CO_2e/year, additional sensitivity analysis and verification is warranted.

Yet the EAW fails to fully (1) account for its full GHG emissions footprint, (2) consider the impacts of those emissions, and (3) consider alternate ways to mitigate those emissions. Even with the incomplete information contained in the EAW, the MPCA should recognize the potential for significant environmental effects and order an Environmental Impact Statement ("EIS") to further examine those effects. Fully assessing the GHG emissions of the Expansion Project is especially important because the agriculture sector is the second largest source of GHG emissions in Minnesota, responsible for approximately 25% of the State's net emissions.[4]

Second, the EAW's assessment of water availability relies upon an aquifer test that is nearly two decades old, and the EAW fails to consider the water quality impacts attendant to appropriating over 200 million gallons of water per year from an aquifer hydrologically connected to the Pomme de Terre River. Third, the EAW's plan to protect water quality from the massive amount of manure the Expansion Project will add to the Pomme de Terre River Watershed is inadequate. The EAW's cumulative effects analysis does not recognize the poor water quality already existing in this part of Minnesota and how the Expansion Project will exacerbate the problem. The EAW must include a full assessment of the cumulative effects of applying so much additional manure to fields in a region where surface waters are already impaired with agricultural pollutants. Finally, the EAW entirely fails to assess one of the largest impacts the Expansion Project will have on Minnesota. Riverview's massive size and scale has distorted Minnesota's dairy market, driving out small and mid-sized producers. This is a major environmental effect the EAW entirely overlooks and one MPCA should study through an EIS.

I. STATUTORY AND REGULATORY BACKGROUND

Under the Minnesota Environmental Policy Act ("MEPA"), a responsible governmental unit ("RGU") conducting an EAW review must consider all impacts "that may be reasonably expected to occur from the project" to determine whether the Expansion Project has "the potential for significant environmental effects."[5] The agency must take a "hard look" at the issues involved, and "genuinely engage[] in reasoned decision making."[6] The Minnesota Court of Appeals explained that, in order to determine whether a project has the potential for significant environmental effects, the environmental review process must include an analysis of environmental impacts "reasonably expected" to occur, even if not contemplated on the EAW form.[7] The

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[4] ANNE CLAFLIN ET AL., MPCA, GREENHOUSE GAS EMISSIONS IN MINNESOTA 2005-2022 at 9 (2025), https://www.pca.state.mn.us/sites/default/files/lraq-3sy25.pdf [Exhibit 3; hereinafter "MPCA GHG EMISSIONS IN MINNESOTA"].

[5] Minn. R. 4410.1700, subp. 6.

[6] *Citizens Advocating Responsible Dev. v. Kandiyohi Cnty. Bd. of Comm'rs*, 713 N.W. 2d 817, 832 (Minn. 2006).

[7] *In re Denial of a Contested Case Hearing Request & Modification of a Notice of Coverage Under Individual Nat'l Pollution Discharge Elimination Sys. Feedlot Permit No. MN0067652*, No. A19-0207, 2019 WL 5106666, at *7–8 (Minn. Ct. App. Oct. 14, 2019).

Minnesota Environmental Quality Board ("EQB") and MPCA have adopted guidance requiring all project applicants to complete an environmental study on, for example, their expected GHG emissions and whether they have considered ways to reduce those emissions.[8]

Serious consideration of GHG emissions in environmental review processes aligns with Minnesota law and policy, which, since 2007, has called for steep reductions in GHG emissions throughout the State "across all sectors producing greenhouse gas emissions."[9] Yet, the agricultural sector's emissions have actually increased. Minnesota's 2007 Next Generation Energy Act acknowledges the threat that GHG emissions pose to public health and welfare by setting State goals to reduce statewide GHG emissions, with an ultimate goal of achieving net-zero emissions by 2050.[10] Unfortunately, Minnesota has fallen short both of its 2015 goal to decrease GHG emissions 15% below the 2005 baseline, and its 2025 goal of a 30% decrease.[11] The agricultural sector is particularly off-track: unlike other sectors, such as electricity generation and transportation, which have seen reduced emissions since 2005, emissions from agriculture increased 1% between 2005 and 2023.[12]

MPCA's reporting shows that the agriculture sector is the second largest source of GHG emissions in the State, responsible for approximately 25% of net emissions.[13] Animal agriculture is the largest source of methane in Minnesota, with the methane coming mainly from cattle digestion and manure storage, and a significant portion of the agriculture sector's nitrous oxide emissions stem from manure management and growing

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[8] MINN. ENV'T QUALITY BD., ENVIRONMENTAL ASSESSMENT WORKSHEET (EAW) GUIDANCE: DEVELOPING A CARBON FOOTPRINT AND INCORPORATING CLIMATE ADAPTATION AND RESILIENCE (2024), https://www.eqb.state.mn.us/sites/eqb/files/2024_eaw_climate_guidance_2.pdf]; MPCA, *Environmental Review*, https://www.pca.state.mn.us/business-with-us/environmental-review (last visited May 7, 2026).

[9] MINN. STAT. § 216H.02, subd. 1(a).

[10] MPCA GHG EMISSIONS IN MINNESOTA, *supra* note 4, at 5; MINN. STAT. § 216H.02, subd. 1(a).

[11] Establishing the Climate Change Subcabinet and the Governor's Advisory Council on Climate Change to Promote Coordinated Climate Change Mitigation and Resilience Strategies in the State of Minnesota, Minn. Exec. Order No. 19-37 (Dec. 2, 2019), https://mn.gov/governor/assets/2019_12_2_EO_19-37_Climate_tcm1055-412094.pdf [Exhibit 4].

[12] MPCA GHG EMISSIONS IN MINNESOTA, *supra* note 4, at 9; *Minnesota Greenhouse Gas Inventory, Main Sources of GHG Emissions and Sequestration by Sector in 2023*, MPCA, https://data.pca.state.mn.us/views/Greenhousegasemissionsdata/Sourcesofemissions2023 (last visited May 5, 2026) [Exhibit 5, hereinafter "*MPCA GHG Inventory: Main Sources*"].

[13] MPCA GHG EMISSIONS IN MINNESOTA, *supra* note 4, at 9.

feed for livestock.[14] Minnesota will not meet its GHG emission reduction goals without addressing emissions from massive feedlots like the one proposed.[15]

There are other serious environmental risks from the Expansion Project. The massive amount of water the Expansion Project needs and the manure produced by the additional 11,000 cows risk further degrading water quality and other natural resources in the Pomme de Terre River Watershed. And Riverview's rapidly expanding hoofprint is changing rural Minnesota, driving out small and mid-sized dairies who are unable to compete.

To comply with the law and Minnesota public policy, MPCA must consider whether the Expansion Project has the potential to cause significant environmental effects based on the following criteria, set out in Minn. R. 4410.1700, subp. 7:

A. type, extent, and reversibility of environmental effects;

B. cumulative potential effects, including:

   i. whether the cumulative potential effect is significant;

   ii. whether the contribution from the project is significant when viewed in connection with other contributions to the cumulative potential effect;

   iii. the degree to which the project complies with approved mitigation measures specifically designed to address the cumulative potential effect; and

   iv. the efforts of the proposer to minimize the contributions from the project;

C. the extent to which the environmental effects are subject to mitigation by ongoing public regulatory authority. The RGU may rely only on mitigation measures that are specific and that can be reasonably expected to effectively mitigate the identified environmental impacts of the project; and

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[14] *Id*. at 3, 10; *Minnesota Greenhouse Gas Inventory*, *Sector-Level Details, Agriculture Sector*, MPCA, https://data.pca.state.mn.us/views/Greenhousegasemissionsdata/Sectordetails (last visited May 5, 2026) [Exhibit 6, hereinafter "*MPCA GHG Inventory: Agriculture Sector Details*"]. Minnesota is comparable to the rest of the nation in this respect. Animal agriculture is the largest agricultural emitter in the United States: nearly 80% of U.S. agriculture emissions are from the production of animals for food and their feed. PETER H. LEHNER & NATHAN A. ROSENBERG, FARMING FOR OUR FUTURE: THE SCIENCE, LAW, AND POLICY OF CLIMATE-NEUTRAL AGRICULTURE 43 (2021) [Exhibit 7].

[15] *See* MPCA GHG EMISSIONS IN MINNESOTA, *supra* note 4, at 9; *see also Climate Change Trends and Data*, MPCA, https://www.pca.state.mn.us/air-water-land-climate/climate-change-trends-and-data (last visited May 5, 2026).

D. the extent to which environmental effects can be anticipated and controlled as a result of other available environmental studies undertaken by public agencies or the project proposer, including other EISs.[16]

This comment will show that, applying these criteria, there is the potential for significant environmental effects from the proposed Expansion Project. Consequently, MPCA must order an EIS.

II. MPCA MUST ORDER AN EIS BECAUSE THE EXPANSION PROJECT'S GHG EMISSIONS HAVE THE POTENTIAL FOR SIGNIFICANT ENVIRONMENTAL EFFECTS

The Expansion Project's GHG emissions easily clear the threshold for a full EIS. Riverview's own estimate shows a net increase of 72,210 tons of CO_2e per year and approximately 2.17 million tons of CO_2e over the Expansion Project's 30-year life, primarily from enteric fermentation and manure storage. But that estimate is not the outer bound of the Expansion Project's climate impact; it is likely an understatement. The EAW relies on conservative inventory-based modeling, analyzes methane only under a 100-year global warming potential ("GWP"), omits or selectively accounts for substantial lifecycle and scope 3 emissions, and claims mitigation credits that are indefinite, unsupported, or overstated. At the same time, the Expansion Project's emissions must be evaluated against Minnesota's persistently high and increasing agricultural methane and nitrous oxide emissions, the cumulative nature of climate harm, and the absence of any meaningful regulatory program that will cap, monitor, or reduce feedlot GHG emissions after approval. Taken together, the type, extent, irreversibility, cumulative effects, inadequate mitigation, and lack of regulatory control all demonstrate that the Expansion Project has the potential for significant environmental effects and that MPCA must order an EIS.

A. The Type, Extent, And Irreversibility Of The Expansion Project's GHG Emissions Weighs Strongly In Favor Of An EIS

According to Riverview, the West River Dairy Expansion creates "a net increase of 72,210 CO_2e [tons] per year in GHG emissions, primarily from livestock digestion (enteric fermentation), and manure storage."[17] The "total net GHG emissions during the life of the [West River Dairy Expansion] (~30 years), including the construction and

[16] Minn. R. 4410.1700, subp. 7.

[17] MPCA, RIVERVIEW'S ENVIRONMENTAL ASSESSMENT WORKSHEET FOR WEST RIVER DAIRY EXPANSION 65 (2026) https://webapp.pca.state.mn.us/eqb-search/project-detail/88731?siId=88731-PROJ0000000004 [hereinafter "*Riverview's EAW for West River Dairy*"].

operation phases, is estimated to be 2.17 million tons CO_2e."[18] For comparison, a recent EAW estimates that the total construction and operation emissions of a 287,000 square foot rare-earth magnet manufacturing facility is 1.68 million tons CO_2e over a *50-year* period.[19] Riverview's estimate reflects substantial GHG emissions at levels that weigh in favor of further environmental review.

While even Riverview's estimate describes exceptionally high emissions, the EAW likely understates the extent of the Expansion Project's GHG emissions. The EAW uses the MPCA calculator, which in turn relies on models adopted from the U.S. Environmental Protection Agency ("EPA"). The underlying methodology results in conservative estimates, including because the methodology requires assumptions and extrapolations based on representative systems.[20] Compared to models of carbon dioxide emissions from the fossil fuel industry, the EPA's models of nitrous oxide and methane emissions from agriculture are considered far less certain, and the resulting estimates have wide confidence intervals.[21] According to experts, the range of uncertainty between the upper and lower bounds of U.S. agricultural emissions equates to the annual emissions of more than 100 coal-fired power plants.[22]

This high degree of uncertainty is due in part to the use of an inventory-based, "bottom-up" approach, which involves multiplying the number of animals present by "emissions factors" specific to animal types and regions (i.e., estimates of how much gas is produced by each animal over a set period of time).[23] These emission factors are typically derived from controlled studies, representative farm systems, or modeled averages, and are then applied broadly across diverse real-world operations. As a result, the approach simplifies complex biological and environmental processes—such as feed composition, animal health, manure handling, weather conditions, and management practices—into standardized assumptions. Since this "bottom up" approach requires

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[18] *Id.* at 65–66.

[19] MPCA, NIRON MAGNETICS'S ENVIRONMENTAL ASSESSMENT WORKSHEET 49 (2026), https://webapp.pca.state.mn.us/eqb-search/project-detail/264817?siId=264817-PROJ0000000001 [Exhibit 8].

[20] *See Riverview's EAW for West River Dairy, supra* note 17, at 62; *see also* MPCA, ITEM 18 GREENHOUSE GAS (GHG) EMISSIONS/CARBON FOOTPRINT (2025), https://www.pca.state.mn.us/sites/default/files/p-ear1-16.pdf [Exhibit 9] (using a combination of EPA-approved methodologies and state-specific tools to estimate emissions from feedlots).

[21] LEHNER & ROSENBERG, *supra* note 14, at 54.

[22] *Id.* at 55.

[23] Matthew N. Hayek and Scot M. Miller, *Underestimates of Methane from Intensively Raised Animals Could Undermine Goals of Sustainable Development*, 16 ENV'T RSCH. LETTERS 1, 3–7 (2021) [Exhibit 10]; Olga Gavrilova et al., *Chapter 10: Emissions from Livestock and Manure Management*, *in* 2019 REFINEMENT TO THE 2006 IPCC GUIDELINES FOR NATIONAL GREENHOUSE GAS INVENTORIES 10.50–10.52 (2019), https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch10_Livestock.pdf [Exhibit 11].

many inputs—each with its own uncertainty—the resulting uncertainty of the total emissions estimate can be more than that of any individual input.[24]

The alternative to a "bottom-up" approach is a "top-down" approach, which uses atmospheric measurements from livestock production regions to produce emissions estimates or corroborate a model's emissions estimates. One comparison of bottom-up and top-down estimates found that animal methane emissions in the U.S. may be 39% to 90% higher than bottom-up studies predict.[25] This may be because bottom-up models like that used by the EPA and adopted by MPCA fail to account for animal diseases that increase enteric fermentation and rely on manure emission factors that are based on laboratory experiments, rather than real-world settings.[26] The Expansion Project's EAW should acknowledge the uncertainty of its modeling with an uncertainty range. The EAW should also include a sensitivity analysis to model scenarios involving variables such as alternative feeds and high or low productivity cases.

Another problem with the EAW is that it relies only on a 100-year global warming potential (GWP100) value. Even though under GWP100, methane is converted to CO_2e emissions using a factor of 28 (meaning 1 ton of methane is treated as having the same warming impact as 28 tons of CO_2 over a 100-year period), this approach can still obscure the near-term climate impacts of the Expansion Project's emissions. Given that methane is a short-lived but highly potent GHG, the analysis should also present emissions using a 20-year global warming potential (GWP20), which better reflects the Expansion Project's 30-year operational lifetime and the acute warming effects of methane during that period. Presenting both GWP100 and GWP20 values would provide a more complete and policy-relevant understanding of the Expansion Project's climate impact.

More critically, the Expansion Project's EAW also misses much of the Expansion Project's scope 3 emissions. A company's GHG emissions can be classified into three scopes:

> Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.[27]

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[24] Hayek & Miller, *supra* note 23, at 4.
[25] *Id.* at 5.
[26] *Id.* at 6–7.
[27] *FAQ*, GREENHOUSE GAS PROTOCOL, https://ghgprotocol.org/sites/default/files/2022-12/FAQ.pdf (last visited May 7, 2026) [Exhibit 12, hereinafter "Greenhouse Gas Protocol FAQ"].

While the EAW includes a table of the Expansion Project's scope 1 and scope 2 emissions, it fails to clearly quantify scope 3 emission.[28] The EAW narratively acknowledges several upstream and downstream emissions that typically fall under scope 3, but it does not fully quantify them in its final total. These full value chain or lifecycle emissions include, for example, emissions from feed production (including fertilizer manufacture and soil emissions), transportation of inputs and products, and downstream processing and distribution. As one example of a failure to count scope 3 emissions, while the EAW narratively identifies that there will be vehicle emissions from contractor and employee commuting, milk hauling, and feed delivery and discusses strategies to mitigate these,[29] it does not include calculated estimates for these specific transport activities in its 72,210 tons/year total.

At the same time, the EAW selectively quantifies certain upstream and downstream impacts *when doing so results in claimed emissions reductions*, but miscategorizes them as scope 1 rather than scope 3. Inexplicably, the EAW does not quantify the total annual GHG emissions generated from feed production, but does quantify a specific *reduction* (or carbon sink credit) related to growing feed.[30] In another example, the upstream reduction from avoided synthetic fertilizer manufacturing (-9,038 tons) and the carbon sink credit for converting land to alfalfa feed (-2,662 tons) are both included in the total as scope 1 adjustments.[31] Such misleading and erroneous calculation methods result in significant asymmetry. Upstream and downstream emissions are included when they decrease the Expansion Project's reported footprint but excluded when they would increase it. Such one-sided accounting does not provide a complete or balanced picture of the Expansion Project's climate impacts and results in a significant understatement of total emissions.

And the Expansion Project's scope 3 emissions are likely large and material.[32] Figure 1 below provides estimated percentages of the U.S. dairy industry's lifecycle GHG emissions for fluid milk in 2008.[33] As the figure shows, emissions from enteric fermentation and manure management—which are scope 1 emissions for a dairy farm like West River Dairy—only comprise 51% of life cycle emissions. The other 49% of emissions—which are all scope 3 emissions—are from feed production, refrigeration and packaging, and distribution to retail and consumers. Newer research suggests that feed

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[28] *Riverview's EAW for West River Dairy, supra* note 17, at 62–63.
[29] *Id*. at 61.
[30] *Id*. at 62.
[31] *Id*. at 62–63.
[32] Scope 3 emissions "often represent a company's biggest greenhouse gas impacts." Greenhouse Gas Protocol FAQ, *supra* note 27.
[33] INNOVATION CTR. FOR U.S. DAIRY, SCOPE 3 GHG INVENTORY GUIDANCE FOR U.S. DAIRY COOPERATIVES AND PROCESSORS 12 (2024), https://www.usdairy.com/getmedia/2e8a6a15-6254-4bdc-a323-7be3b3d973da/scope_3_guidance_handbook_2024_final_reduced.pdf?ext=.pdf [Exhibit 13] (citing Greg Thoma et al., *Greenhouse Gas Emissions from Milk Production and Consumption in the United States: A Cradle-to-Grave Life Cycle Assessment Circa 2008*, 31 INT'L DAIRY J. S3–S14 (2013) [Exhibit 14]).

production in particular may contribute more than the 20% estimate from the 2008 data: in 2017, the U.N. Food and Agricultural Organization estimated that feed production and processing alone account for 45% of GHG emissions from livestock production.[34] As another example, U.S. dairy farm giant Rockview self-reported that its 2024 scope 3 emissions amounted to 537,144 metric tons CO_2e, over 67% of its total GHG footprint.[35] But almost all scope 3 emissions are left out of the Expansion Project's EAW. By omitting these scope 3 sources of emissions, the EAW likely ignores at least *half* of the Expansion Project's true GHG emissions.

U.S. Dairy Industry Fluid Milk GHG Emissions Allocation	
Fluid Milk Production Process	Approximate GHG Emissions
Enteric Emissions	26%
Manure Management	25%
Feed Production	20%
Refrigeration and Packaging	9%
Distribution, Retail and Consumer	20%

Figure 1. Allocation of fluid milk GHG emissions from the U.S. dairy industry in 2008.

For these reasons, the EAW's failure to quantify emissions from feed production is problematic and likely contributing to a significant understatement of emissions. The EAW does not list the total acres of crops required to feed the Expansion Project's cattle each year, only referring to the 2,200 acres of alfalfa proposed as a mitigation.[36] But 2,200 acres is generally not sufficient to feed 11,000 dairy cows as their primary forage source for a full year. For intensive dairy operations, a common guideline is 1.5 to 2.0 acres per cow to provide enough forage.[37] According to this guideline, 11,000 cows would require between 16,500 acres and 22,000 acres. Peer-reviewed data from high-producing Minnesota freestall dairy herds indicate dry matter intake of approximately 24.3

[34] FOOD AND AGRIC. ORG. OF THE UNITED NATIONS, GLOBAL DATABASE OF GHG EMISSIONS RELATED TO FEED CROPS: METHODOLOGY 4 (2017), https://openknowledge.fao.org/server/api/core/bitstreams/c3b15795-3030-41c4-986e-31a090aa2ab4/content [Exhibit 15].

[35] *Our Sustainability Efforts*, ROCKVIEW FARMS, https://www.rockviewfarms.com/sustainability-efforts/ (last visited May 5, 2026) [Exhibit 16].

[36] *See* discussion *infra* notes 53-8 and accompanying text.

[37] Virginia A. Ishler, *Dairy Sense: Keeping the Dairy Right Sized*, PENN STATE EXTENSION (Mar. 2020) (updated Dec. 8, 2025), https://extension.psu.edu/dairy-sense-keeping-the-dairy-right-sized [Exhibit 17].

kg/cow/day, with forage comprising about 52% of the ration.[38] For 11,000 cows, that translates to approximately 97,565 metric tons of feed dry matter per year. Applying peer-reviewed carbon-footprint factors for common U.S. dairy feeds indicates that feed production alone would likely generate approximately 27,000 to 53,000 metric tons CO_2e per year.[39] This is not a minor or speculative source of emissions. It is a major lifecycle emissions category that the EAW fails to quantify.

Because these scope 3 emissions are both foreseeable and substantial, their exclusion and incomplete reporting thwarts MPCA's ability to evaluate the Expansion Project's true climate impact and its consistency with State climate goals. An EIS is required by law and is necessary to assess these lifecycle emissions and their cumulative effects, as discussed further in *infra* Part II.C.

Once the Expansion Project's GHGs are emitted their impacts are effectively irreversible.

The Intergovernmental Panel on Climate Change (IPCC) has explained that the "very long lifetime of CO_2 in the atmosphere" means that "part of the CO_2 emitted by humans remains . . . for centuries to millennia."[40] As a result, GHGs accumulate and the warming they produce continues long after the underlying GHGs are emitted. This persistence means that the warming effects caused by GHG emissions are not only long-term but nearly impossible to fix within a meaningful duration, even if significant mitigation efforts occur.[41] Rapidly reducing short-lived GHGs like methane could provide an emergency brake on the rate of warming, slowing near-term temperature increases and reducing peak warming, but it cannot immediately undo the underlying climate harms that have already been set in motion.[42] Indeed, committed warming due to ocean uptake and delayed equilibrium responses means that the environmental harms associated with climate change will persist independently of future mitigation efforts. Furthermore, even where recovery is theoretically possible, the long recovery lags often

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[38] M.I. Endres & L.A. Espejo, *Feeding Management and Characteristics of Rations for High-producing Dairy Cows in Freestall Herds*, 92 J. OF DAIRY SCI. 822–829 (2010), https://doi.org/10.3168/jds.2008-2007 [Exhibit 18].

[39] Felix Adom et al., *Regional Carbon Footprint Analysis of Dairy Feeds for Milk Production in the USA*, 17 INT'L J. LIFE CYCLE ASSESSMENT 520–534 (2012). https://doi.org/10.1007/s11367-012-0386-y [Exhibit 19].

[40] *See* IPCC, *Climate Change 2021: The Physical Science Basis: Frequently Asked Questions, 4.2* (2021), https://www.ipcc.ch/report/ar6/wg1/downloads/faqs/IPCC_AR6_WGI_FAQ_Chapter_04.pdf [Exhibit 20].

[41] Susan Solomon et al., *Irreversible Climate Change Due to Carbon Dioxide Emissions*, 106 PNAS 1704-1709 (2009), https://doi.org/10.1073/pnas.081272110 [Exhibit 21].

[42] *See, e.g.*, Hannah Bäck et al., *Effect of Methane Mitigation on Global Temperature Under a Permafrost Feedback*, 2 GLOB. ENV'T CHANGE ADVANCES 100005, at 1, 8 (2024), https://doi.org/10.1016/j.gecadv.2024.100005 [Exhibit 22] (finding that rapid methane cuts can slow warming in the near term but do not produce meaningful long-term temperature reductions).

exhibited by ecological systems may extend recovery timelines for affected species and habitats by decades.[43]

In sum, GHG emissions from the Expansion Project pose threats of a type and extent that are significant and harmful to Minnesota's environment. The Expansion Project significantly increases, without effective mitigation or offsets, the emission of GHG pollutants contrary to state policy mandating reductions in *all sectors*. Moreover, the harms associated with the Expansion Project's GHG emissions are long-term, cumulative, and effectively irreversible. Accordingly, the type, extent and irreversibility of these potential effects weigh in favor of determining that the Expansion Project has the potential for significant environmental effects.

B. The EAW's Mitigation Plans Weigh In Favor Of An EIS

In addition to underestimating the GHG emissions of the West River Dairy Expansion, the EAW fails to fully grapple with mitigation methods. To fulfill the purpose of environmental review, the EAW must include a robust discussion of potential mitigation measures sufficient for meaningful public review.[44] As recognized by the Minnesota Supreme Court, mitigation analysis in an EAW "gives the public the assurance that the agency has indeed considered environmental concerns in its decisionmaking process . . . and, perhaps more significantly, provides a springboard for public comment."[45]

Rules and guidance make clear that the mitigation analysis must include not only a detailed description of planned mitigations and their efficacy, but also additional mitigation efforts that could be implemented to further reduce environmental effects.[46] Indeed, for purposes of avoiding an EIS, measures identified to mitigate potential adverse environmental effects must be "specific, targeted, and . . . certain."[47] The mitigation plans included in the EAW are not robust and do not fulfill these requirements.

While some categories of mitigation Riverview identifies may have value in the abstract—for example, certain feed formulations (such as those with lower crude protein

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[43] Sarah Weiskopf et al., *Climate Change Effects on Biodiversity, Ecosystems, Ecosystem Services, and Natural Resource Management in the United States*, SCI. OF THE TOTAL ENV'T 137782 (2020), https://doi.org/10.1016/j.scitotenv.2020.137782 [Exhibit 23].

[44] *See* Minn. R. 4410.0300, subd. 3.

[45] *Minn. Ctr. for Env't. Advoc. v. Minn. Pollution Control Agency*, 644 N.W. 2d 457, 468 (Minn. 2002) (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989)).

[46] *See id.*; MINN. ENV'T QUALITY BD., ENVIRONMENTAL ASSESSMENT WORKSHEET (EAW) GUIDANCE, *supra* note 8, at 14–16; Minn. R. 4410.1200(D).

[47] *Citizens Advocating Responsible Dev. v. Kandiyohi Cnty. Bd. of Comm'rs*, 713 N.W.2d 817, 835 (Minn. 2006).

and higher digestibility) can reduce enteric methane emissions from ruminants,[48] as can some feed additives,[49] and feed sources developed through lower carbon intensity practices can reduce total feedlot-associated GHGs[50]—they are largely untested and their mitigation potential is limited. In trying to apply such mitigation practices here, the EAW lacks evidentiary support and enforceable implementation commitments needed to show that they will meaningfully reduce the Expansion Project's actual emissions.

The mitigations proposed in the EAW are indefinite and incomplete and cannot be reasonably expected to effectively mitigate the identified environmental impacts of the Expansion Project. To start, Riverview concedes that "it is difficult to accurately quantify the GHG reductions" of almost all the listed mitigation methods.[51] Despite the many mitigation activities touted in the EAW, Riverview itself acknowledges that "only two have clearly quantified reductions: (1) Alfalfa Conversion Carbon Sink, and (2) Area Ammonia Replacement."[52] The EAW also omits many alternative emission mitigation methods that could be reasonably expected to effectively mitigate the identified environmental impacts of the Expansion Project. Riverview does no alternative scenario modeling.

1. Mitigations identified in the EAW are unreliable and overstated

Several of Riverview's proposed mitigation approaches are flawed and unreliable, including its reliance on emissions reductions from alfalfa conversion and ammonia replacement.

As a threshold matter, the theoretical reductions in emissions from row crop conversion cannot count as "mitigations" for purposes of the MPCA determination because emissions from crop production (scope 3) were not included in the calculation of the Expansion Project's emission total. Riverview cannot claim a benefit from the possible GHG emissions avoided by row crop to alfalfa conversion when the EAW fails to identify crop production emissions as operational emissions.

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[48] Yue Wang et al., *Mitigating Greenhouse Gas and Ammonia Emissions from Beef Cattle Feedlot Production: A System Meta-Analysis*, 52 ENV'T SCI. TECH. 11232, 11236–37 (2018), https://doi.org/10.1021/acs.est.6b06430 [Exhibit 24].

[49] While some feed additives have shown promise, many of them have not been tested or adopted by industry at scale, and their mitigation potential is limited. Daina Bray, *Reining in Animal Agriculture's Emissions by Shrinking the Herd: Early Signs of a Necessary Global Policy Shift*, 54 ENV'T L. 489, 523–31 (2024), https://law.lclark.edu/live/files/36859-5braypdf [Exhibit 25]; *see also* F.-X. Philippe & B. Nicks, *Review on Greenhouse Gas Emissions from Pig Houses: Production of Carbon Dioxide, Methane, and Nitrous Oxide by Animals and Manure*, 199 AGRIC., ECOSYSTEMS & ENV'T 10, 21 (2015), https://doi.org/10.1016/j.agee.2014.08.015 [Exhibit 26].

[50] Muxi Cheng et al., *Climate Change and Livestock Production: A Literature Review*, 13 ATMOSPHERE 140, 8 (2022) [Exhibit 27].

[51] *Riverview's EAW for West River Dairy, supra* note 17, at 65.

[52] *Id.*

a. Conversion of row crops to alfalfa

The EAW claims that converting row crops to alfalfa is an emissions-negative way to meet required feed production for the Expansion Project and that "1.21 tons CO_2e are avoided annually for each acre of row crop converted to alfalfa. The Project's cattle will require approximately 2,200 acres of alfalfa produced for feed each year," thus resulting in "a reduction in GHG emissions by 2,662 tons CO_2e per year."[53] But that assumed rate equates to approximately 2.99 tons CO_2e per hectare per year, or roughly 0.81 tons C per hectare per year—a relatively high soil-carbon sequestration assumption compared to published syntheses. For example, a global synthesis of soil organic carbon under perennial crops found that conversion from annual to perennial crops produced an average gain of 6.0 ± 4.6 Mg C/ha over 20 years in the 0–30 cm soil layer—approximately 0.30 Mg C/ha/year—with substantial variability and uncertainty across sites.[54] Similarly, a synthesis of 103 publications and 160 sites found that farmland-to-grassland conversion increased soil carbon stocks by approximately 0.30 Mg/ha/year.[55] More regionally relevant literature also counsels caution. A review of long-term Iowa studies found that conversion of cropland to perennial grassland increased soil organic carbon by 0.21–0.74 Mg C/ha/year, but emphasized that soil carbon responses were highly variable, slow to detect, and not always statistically significant.[56] And a 30-year study in southern Wisconsin found that alfalfa-based dairy forage systems actually lost an average of 0.54 ± 0.13 Mg C/ha/year—meaning alfalfa-based systems represent a carbon source, not a carbon sink.[57] Applied to Riverview's claimed 2,200 acres of alfalfa, the Wisconsin study's rate would imply approximately +1,763 metric tons CO_2/year rather than an emissions reduction. These studies show that the EAW cannot simply treat the alfalfa acreage as a fixed, annual emissions-negative credit without further support.

Even assuming that all feed production needs will be met by the 2,200 acres of alfalfa—which is not realistic as discussed above[58]—using land to grow alfalfa still results in emissions, even if those emissions are lower than they would be if the land was used to grow row crops. Rather than a mitigation that reduces the Expansion Project's emissions, the alfalfa conversion merely generates fewer emissions for the Expansion Project than row crops would. To illustrate this with a hypothetical, if row crops for required feed production generate 50,000 tons of emissions per year, and the alfalfa

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[53] *Id*.

[54] Alicia Ledo et al., *Changes In Soil Organic Carbon Under Perennial Crops*, 26 GLOB CHANGE BIOL. 4158 (2020), https://nora.nerc.ac.uk/id/eprint/527969/1/N527969JA.pdf [Exhibit 28].

[55] Lei Deng et al., *Global Patterns of the Effects of Land-Use Changes on Soil Carbon Stocks*, 5 GLOB ECOLOGY & CONSERVATION 127 (2016), https://doi.org/10.1016/j.gecco.2015.12.004 [Exhibit 29].

[56] Jim Jordahl et al., *Carbon Storage in Cropland Soils: Insights from Iowa, United States*, 12 LAND 1630 (2023), https://doi.org/10.3390/land12081630 [Exhibit 30].

[57] C. Dietz et al., *Soil Carbon Maintained By Perennial Grasslands Over 30 Years But Lost in Field Crop Systems in a Temperate Mollisol*, 5 COMMC'NS EARTH ENV'T 360 (2024), https://doi.org/10.1038/s43247-024-01500-w [Exhibit 31].

[58] *See supra* notes 37-39 and accompanying text.

conversion reduces those emissions by 2,662 tons CO_2e per year, then the total feed-production-related emissions would be 47,378 tons CO_2e per year (50,000 minus 2,622). This number is greater than zero, and certainly not a mitigation, as the EAW claims.

The EAW's claim of net negative emission from feed production seems to stem from the following erroneous assumption:

> The nearby cropland that will be used for feed production for the Project is already in crop production. Since the Project will not trigger new crop production and will create a market for crops already being grown, a reduction in GHG emissions is anticipated due to the shorter transportation distance of those crops to the Project.[59]

This assumption ignores the reality that, by removing the supply of row crops already in production to feed the Expansion Project's cattle, market forces will replace the displaced row crops production in another location. This indirect land-use change may result in even greater emissions than the emissions reduction from the alfalfa conversion. And if required feed production for the Expansion Project's cattle is not entirely met by the 2,200 acres of alfalfa (as seems likely), then the EAW is also ignoring the emissions generated by other feed production required to meet the need of the Expansion Project's cattle. The EAW itself seems to assume that some amount of other row crops will be required for feed production, as evidenced by the statement discussed earlier that the Expansion Project will use nearby cropland.

Additionally, the EAW's alfalfa credit is unsupported because it assumes that 2,200 acres of alfalfa represent a durable conversion from row crops to an emissions-negative feed source. In the Upper Midwest, however, alfalfa is commonly grown as part of a crop rotation, not as a permanent replacement for annual row-crop production. A regional study of alfalfa stand length and subsequent crop patterns in Minnesota, Iowa, Wisconsin, Nebraska, North Dakota, and South Dakota found that corn was the most common crop planted in both the first and second years after alfalfa—79% and 61% of cases, respectively—and soybean was also commonly planted after alfalfa.[60] Thus, it is unclear whether the Expansion Project would actually convert permanent row-crop acreage to long-term alfalfa production, or merely introduce alfalfa temporarily within existing row-crop rotations. This distinction matters because any claimed soil-carbon benefit from alfalfa depends on duration, permanence, management, and what happens after the alfalfa stand is terminated. If the acreage returns to corn or soybean production after a short rotation, any carbon benefit may be temporary, reduced, or reversed.

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[59] *Riverview's EAW for West River Dairy, supra* note 17, at 64.

[60] Matt Yost et al., *Alfalfa Stand Length and Subsequent Crop Patterns in the Upper Midwestern United States*, AGRONOMY J. 1697-1708 (2014), https://doi.org/10.2134/agronj14.0014 [Exhibit 32].

The EAW's claimed alfalfa credit is also unreliable because it is impossible to determine whether Riverview accounted for the nitrous oxide emissions associated with alfalfa production. The EAW treats conversion of row crops to alfalfa as a fixed emissions reduction, claiming that 1.21 tons CO_2e are avoided annually per acre and that 2,200 acres of alfalfa would therefore reduce emissions by 2,662 tons CO_2e per year.[61] But as a nitrogen-fixing crop, alfalfa can increase soil nitrogen availability and contribute to nitrous oxide emissions—a particularly powerful GHG—through nitrification and denitrification, particularly following rainfall, irrigation, and other soil-wetting events. A recent study found that continuous alfalfa growth was a substantial N_2O source, that short-term "hot moments" accounted for up to 57% of annual N_2O emissions, and that N_2O emissions reduced the system's carbon-sink potential by up to 14% annually.[62] When harvested biomass removal was considered, N_2O emissions offset 70% of the remaining ecosystem carbon sink.[63] The EAW does not disclose whether its alfalfa credit is net of N_2O emissions, whether it assumes any site-specific soil carbon sequestration, or whether it accounts for carbon removed from fields through repeated alfalfa harvests and later converted to CO_2 and methane when used as cattle feed. This omission is material. The Expansion Project cannot claim alfalfa as an emissions-negative feed source while failing to evaluate the GHG emissions generated by producing, harvesting, and fertilizing that alfalfa.

b. Ammonia-replacement credit

The EAW also claims that replacing ammonia fertilizer used on farms in surrounding areas with manure generated by the Expansion Project will mitigate the Expansion Project's emissions,[64] because ammonia from other sources would likely be produced through the energy-intensive Haber-Bosch process.[65] However, the EAW's modeling of emissions from the electricity required by the Haber-Bosch process relies on an emissions factor for the Midwest Reliability Organization West ("MROW") region.[66] While the MROW region includes Minnesota, it also includes parts of eight other states with various fuel mixes to generate electricity.[67] A more accurate model would use the emissions factor for Minnesota's electricity generation, which has a resource mix for electricity generation that is cleaner than the MROW region,[68] resulting in a lower

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[61] *Riverview's EAW for West River Dairy, supra* note 17, at 65.
[62] Tyler L. Anthony et al., *Carbon-Sink Potential of Continuous Alfalfa Agriculture Lowered by Short-Term Nitrous Oxide Emission Events*, 14 NATURE COMMC'NS 1926 (2023), https://www.nature.com/articles/s41467-023-37391-2 [Exhibit 33].
[63] *Riverview's EAW for West River Dairy, supra* note 17, at 64.
[64] *Id.* at 65.
[65] *See Id.*
[66] *Id.* at Attachment 21.
[67] *Power Profiler for MROW*, EPA, https://www.epa.gov/egrid/power-profiler#/MROW (last visited May 5, 2026) [Exhibit 34].
[68] *Compare id. with* MPCA GHG EMISSIONS IN MINNESOTA, *supra* note 4, at 13 (describing Minnesota's electricity generation resource mix).

emissions factor. Employing a lower, Minnesota-specific emissions factor in the EAW would result in a smaller emissions reduction from area ammonia replacement than Riverview claims.

Additionally, the EAW's ammonia-replacement credit assumes, without support, a particular fertilizer-sourcing baseline. The EAW claims that manure generated by the Expansion Project will replace approximately 1,545 tons per year of anhydrous ammonia and therefore reduce emissions by 9,038 tons CO_2 per year.[69] But the EAW does not establish what synthetic fertilizer products are currently used on the receiving fields, where those fertilizers are produced, whether the displaced product would in fact be anhydrous ammonia, or whether manure application would displace synthetic fertilizer on a one-for-one basis. These omissions matter because, while Minnesota is a major ammonia-consuming state, it appears to have no in-state ammonia production facilities: nearly all ammonia fertilizer used in Minnesota is produced outside the State and transported long distances, often from the Gulf Coast.[70] Thus, the EAW's claimed ammonia-replacement credit rests on an unsupported assumption about the source and emissions intensity of the fertilizer being displaced. At minimum, the EAW should identify the baseline fertilizer products used on the relevant fields, the likely production region and fuel mix for those products, and the amount of synthetic fertilizer that would actually be displaced before treating ammonia replacement as a fixed emissions reduction.

The EAW's modeling also assumes that the emissions factor for electricity generation will remain constant throughout the Expansion Project's lifespan. A more accurate model would take into account likely future emissions intensity reductions for the Haber-Bosch process to produce ammonia. Along with many states within the MROW region, Minnesota has reduced emissions from electricity generation over recent decades and has adopted climate goals to further reduce those emissions. For example, Minnesota reduced its GHG emissions from electricity generation by 50% from 2005 to 2022, and the "Minnesota Legislature adopted a new Clean Electricity Standard that requires electric utilities to provide net-zero, or 100% carbon-free, electricity by 2040."[71]

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[69] *Riverview's EAW for West River Dairy, supra* note 17, at 65.

[70] Quailan Homann et al., *Roadmap for Distributed Green Ammonia in Minnesota*, RMI (June 2024), https://rmi.org/wp-content/uploads/dlm_uploads/2024/06/roadmap_for_distributed_green_ammonia_in_minnesota.pdf [Exhibit 35] (reporting that Minnesota is the fourth-highest ammonia-fertilizer-consuming state, accounting for more than 10% of market demand, but has no ammonia production facilities); Noah Fish, *Local Ammonia Project Could Stabilize Fertilizer Supply For Southern Minnesota Farmers*, AG WEEK (Mar. 17, 2026), https://www.agweek.com/local-ammonia-project-could-stabilize-fertilizer-supply-for-southern-minnesota-farmers [Exhibit 36]. Fertilizer sales data from the Minnesota Department of Agriculture is not helpful on this point, as it tracks fertilizer sales and distribution in Minnesota, rather than the state or region of production. *Fertilizer Use, Nutrient Management Survey*, MINN. DEP'T OF AGRIC., https://www.mda.state.mn.us/pesticide-fertilizer/fertilizer-use-sales-data (last visited May 5, 2026).

[71] MPCA GHG EMISSIONS IN MINNESOTA, *supra* note 4, at 13.

More accurate modeling would reduce the scale of the mitigation from the Expansion Project's area ammonia replacement.

c. Other proposed mitigation methods

Other mitigation methods proposed in the EAW lack quantified emissions reductions, are theoretically flawed, and/or lack adequate supporting evidence. For instance, the EAW claims that the Expansion Project's use of Holstein-Jersey crossbred dairy cows will reduce GHG emissions per unit of milk produced, as compared to traditional Holstein cows.[72] Yet this claim is only supported with research on the emissions of Jersey cows compared to Holstein cows.[73] The EAW fails to provide any research on potential emissions reductions from the crossbred Holstein-Jersey cows that will be used in the Expansion Project.

The EAW also claims that the Expansion Project will employ efficient feed practices, "including research and use of feed additives such as Rumensin, to reduce GHG emissions by up to 4,365 tons CO_2e per year."[74] Yet the EAW provides zero citations or research on potential emissions reductions from efficient feed practices or feed additives, making it unclear why the EAW mentions Rumensin specifically and how Riverview calculated the alleged reduction of 4,365 tons CO_2e. Finally, the EAW claims that "[i]f market conditions allow, and renewable electricity is purchased from the utility provider for the Project, there would be a potential GHG offset of 5,520 tons CO_2e per year."[75] First, this mitigation is tentative and expressly conditioned on market conditions. Second, it lacks any citations to support the calculation of a 5,520 CO_2e offset.

The EAW also contends that "[m]eeting growing global dairy demand from less-efficient dairy production outside of North America would have a more detrimental impact on global climate change" than by meeting that demand with more-efficient dairy production inside of North America.[76] Even assuming that (1) global dairy demand will increase, (2) unmet demand would be satisfied through imports, and (3) North American dairy production is more emissions-efficient on a per-unit basis, this argument is beside the point and does not bear on the inquiry before MPCA. The question under environmental review is not whether the Expansion Project might be more efficient than hypothetical production elsewhere, but rather whether the Expansion Project's actual, incremental emissions have the potential to cause significant environmental effects in Minnesota.[77]

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[72] *Riverview's EAW for West River Dairy, supra* note 17, at 63.
[73] *Id.*
[74] *Id.* at 66.
[75] *Id.*
[76] *Riverview's EAW for West River Dairy, supra* note 17, at 65.
[77] Minn. R. 4410.1700, subp. 7.

Moreover, the argument improperly substitutes emissions intensity (emissions per unit of production) for absolute emissions.[78] While it is often asserted that U.S. or North American dairy systems are more efficient on a per-unit basis, improvements in efficiency do not necessarily reduce total emissions.[79] In fact, increased productivity has historically coincided with increases in total sector emissions as production expands.[80] This reflects a well-established phenomenon: efficiency gains can lower emissions per unit while still increasing total emissions when overall output grows.

Most importantly, this line of reasoning is legally and analytically irrelevant to MPCA's obligations. The argument assumes that denying or conditioning this Expansion Project would result in increased production elsewhere, rather than reduced demand, substitution, or shifts in consumption. Such leakage-style arguments rest on speculative and unsupported assumptions about global market responses. The EAW provides no basis for making these assumptions.

The Minnesota Supreme Court held in *Citizens Advocating Responsible Development v. Kandiyohi County Board of Commissioners* that an RGU may not rely on vague or unsupported mitigation concepts.[81] Riverview is making a generalized claim that the Expansion Project is preferable to an imagined alternative production scenario somewhere else in the global dairy market. This argument does not reduce the Expansion Project's actual emissions. It does not impose any enforceable operational requirement. It does not identify a specific avoided source. And it does not provide substantial evidence that any claimed global emissions reduction will occur. At most, it is a policy argument about the relative efficiency of North American dairy production. It cannot be treated as mitigation, cannot offset the Expansion Project's quantified GHG emissions, and cannot support a negative EIS determination. Accepting such reasoning would effectively allow any high-emitting project to evade scrutiny by asserting that emissions might be higher elsewhere, undermining the purpose of environmental review entirely.

2. The EAW fails to discuss several mitigation measures that could actually reduce the Expansion Project's emissions

The EAW does not consider scenarios that improve manure management, build out renewable energy, or improve livestock conditions. Approaches such as these have

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[78] News Release, Climate Council, What's the difference between absolute emissions and emissions intensity? (Aug. 4, 2015), https://www.climatecouncil.org.au/what-is-the-difference-between-absolute-emissions-and-emissions-intensity/ [Exhibit 37].

[79] *See, e.g.*, Andrew Hunt, *Discover How U.S. Cows Are Shattering Milk Production Efficiency Records!*, BULL VINE (Aug. 23, 2024), https://www.thebullvine.com/news/discover-how-u-s-cows-are-shattering-milk-production-records [Exhibit 38].

[80] C.A. Rotz et al., *Fifty Years of Environmental Progress for United States Dairy Farms*, 107 J. OF DAIRY SCI. 6, 1 (2024) [Exhibit 39].

[81] 713 N.W.2d 817, 835 (Minn. 2006).

been shown to reduce GHG emissions from animal agriculture.[82] Despite the Expansion Project's significant and continuous energy demands and emissions, the EAW does not quantify potential emissions reductions from these readily available and increasingly cost-effective strategies, nor does it evaluate their feasibility or effectiveness. Without that information, MPCA and the public cannot determine whether feasible mitigation measures could materially reduce the Expansion Project's emissions; whether the EAW's proposed mitigation is adequate, durable, or enforceable; or whether the Expansion Project's GHG impacts can be reduced below the level of significance.

a. Manure management

The Expansion Project will use clay-lined basins with impermeable covers to collect and store manure and wastewater, with liquid manure subsequently land applied as fertilizer on cropland.[83] As such, the Expansion Project's manure management system will be a major and persistent source of methane and nitrous oxide emissions. The EAW entirely fails to discuss alternatives, such as dry or composting systems, that can significantly reduce methane emissions.

Manure management makes up a significant portion of dairy cow emissions.[84] As dairy operations have gotten bigger, they increasingly produce and collect large volumes of liquid (rather than solid) manure.[85] This Expansion Project's manure management strategy is no exception. Storing liquid manure in anaerobic environments—such as ponds, lagoons, and the clay-lined basins proposed here—promotes bacterial activity that leads to methane production.[86] Per the EPA: "[M]anure management systems with the

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[82] LEHNER & ROSENBERG, *supra* note 14, at 81.

[83] *Riverview's EAW for West River Dairy, supra* note 17, at 2.

[84] Søren O. Petersen, *Greenhouse Gas Emissions from Liquid Dairy Manure: Prediction and Mitigation*, 101 J. DAIRY SCI. 6642, 6651 (2018) [Exhibit 40].

[85] ENVIRONMENTAL PROTECTION AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990–2022, 5-12 to 5-13 (2024), https://www.epa.gov/system/files/documents/2024-04/us-ghg-inventory-2024-main-text_04-18-2024.pdf [Exhibit 41, hereinafter "EPA GHG INVENTORY"].

[86] CARRIE HRIBAR, NAT'L ASS'N OF LOCAL BDS. OF HEALTH, UNDERSTANDING CONCENTRATED ANIMAL FEEDING OPERATIONS AND THEIR IMPACT ON COMMUNITIES 7 (2010) [Exhibit 42]; Paul Jun et al., *CH_4 and N_20 Emissions from Livestock Manure*, *in* GOOD PRACTICE GUIDANCE AND UNCERTAINTY MANAGEMENT IN NATIONAL GREENHOUSE GAS INVENTORIES 321, 322-23 (IPCC 2000), https://www.ipcc-nggip.iges.or.jp/public/gp/gpg-bgp.html [Exhibit 43]; FAO, GREENHOUSE GAS EMISSIONS FROM RUMINANT SUPPLY CHAINS: A GLOBAL LIFE CYCLE ASSESSMENT 68–70 (2013), https://www.fao.org/3/i3461e/i3461e.pdf [Exhibit 44]; EMMETT INST. ON CLIMATE CHANGE & ENV'T, UCLA L. SCH., MITIGATING EMISSIONS FROM CALIFORNIA'S DAIRIES: CONSIDERING THE ROLE OF ANAEROBIC DIGESTERS 16 (2024), https://law.ucla.edu/sites/default/files/PDFs/Publications/Emmett%20Institute/UCLA_Emmett_CA_Dairies_1%2018%2024.pdf [Exhibit 45]; *Riverview's EAW for West River Dairy, supra* note 17, at 2. According to EPA, "manure management systems with the most substantial methane emissions are those associated with confined animal management operations where manure is handled in liquid-based systems." EPA GHG INVENTORY, *supra* note 85, at 5-12; *see also* IPCC, GOOD PRACTICE GUIDANCE AND UNCERTAINTY MANAGEMENT IN NATIONAL GREENHOUSE GAS INVENTORIES 1, 322–23 (2000), *available at* https://www.ipcc-nggip.iges.or.jp/public/gp/gpg-bgp.html.

most substantial methane emissions are those associated with confined animal management operations where manure is handled in liquid-based systems."[87] Stored manure also produces nitrous oxide and carbon dioxide.[88] Thus, the Expansion Project's proposed manure management system reflects precisely the type of system that is widely recognized as a major and persistent source of GHG emissions.

When manure is applied to fields, exposure to oxygen and microbes in the soil can convert nitrogen from the manure into nitrous oxide, and the manure also produces carbon dioxide as it breaks down.[89] Cattle raised in the United States often live on farms that produce more manure than the surrounding land can absorb,[90] leading to nutrient runoff that creates GHGs and other pollution.[91]

That these clay-lined basins will be fitted with impermeable covers provides little relief.[92] While the use of impermeable covers may reduce certain emissions pathways—such as limiting ammonia volatilization and reducing rainfall infiltration that can increase storage volume—it does not eliminate methane generation from the stored manure. Methane production continues beneath the covers, and covered systems remain a significant source of GHG emissions.[93] Moreover, the scale of the proposed operation—generating over 200 million gallons of manure and wastewater annually—means that even marginal per-unit emission rates will translate into substantial absolute emissions increases over time.[94]

The Expansion Project's reliance on land application of manure compounds these impacts. Although manure can displace some synthetic fertilizer use, its application—particularly at the volumes contemplated here—increases the risk of nitrous oxide

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[87] EPA GHG INVENTORY, *supra* note 85, at 5-12; *see also* Jun et al., *supra* note 86, at 323.
[88] Jun et al., *supra* note 86, at 323; Philippe & Nicks, *supra* note 49, at 12.
[89] Jan Broucek, *Nitrous Oxide Production from Cattle and Swine Manure*, 5 J. ANIMAL BEHAV. & BIOMETEOROLOGY 13, 13-16 (2017) [Exhibit 46]; Philippe & Nicks, *supra* note 49, at 12.
[90] HRIBAR, *supra* note 86, at 2–3 (explaining that the quantity of manure produced by concentrated animal feeding operations (CAFOs) cannot all be used as fertilizer); *see also* RUTHIE LAZENBY, CTR. FOR AGRIC. & FOOD SYS., VT. L. SCH., RETHINKING MANURE BIOGAS: POLICY CONSIDERATIONS TO PROMOTE EQUITY & PROTECT THE CLIMATE & ENVIRONMENT 18 (2022), https://www.vermontlaw.edu/sites/default/files/2022-08/Rethinking_Manure_Biogas.pdf [Exhibit 47] ("[V]ery large facilities often cannot dispose of all of their manure safely through land application without exceeding the amount of nutrients the land can take up . . . .").
[91] Jake Beaulieu et al., *Climate Benefits of Reducing Nutrient Pollution in Aquatic Ecosystems* (EPA, 2021 Social Cost of Water Pollution Workshop, 2021) [Exhibit 48]; Michael A. Mallin et al., *Industrial Swine and Poultry Production Causes Chronic Nutrient and Fecal Microbial Stream Pollution*, 226 WATER, AIR, & SOIL POLLUTION 1, 10–11 (2015) [Exhibit 49].
[92] *Riverview's EAW for West River Dairy, supra* note 17, at 2.
[93] Semra Bakkaloglu et al., *Methane Emissions Along Biomethane and Biogas Supply Chains are Underestimated*, 5 ONE EARTH 724-736 (2022), https://www.cell.com/one-earth/fulltext/S2590-3322(22)00267-6 [Exhibit 50].
[94] *Riverview's EAW for West River Dairy, supra* note 17, at 63.

emissions from soils, especially under conditions of excess nitrogen, variable weather, and saturated soils.[95] In addition, nutrient runoff associated with over-application or extreme precipitation events contributes to downstream water quality degradation, which in turn can drive secondary GHG emissions, including nitrous oxide from aquatic systems.

The EAW fails to adequately evaluate whether the surrounding cropland can consistently and safely absorb the Expansion Project's manure supply. The EAW states that the Expansion Project will require approximately 7,700 acres for manure application and that the combined Expansion Project and existing facility will require approximately 13,200 acres, with 16,669 acres identified as available.[96] But those acres are not simply co-located immediately around the facility: the EAW identifies manure application sites across five townships in Stevens County and two townships in Swift County.[97] At the same time, the EAW does not provide a field-by-field nutrient balance, distance-weighted transport analysis, or average and maximum manure movement distances. Nor does it quantify the emissions associated with pumping, transferring, hauling, or otherwise moving manure to those fields. As such, the EAW does not demonstrate that the Expansion Project's manure can be applied at agronomic rates each year without increasing nitrous oxide or transport-related emissions,[98] and (as discussed more in *infra* Part IV) runoff risk and other pollution.

Transitioning from long-term liquid storage systems to dry or composting systems paired with non-digester covered storage can significantly reduce methane emissions.[99] Whereas liquid manure systems maintain oxygen-deprived environments that are ideal for methanogenic bacteria,[100] dry handling and composting systems promote aerobic

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[95] John A. Lory et al., *Calculating Plant-Available Nitrogen and Residual Nitrogen Value in Manure*, UNIV. OF MO. EXTENSION (Dec. 2007), https://extension.missouri.edu/publications/g9186 [Exhibit 51].

[96] *Riverview's EAW for West River Dairy, supra* note 17, at 8.

[97] *Id*. at 24.

[98] Curtis Dell et al., *Challenges and Opportunities for Manureshed Management Across U.S. Dairy Systems: Case Studies From Four Regions*, 51 J. OF ENV'T QUALITY 521–539 (2022), https://doi.org/10.1002/jeq2.20341 [Exhibit 52] (finding that where manure production exceeds nearby cropland's assimilative capacity, off-farm transport becomes necessary, but transportation costs and logistics complicate effective redistribution); Sheri Spiegal et al, *Manuresheds: Advancing Nutrient Recycling in US Agriculture*, 182 AGRIC. SYSTEMS 102813 (2020), https://doi.org/10.1016/j.agsy.2020.102813 https://www.sciencedirect.com/science/article/pii/S0308521X19311679 [Exhibit 53] (finding that manure nutrients often concentrate in source regions where they threaten environmental health, and that manure may need to be moved long distances to reach land capable of assimilating excess nutrients).

[99] FAO, GREENHOUSE GAS EMISSIONS FROM RUMINANT SUPPLY CHAINS, *supra* note 86; Broucek, *supra* note 89, at 13–16; Philippe & Nicks, *supra* note 49, at 12.

[100] Frederik Dalby et al., *Understanding Methane Emission from Stored Animal Manure: A Review to Guide Model Development*, 50 J. ENV'T QUALITY 817–835 (2021), https://doi.org/10.1002/jeq2.20252 [Exhibit 54]. Even if mitigation methods were to be proposed to help reduce emissions from the planned liquid manure system, such methods are limited and inadequate. If the applicant were to propose installing a biodigester, the limitations and counterproductive results of that technology are critical to consider. Anaerobic digesters,

conditions, in which oxygen is present and microbial communities instead produce carbon dioxide (a substantially less potent GHG) rather than methane.[101]

Solid manure management systems, including scrape-and-stack methods, frequent removal from housing areas, and composting, reduce the residence time of manure in anaerobic conditions and limit the accumulation of large volumes of wet waste.[102] Composting, in particular, can be managed to maintain optimal temperature, moisture, and aeration levels, further suppressing methane formation while stabilizing nutrients.[103] When properly implemented, these systems can result in orders-of-magnitude reductions in methane emissions compared to conventional liquid storage.[104]

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often promoted as a methane mitigation strategy, present significant limitations and risks. *We're Challenging the NC Permit for Hog Waste Operations Causing Pollution and Harm to Communities*, S. ENV'T L. CTR. (Aug. 4, 2022), https://www.southernenvironment.org/news/were-challenging-the-n-c-permit-for-hog-waste-operations-causing-pollution-and-harm-to-communities [Exhibit 55]; *see also* LAZENBY, RETHINKING MANURE BIOGAS, *supra* note 90 at 18. They do not eliminate methane emissions and can leak substantial amounts of methane across the biogas supply chain. Thomas Flesch et al., *Fugitive Methane Emissions from an Agricultural Biodigester*, 35 BIOMASS & BIOENERGY 3927, 3927 (2011) [Exhibit 56]; Bakkaloglu et al., *supra* note 93 at 730–731; Norah Efosa et al., *Emissions of Nitrous Oxide and Methane After Field Application of Liquid Organic Fertilizers and Biochar,* 356 AGRIC., ECOSYSTEMS & ENV'T 1, 1 (2023) [Exhibit 57]; Thomas Kupper et al., *Ammonia and Greenhouse Gas Emissions from Slurry Storage – A Review,* 300 AGRIC., ECOSYSTEMS & ENV'T 1, 1 (2020) [Exhibit 58]; Alyssa Valdez et al., *Evaluating the Impact of Anaerobic Digesters on Point Source Methane Emissions from California Dairies from Remote Sensing,* 21 ENV'T RSCH. LETTERS 064018 (2026), https://iopscience.iop.org/article/10.1088/1748-9326/ae4fe4/pdf [Exhibit 59]. In addition, digesters can exacerbate other pollutants, including nitrous oxide and ammonia, particularly after land application of digestate. They have also been associated with safety hazards such as gas buildup, explosions, and storage failures, posing risks to human health and the environment. Ji-Qin Ni, *Cases, Causes, and Impacts of Safety Incidents at AD Systems*, (unpublished workshop presentation, PURDUE UNIV.) 7–23 (Mar. 10, 2023), https://engineering.purdue.edu/adt/workshop/230310/ni.pdf [Exhibit 60]; Frank H. Hedlund, *Biomass Accident Investigations – Missed Opportunities for Learning & Accident Prevention*, 25TH EUR. BIOMASS CONF. & EXHIBITION (June 2017) [Exhibit 61]. Finally, biogas production is costly and typically relies on substantial subsidies, raising questions about its long-term viability as a climate solution. Aaron Smith, *What's Worth More: A Cow's Milk or Its Poop?*, AG DATA NEWS SUBSTACK (Feb. 3, 2021), https://agdatanews.substack.com/p/whats-worth-more-a-cows-milk-or-its [Exhibit 62].

[101] Sarah Nordahl et al., *Greenhouse Gas and Air Pollutant Emissions from Composting*, 57 ENV'T SCI. TECH. 2235-2247 (2023), https://pmc.ncbi.nlm.nih.gov/articles/PMC9933540/ [Exhibit 63]; Justine Owen & Whendee Silver, *Greenhouse Gas Emissions From Dairy Manure Management: A Review Of Field-Based Studies*, GLOB. CHANGE BIOLOGY (2014), https://matteroftrust.org/wp-content/uploads/2015/11/Owen-and-Silver-GCB-2014.pdf [Exhibit 64].

[102] LAZENBY, RETHINKING MANURE BIOGAS, *supra* note 90, at 26; Dave Chadwick et al., *Manure Management: Implications for Greenhouse Gas Emissions*, 166 ANIMAL FEED SCI. & TECH 514-531 (2011), https://doi.org/10.1016/j.anifeedsci.2011.04.036 [Exhibit 65]; D. Meyer et al., *Survey of Dairy Housing and Manure Management Practices in California*, 94 J. OF DAIRY SCI. 4744-4750 (2011), https://doi.org/10.3168/jds.2010-3761 [Exhibit 66].

[103] E. Pattey et al., *Quantifying the Reduction of Greenhouse Gas Emissions as a Result of Composting Dairy and Beef Cattle Manure*, 72 NUTRIENT CYCLE AGROECOSYST 173–187 (2005), https://doi.org/10.1007/s10705-005-1268-5 [Exhibit 67].

[104] *Id*.

Additionally, where some degree of storage remains necessary, transitioning to covered storage that minimizes moisture inputs (e.g., by excluding precipitation) without creating sealed anaerobic conditions can further reduce emissions. Unlike impermeable lagoon covers that trap and concentrate methane beneath them, requiring a vent or adsorbents to avoid explosion, non-digester covered or dry-stack storage systems aim to prevent excess water infiltration while maintaining conditions that discourage methanogenesis.[105]

Importantly, these alternative systems can also provide co-benefits, including reduced risk of catastrophic spills, improved nutrient management, and lower potential for downstream water contamination.[106] While they may require different infrastructure and management practices, they represent a well-established pathway for materially reducing the climate impact of manure management—particularly for large-scale operations where liquid systems would otherwise generate substantial and continuous methane emissions.

b. Renewable energy buildout

Renewable energy buildout is another concrete mitigation pathway the EAW should have evaluated, rather than treating renewable electricity as a contingent, market-dependent offset. The Expansion Project will create substantial ongoing electricity and fuel demand for cross-ventilated barns, milking and milk-cooling operations, ventilation systems, pumps, lighting, manure handling, and related equipment; yet the EAW does not model whether those loads could be reduced through on-site solar arrays, dedicated wind procurement or development, electrification of diesel-powered machinery and other farm equipment, or battery storage and demand-response measures to manage peak loads and maximize on-site renewable use.[107]

Peer-reviewed research supports the relevance of these measures: dairy-specific studies have found that photovoltaic ("PV") systems can feasibly supply dairy-farm electricity loads and reduce the GHG intensity of farm electricity by up to 29%, and a recent techno-economic assessment of dairy-farm solar PV with battery storage found

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[105] Herald Wilson Ambrose et al., *Additives and Methods for the Mitigation of Methane Emission from Stored Liquid Manure*, 229 BIOSYSTEMS ENG'G 209-245 (2023), https://doi.org/10.1016/j.biosystemseng.2023.03.015 [Exhibit 68].

[106] Shidi Ba et al., *Meta-Analysis of Greenhouse Gas and Ammonia Emissions From Dairy Manure Composting*, 193 BIOSYSTEMS ENG'G 126-137 (2020), https://doi.org/10.1016/j.biosystemseng.2020.02.015 [Exhibit 69]; *20,000 Gallons of Liquid Manure Leak From Tank at Albany, Minn. Farm*, FOX9 (Sept. 25, 2019), https://www.fox9.com/news/20000-gallons-of-liquid-manure-leak-from-tank-at-albany-minn-farm [Exhibit 70].

[107] *Riverview's EAW for West River Dairy, supra* note 17, at 64, Attachment 21.

substantial CO_2 reductions under farm-specific operating profiles.[108] Studies of large-scale dairy farms also show that milking and related operations contribute to electricity demand peaks, and that demand flexibility or storage technologies can reduce peak impacts.[109]

Likewise, agricultural machinery electrification is a feasible decarbonization pathway for replacing diesel equipment, and life-cycle assessment research has found battery-electric tractors to have substantially lower GWP than conventional tractor systems when evaluated over the full use phase and life cycle.[110] Dedicated wind energy should also have been assessed as a low-carbon electricity source, subject to site-specific resource, interconnection, and land-use constraints.[111]

c. Livestock management

Improved livestock management can also significantly reduce the volume and intensity of GHG emissions from feedlots. Reducing use of nontherapeutic antibiotics can prevent increased methane emissions from animals' disrupted microbiomes.[112] Healthier animals are more productive and emit fewer GHGs per unit of output.[113] By contrast, animals in overcrowded conditions experience more stress, contributing to disease spread and inefficient feed conversion, all of which can increase methane and nitrous oxide emissions per animal.[114]

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[108] Jonathan Dean et al., *Modelling Solar Photovoltaic Systems on Dairy Farms for Cost Savings and GHG Emission Reduction*, 948 SCI. OF THE TOTAL ENV'T 174874 (2024), https://doi.org/10.1016/j.scitotenv.2024.174874 [Exhibit 71].

[109] Jefferson Dew et al., *Reducing Electricity Demand Peaks on Large-Scale Dairy Farms*, 25 SUSTAINABLE PROD. & CONSUMPTION 248 (2021), https://doi.org/10.1016/j.spc.2020.08.014 [Exhibit 72].

[110] Elia Scolaro et al., *Electrification of Agricultural Machinery: A Review*, 9 IEEE ACCESS 164520-164541 (2021), https://doi.org/10.1109/ACCESS.2021.3135037 [Exhibit 73]; Oscar Lagnelov et al., *Life Cycle Assessment of Autonomous Electric Field Tractors in Swedish Agriculture*, 13 SUSTAINABILITY 11285 (2021), https://doi.org/10.3390/su132011285 [Exhibit 74].

[111] M. Faizan & I. Afgan, *Life Cycle Assessment Of Wind Turbine Systems: A Statistical Synthesis Approach To Address Greenhouse Gas Emissions*, 226 RENEWABLE AND SUSTAINABLE ENERGY REVIEWS 116429 (2026), https://doi.org/10.1016/j.rser.2025.116429 [Exhibit 75].

[112] Tobin J. Hammer et al., *Treating Cattle with Antibiotics Affects Greenhouse Gas Emissions, and Microbiota in Dung and Dung Beetles*, 283 PROCEEDINGS ROYAL SOC'Y BIOLOGICAL SCI. 1, 5 (2016) [Exhibit 76].

[113] FAO, PATHWAYS TOWARDS LOWER EMISSIONS: A GLOBAL ASSESSMENT OF GHG EMISSIONS & MITIGATION OPTIONS FROM LIVESTOCK AGRIFOOD SYSTEMS 1, 32 (2023) [Exhibit 77] (reporting that increased productivity and improved animal health can reduce global livestock emissions by 30%); Tara L. Felix, *Beef Cattle Spacing Requirements*, PENNSTATE EXTENSION (Mar. 7, 2023), https://extension.psu.edu/beef-cattle-spacing-requirements [Exhibit 78].

[114] FAO, PATHWAYS TOWARDS LOWER EMISSIONS, *supra* note 113, at 24; Felix, *supra* note 113; *see also* WORLD ORG. FOR ANIMAL HEALTH, TERRESTRIAL ANIMAL HEALTH CODE Ch.7.1. (2018), https://www.woah.org/fileadmin/Home/eng/Health_standards/tahc/2018/en_chapitre_aw_introduction.htm [Exhibit 79] (suggesting giving animals more space to improve their health).

The cows living in the proposed feedlot will be housed in a cross-ventilated, total-confinement, free-stall barn.[115] In free-stall total confinement systems, cows are housed indoors year-round in controlled environments. Such systems are typically associated with higher reliance on energy inputs (e.g., ventilation, cooling) and, as discussed above, centralized manure collection systems that can increase methane emissions if manure is stored in liquid form.[116] Moreover, large-scale confinement can exacerbate the stress and disease pressures that reduce feed efficiency and increase emissions intensity.

By contrast, pasture-based systems allow cows to engage in a broader range of natural behaviors, including grazing, walking, and social interaction in more dynamic environments.[117] Access to pasture is generally associated with improved hoof health, lower rates of lameness, and increased behavioral expression.[118] Pasture systems can also reduce stress by allowing animals to self-regulate movement, rest, and feeding patterns.[119] From a welfare perspective, the ability to graze is often considered a core behavioral need for ruminants, and its absence in confinement systems is a key point of concern.[120]

Indeed, the most impactful strategy to reduce GHG emissions from feedlots is to directly address the scale and intensity of animal production.[121] Such approaches would align with Minnesota's longstanding commitment to maintaining small, family-owned farms:

> The legislature finds that it is in the interests of the state to encourage and protect the family farm as a basic economic unit, to insure it as the most socially desirable mode of agricultural production, and to enhance and promote the

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[115] *Riverview's EAW for West River Dairy, supra* note 17, at 2.

[116] Dan McFarland, *Ventilation Systems, Efficiency, and Maintenance for Dairy Housing*, PENN STATE EXTENSION (Dec. 3, 2025), https://extension.psu.edu/ventilation-systems-efficiency-and-maintenance-for-dairy-housing [Exhibit 80] ("The ventilation system on your dairy housing consumes 20% to 25% of the total energy used on the dairy").

[117] M. Verdon et al., *Invited Review: Animal Welfare in Pasture-Based Dairy Systems – A Systematic Scoping Review to Identify Progress, Priorities, and Future Directions*, 108 J OF DAIRY SCI. 12924-12948 (2025), https://doi.org/10.3168/jds.2025-26981 [Exhibit 81]; G. Arnott et al., *Review: Welfare of Dairy Cows in Continuously Housed and Pasture-Based Production Systems*, 11 ANIMAL 261-273 (2017), https://doi.org/10.1017/S1751731116001336 [Exhibit 82].

[118] Kathryn McLellan et al., *Effects Of Free-Choice Pasture Access on Lameness Recovery and Behavior of Lame Dairy Cattle*, 105 J. OF DAIRY SCI. 6845-6857 (2022), https://doi.org/10.3168/jds.2021-21042 [Exhibit 83]; Anne-Marieke Smid et al., *The Influence of Different Types of Outdoor Access on Dairy Cattle Behavior*, 7 FRONT. VET. SCI. 257 (2020), https://doi.org/10.3389/fvets.2020.00257 [Exhibit 84].

[119] Andrew Crump et al., *Pasture Access Affects Behavioral Indicators of Wellbeing in Dairy Cows*, 11 ANIMALS 902 (2019), https://doi.org/10.3390/ani9110902 [Exhibit 85].

[120] G. Arnott et al., *supra* note 117.

[121] Bray, *supra* note 49, at 523–31.

> stability and well-being of rural society in Minnesota and the nuclear family.[122]

Yet, despite this statutory commitment, the number of permits for new farms is going down while the number of animals per farm goes up.[123] Dairy feedlots in the United States have become increasingly consolidated, with a small number of large operations handling most cattle.[124] The trend in Minnesota mirrors this national shift and would be exacerbated by the proposed dairy expansion.[125]

This concentration significantly magnifies GHG emissions and cumulative environmental impacts per site.[126] From a climate perspective, concentration creates GHG "hotspots" with emissions comparable to industrial sources.[127] Moreover, as discussed above, the volume of manure generated at these facilities often exceeds the nutrient absorption capacity of surrounding land, leading to runoff and leaching that pollutes water sources and contributes further to nitrous oxide emissions.[128]

High-density operations are also more vulnerable to climate-related events, such as heavy rainfall and lagoon overflows, increasing the likelihood of catastrophic pollution

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[122] MINN. STAT. § 500.24, subd. 1.

[123] Office of the Legis. Auditor, *Animal Feedlot Regulation*, MINN. LEG., https://www.auditor.leg.state.mn.us/ped/1999/fedlt99.htm (last visited May 5, 2026) [Exhibit 86]; *see also Request for Comments*, MPCA 2 (2025), https://www.pca.state.mn.us/sites/default/files/wq-rule4-29a.pdf [Exhibit 87] (There are "[f]ewer total number of feedlots in the state [since the last major update to the Feedlots Rule in 2000], with feedlots now having more animal units per facility.").

[124] USDA, OVERVIEW OF THE U.S. CATTLE INDUSTRY 14 (2016), *available at* https://usda.library.cornell.edu/concern/publications/8s45q879d [Exhibit 88] (noting the combined capacity of large feedlots with over 1,000 head of cattle increased by 100,000 head between 2006 and 2016). Across the county, roughly 5% of feedlots house more than 1,000 cattle, yet those facilities are responsible for over 85% of all beef cattle production. *Id.*; *Sector at a Glance: Cattle & Beef*, ECON. RSCH. SERV. (May 22, 2025), https://www.ers.usda.gov/topics/animal-products/cattle-beef/sector-at-a-glance [Exhibit 89].

[125] *Request for Comments, supra* note 123 (There are "[f]ewer total number of feedlots in the state [since the last major update to the Feedlots Rule in 2000], with feedlots now having more animal units per facility.").

[126] April Leytem et al., *Methane Emissions from Dairy Lagoons in the Western United States*, 100 J. OF DAIRY SCI. 6785 (2017), https://doi.org/10.3168/jds.2017-12777 [Exhibit 90]; Horacio A. Aguirre-Villegas & Rebecca A. Larson, *Evaluating Greenhouse Gas Emissions from Dairy Manure Management Practices Using Survey Data and Lifecycle Tools*, 143 J. OF CLEANER PROD. 169-179 (2017), https://doi.org/10.1016/j.jclepro.2016.12.133 [Exhibit 91]; Qingbo Qu et al., *A Model to Identify Entry Points to Curb Emissions from Complex Manure Management Chains*, 415 J. OF CLEANER PROD. 137787 (2023), https://doi.org/10.1016/j.jclepro.2023.137787 [Exhibit 92].

[127] A meta-analysis of 104 studies showed that a single feedlot emits approximately 2,786 kg CO_2-equivalent per animal unit annually, primarily through enteric fermentation and manure management. Wang et al., *supra* note 48, at 11232–33.

[128] ECON. RSCH. SERV., MANAGING MANURE TO IMPROVE AIR AND WATER QUALITY 2, 40 (2005), https://ers.usda.gov/sites/default/files/_laserfiche/publications/46336/29004_err9.pdf?v=98631 [Exhibit 93]; Ben Chugg et al., *Detecting Environmental Violations with Satellite Imagery in Near Real Time: Land Application under the Clean Water Act*, 31 ASS'N FOR COMPUTING MACH. INT'L CONF. ON INFO. & KNOWLEDGE MGMT. 3052, 3053 (2022) [Exhibit 94].

events.[129] As MPCA's feedlot program manager recently commented: "Minnesota has also been getting more extreme and unpredictable rain storms than it did when its [feedlot] rules were last updated [in 2000], which have caused manure lagoons to overflow and increased runoff on farms."[130] If GHG emissions reductions are not required from larger and denser feedlots, Minnesota risks entrenching a model of production that not only worsens climate impacts but also undermines broader environmental, public health, and equity goals.

The EAW fails to evaluate alternative livestock management approaches. This omission is significant because different production systems—such as pasture-based or hybrid models, reduced stocking densities, distributed smaller-scale operations, or alternative manure handling systems—can materially alter both the magnitude and intensity of GHG emissions, as well as associated environmental and public health impacts. An adequate environmental review would assess whether feasible alternatives could achieve similar production objectives with lower emissions and reduced risk. Without such an analysis, the record does not allow MPCA to meaningfully compare the proposed high-density, confinement-based model against less emissions-intensive approaches or to determine whether the Expansion Project represents the least environmentally harmful practicable alternative.

In sum, the EAW fails to identify any ways in which the Expansion Project would be subject to mitigation by ongoing public regulatory authority or any other mitigation measures that could reasonably be expected to effectively mitigate the significant increase in GHG emissions from the Expansion Project. This factor weighs in favor of requiring an EIS.

C. The Expansion Project's Cumulative Potential Effects Weigh Heavily In Favor Of An EIS

The Expansion Project's GHG emissions must be considered in the context of its cumulative potential effects. Minnesota's environmental-review rules define "cumulative potential effects" as incremental effects "in addition to other projects in the environmentally relevant area" that may affect the same environmental resources.[131] The rule also recognizes that significant cumulative potential effects can result from individually minor projects over time, and that the RGU must consider historic and

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[129] JoAnn Burkholder et al., *Impacts of Waste from Concentrated Animal Feeding Operations on Water Quality*, 115 ENV'T HEALTH PERSPECTIVES 308, 308 (2007) [Exhibit 95].

[130] Greg Stanley, *Minnesota Looks to Tighten Regulations on Feedlots to Deal with Persistent Pollution from Manure*, MINN. STAR TRIBUNE (June 13, 2025), https://www.startribune.com/minnestoa-will-rewrite-feedlot-rules-to-curb-nitrate-pollution-in-drinking-water/601369770 [Exhibit 96]; Minn. R. Ch. 7020.

[131] Minn. R. 4410.1200(E), 4410.0200, subp. 11a.

forecasted trends when determining whether future projects are reasonably likely to occur.[132]

For GHG emissions, the environmentally relevant area cannot be limited to the facility footprint, manure-spreading fields, or a one-mile well radius. The relevant environmental resource is the atmosphere and climate system, and the relevant cumulative context is the aggregate contribution of existing and reasonably foreseeable emission sources that affect that same resource. The Minnesota Court of Appeals has recognized GHG emissions as a cumulative potential effects issue in environmental review. In *Mankato Motorsports Park*, the court reversed a negative EIS declaration where the RGU had failed to adequately consider cumulative GHG impacts, explaining that the cumulative-effects criterion required the RGU to place the project in context rather than evaluating its incremental emissions in isolation.[133] The court also held that omitting an important source of GHG emissions from the project's analysis rendered the GHG analysis arbitrary, capricious, and unsupported by substantial evidence.[134]

The West River Dairy EAW suffers from the same fundamental flaw. Although the EAW quantifies the Expansion Project's operational GHG emissions at 72,210 tons CO_2e/year, the actual cumulative potential effects analysis in Item 21 does not discuss climate impacts at all.[135] Instead, Item 21 defines the "Environmentally Relevant Area" as the Expansion Project site, the dedicated manure application acreage for the Expansion Project and existing facility, and a one-mile radius around the off-site well, then limits the cumulative discussion to overlapping manure application and groundwater extraction.[136] That is not a cumulative climate analysis. It does not evaluate whether the Expansion Project's substantial annual GHG emissions will combine with existing and reasonably foreseeable emissions from other animal agriculture operations to affect the same climate resource.

That omission is material, especially because the agricultural sector's emissions in Minnesota have remained persistently high, and because large feedlot operations are a significant and growing source. Each additional major source compounds the problem, making it more difficult to achieve State and regional climate goals. GHG emissions are cumulative and long-lived; once emitted, they contribute to warming for decades or hundreds of years. As a result, the Expansion Project's emissions will cause irreversible environmental harm that cannot be fully mitigated after the fact.

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[132] *Id*. 4410.0200, subp. 11a.
[133] *Matter of Determination of Need for Env't Impact Statement for Mankato Motorsports Park*, A23-0091, 2023 WL 8177126, at *7 (Minn. Ct. App. Nov. 27, 2023).
[134] *Id*.
[135] *Riverview's EAW for West River Dairy, supra* note 17, at 70.
[136] *Id*.

In Minnesota, dairy cattle were the largest source of enteric fermentation and second largest source of manure management emissions in 2023.[137] That year, the State's methane emissions from manure management and enteric fermentation together were more than 8.8 million metric tons of CO_2 equivalent, more than all emissions from the commercial sector (about 7.3 million) and the waste sector (about 1.5 million) combined.[138] And methane emissions from animal agriculture are trending upward in Minnesota: "[S]ince 2005, methane emissions from animal agriculture have increased 10% in the state . . . ."[139] The trend in emissions from manure management is especially concerning, as those emissions have grown about 30% in Minnesota from 2005 to 2023.[140] To fully understand the scope of animal agriculture emissions relative to other sources, see Figure 2 below from Minnesota's 2026 Climate Action Framework, which shows that manure management and enteric fermentation combined emit more in Minnesota than heavy-duty trucks, passenger cars, aviation, or natural gas in the industrial, residential, or electricity generation sectors.

[137] *Minnesota Greenhouse Gas Inventory, Greenhouse Gas Emissions by Activity, Sector, Source, GHG, and Year*, MPCA, https://data.pca.state.mn.us/views/Greenhousegasemissionsdata/Fullresultstable (last visited May 5, 2026).

[138] *MPCA GHG Inventory: Main Sources*, *supra* note 12.

[139] Ben Lilliston, *Minnesota Agriculture Emissions: The CAFO Challenge*, INST. FOR AGRIC. & TRADE POL'Y 2 (Mar. 2023), https://www.iatp.org/sites/default/files/2023-03/MN%20GHG%20analysis%202023.3.pdf [Exhibit 97].

[140] *MPCA GHG Inventory: Agriculture Sector Details*, *supra* note 14 (showing that manure management emissions have risen from about 3.2 million metric tons of CO_2 equivalent in 2005 to 4.1 million in 2023).

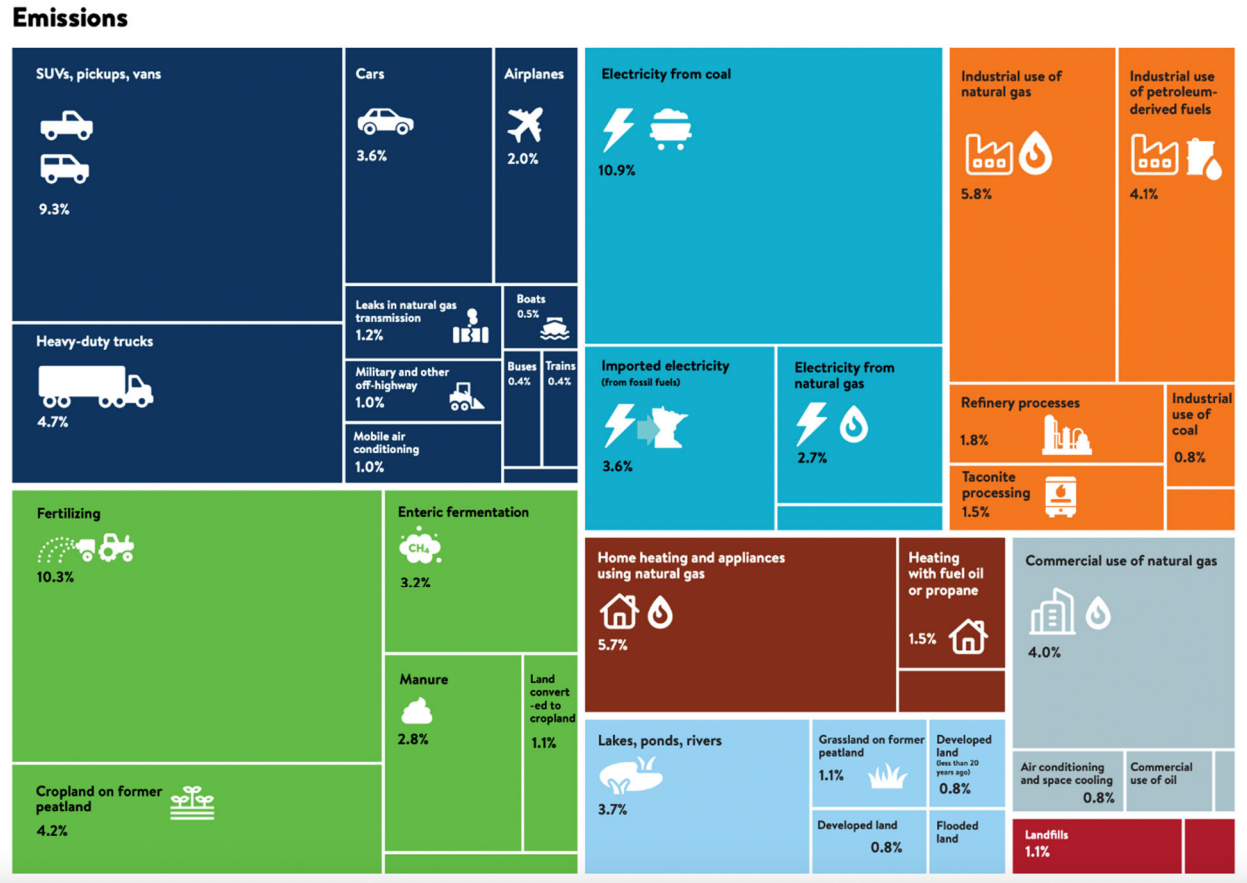

Figure 2: Minnesota's 2026 Climate Action Framework Emissions Breakdown.

By adding tens of thousands of tons of CO_2-equivalent emissions annually over the Expansion Project's lifetime, the Expansion Project will contribute meaningfully to climate change. GHG emissions accumulate in the atmosphere and drive increases in global temperatures. Methane and nitrous oxide—the primary emissions associated with this Expansion Project—are particularly potent climate pollutants, with significantly greater warming potential than carbon dioxide over relevant time horizons.

Methane is about 80 times more warming than carbon dioxide over a 20-year period.[141] But because of its relatively short persistence in the atmosphere—with an average methane molecule remaining for about ten years[142] (as compared to carbon dioxide, which can cause warming for thousands of years[143])—reducing methane

[141] Piers Forster et al., *The Earth's Energy Budget, Climate Feedbacks and Climate Sensitivity*, *in* CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS. CONTRIBUTION OF WORKING GROUP I TO THE SIXTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 923, 1017 tbl.7.15 (Valérie Masson-Delmotte et al. eds., 2021) [Exhibit 98].

[142] *Understanding Global Warming Potentials*, EPA (last updated Dec. 29, 2025), https://www.epa.gov/ghgemissions/understanding-global-warming-potentials.

[143] *Id.*

emissions in the coming years can play an important role in curbing warming.[144] Moreover, reducing carbon dioxide emissions without serious action on super-pollutants, including methane, will preclude achievement of the Paris Climate Agreement and Minnesota's GHG reduction goals.[145]

Nitrous oxide, like methane, is a climate super-pollutant closely associated with animal farming.[146] Nitrous oxide is one of the most powerful GHGs—estimated to contribute 273 times more than carbon dioxide to global warming over a 100-year timescale[147]—and is also harmful to the ozone layer.[148] Human-caused emissions of nitrous oxide have increased more than 40% over the past forty years, driven in large part by the use of nitrogen fertilizer and manure from farmed animals.[149] According to a U.N. estimate, animal agriculture is responsible for at least half of global anthropogenic nitrous oxide emissions.[150] The agricultural sector is responsible for nearly all of Minnesota's nitrous oxide emissions, and a significant portion of those emissions are attributed to the land application of manure.[151] Since 2005, "nitrous oxide emissions related to both manure and synthetic fertilizer use have increased 9%" in Minnesota.[152]

Thus, the Expansion Project's GHG emissions will aggravate the consequences of climate change in Minnesota. The Expansion Project's emissions will contribute to increased frequency and severity of extreme weather events, including heavy rainfall,

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[144] U.N. ENV'T PROGRAMME, GLOBAL METHANE ASSESSMENT 8, 11 (2021), https://www.ccacoalition.org/sites/default/files/resources//2021_Global-Methane_Assessment_full_0.pdf ("Reducing human-caused methane emissions is one of the most cost-effective strategies to rapidly reduce the rate of warming and contribute significantly to global efforts to limit temperature rise to 1.5°C.") [Exhibit 100, hereinafter "GLOBAL METHANE ASSESSMENT"]. As observed by one of the lead reviewers of a 2021 U.N. Intergovernmental Panel on Climate Change report: "Cutting methane is the biggest opportunity to slow warming between now and 2040. We need to face this emergency." Fiona Harvey, *Reduce Methane or Face Climate Catastrophe, Scientists Warn*, GUARDIAN (Aug. 6, 2021), https://www.theguardian.com/environment/2021/aug/06/reduce-methane-or-face-climate-catastrophe-scientists-warn; *see also* GLOBAL METHANE ASSESSMENT, *supra* note 144, at 8 ("Reducing human-caused methane emissions is one of the most cost-effective strategies to rapidly reduce the rate of warming and contribute significantly to global efforts to limit temperature rise to 1.5°C.").

[145] Gabrielle B. Dreyfus et al., *Mitigating Climate Disruption in Time: A Self-Consistent Approach for Avoiding Both Near-Term and Long-Term Global Warming*, PROCS. NAT'L ACAD. SCIS., May 23, 2022, at 1–8 [Exhibit 102].

[146] MPCA GHG EMISSIONS IN MINNESOTA, *supra* note 4, at 3.

[147] *Understanding Global Warming Potentials*, *supra* note 142.

[148] Robert Portmann et al., *Stratospheric Ozone Depletion Due to Nitrous Oxide: Influences of Other Gases*, 367 PHIL. TRANSACTIONS ROYAL SOC'Y B 1256, 1263 (2012) [Exhibit 103].

[149] Hanqin Tian, *Global Nitrous Oxide Budget (1980-2020)*, 16 EARTH SYS. SCI. DATA 2543, 2545, 2549 (2024) [Exhibit 104].

[150] Pierre J. Gerber et al., *Tackling Climate Change Through Livestock: A Global Assessment of Emissions and Mitigation Opportunities*, FOOD & AGRIC. ORG. OF THE U.N. (FAO) 15 (2013), https://www.fao.org/3/i3437e/i3437e.pdf [Exhibit 105] (relying on 2004 and 2005 data).

[151] MPCA GHG EMISSIONS IN MINNESOTA, *supra* note 4, at 9; *MPCA GHG Inventory: Agriculture Sector Details*, *supra* note 14.

[152] Lilliston, *supra* note 139.

flooding, heat waves, and drought. These impacts are particularly relevant in Minnesota, where recent trends show increasing precipitation intensity and temperature.

Rising temperatures and the increase in size and frequency of storms and disasters has resulted in unprecedented damage.[153] Per MPCA: "Daily average minimum temperatures during winter (Dec-Feb) have increased 7.3 degrees from 1895-2021 in northern Minnesota, 6 degrees in central Minnesota and 4.9 degrees in southern Minnesota."[154] Lakes are now experiencing an average of up to two fewer weeks of ice cover each year.[155] These changes put an increasing strain on Minnesota's budget.[156] According to MPCA: "Over the past decade . . . our state has been experiencing a much higher rate of natural disasters, with a higher number of individual storms that cause more than $1 billion in damage."[157]

Climate-driven increases in precipitation intensity and runoff will exacerbate nutrient pollution associated with manure management. As temperatures rise and rainfall events become more extreme, nitrogen and phosphorus losses from manure-applied fields are expected to increase, contributing to eutrophication of lakes, rivers, and downstream waters.[158] These impacts include harmful algal blooms, hypoxia, and degradation of drinking water sources.[159] Given the scale of manure generation associated with the Expansion Project, even small increases in runoff rates can translate into significant additional pollutant loading.

Agricultural producers are themselves intensely vulnerable to the impacts of climate change. In the summer of 2023, the administrator of the U.S. Department of Agriculture's (USDA's) Farm Service Agency observed:

> The recent heat domes plaguing many parts of the country have proven to be unsurvivable for some animals and temperatures are not expected to let up any time soon. This is

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[153] *Climate Change Impacts,* MPCA, https://www.pca.state.mn.us/air-water-land-climate/climate-change-impacts (last visited May 5, 2026).
[154] *Id.*
[155] *Id.*
[156] *See id*. ("Costly repairs to infrastructure, increasing home and crop insurance rates, destructive shifts in our native ecosystems, and more hospitalizations for heat-related illness are some of the impacts climate change is having on Minnesotans and the economy.").
[157] MPCA GHG EMISSIONS IN MINNESOTA, *supra* note 4, at 2.
[158] Marin Skidmore et al., *The Impact of Extreme Precipitation on Nutrient Runoff*, 2 J. OF THE AGRIC. & APPLIED ECON. ASS'N 769–785 (2023), https://doi.org/10.1002/jaa2.90 [Exhibit 106].
[159] Rose Mumbi et al., *Drought to Inundation: Precipitation Extremes Exacerbate Phosphorus Loss in Artificially Drained Watersheds*, 316 AGRIC. WATER MGMT. 109606 (2025), https://doi.org/10.1016/j.agwat.2025.109606 [Exhibit 107]; Ethan Bahe, *Five Years After EWG's First Analysis, Manure Still Overloads Minnesota*, ENV'T WORKING GRP. (May 15, 2025), https://www.ewg.org/research/five-years-after-ewgs-first-analysis-manure-still-overloads-minnesota [Exhibit 108].

> one of the latest, many examples of how a changing climate is creating immediate challenges for farmers and ranchers. . . .[160]

According to MPCA, farmers are already experiencing (and can expect to continue experiencing) a range of negative impacts from climate change.[161] Rising temperatures, unpredictable precipitation, and more frequent extreme weather events are disrupting planting schedules, reducing crop yields, and increasing crop losses from pests, diseases, and disasters.[162] While some areas experience heavy rainfall and flooding, others suffer from prolonged dry spells and drought, often within the same growing season. This variability not only lowers crop yields but also degrades soil and water quality.[163] Here in Minnesota, climate change is driving more intense and erratic droughts in this water-rich state, and extreme droughts are stressing water supplies and state budgets. Just a few years ago in 2021, a historic drought across the State prompted $10 million in emergency funding to help producers withstand the dry conditions.[164] The lack of rain has also prompted producers to increase irrigation. In the summer of 2021, farmers collectively withdrew 6.1 billion gallons of water more than their permits allowed.[165]

Reports from Smithfield Grain, a major feed purchaser and subsidiary of Smithfield Foods—one of the world's largest pig producers—highlight how these climate stressors are already affecting Minnesota producers. In June 2025, spring crop planting and development in some parts of the Upper Midwest was delayed by extreme weather events including strong winds, dust storms, and erratic rainfall that disrupted planting and damaged crops.[166] The University of Minnesota Research and Outreach Center at Lamberton reported below-average rainfall and the lowest soil moisture levels in five years.[167] Abnormally dry to moderate drought conditions were documented across

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[160] News Release, U.S. Department of Agriculture (USDA), USDA Updates Livestock Disaster Payment Rate to Assist Producers Hard-Hit by Heat and Humidity (Aug. 25, 2023), https://www.fsa.usda.gov/news-events/news/08-25-2023/usda-updates-livestock-disaster-payment-rate-assist-producers-hard-15 [Exhibit 109].

[161] *Climate Impacts on Agriculture*, MPCA, https://www.pca.state.mn.us/air-water-land-climate/climate-impacts-on-agriculture (last visited May 5, 2026).

[162] *Id.*; *Farmers Face New Challenges for Crops, Livestock*, OUR MINNESOTA CLIMATE, https://climate.state.mn.us/farmers-face-new-challenges-crops-livestock (last visited Apr. 20, 2026) [Exhibit 110].

[163] *Climate Impacts on Agriculture*, *supra* note 161; *Climate Change in Minnesota*, UNIV. OF MINN. CLIMATE ADAPTATION P'SHIP, https://climate.umn.edu/climate-change-minnesota-0 (last visited May 5, 2026) [Exhibit 111].

[164] Press Release, Office of Governor Tim Walz & Lt. Governor Peggy Flanagan, Governor Walz Announces $10 Million Drought Relief Package for Farmers, Producers, Minn. (Sept. 24, 2021), https://mn.gov/governor/newsroom/press-releases/?id=1055-500585 [Exhibit 112].

[165] Dionne Searcey, *Big Farms and Flawless Fries Are Gulping Water in the Land of 10,000 Lakes*, N.Y. TIMES (Sept. 3, 2023), https://www.nytimes.com/interactive/2023/09/03/climate/minnesota-drought-potatoes.html [Exhibit 113].

[166] Kent Thiesse, *Crops Have Been Slow to Develop in the Upper Midwest*, SMITHFIELD GRAIN (June 5, 2025), https://smithfieldgrain.com/story-crops-been-slow-develop-upper-midwest-0-255565 [Exhibit 114].

[167] *Id.*

western and northern Minnesota.[168] These impacts not only threaten crop yields and farm incomes but can also increase feed costs and risk food system instability.

Climate change is also producing more severe storms that dump large amounts of water on the land in a short amount of time. These "mega-rain" events are not as helpful for growing crops as slow, soaking rains, and climate change is bringing more of these intense, unhelpful storms to Minnesota.[169] Minnesota farmers increasingly face the added burden of managing wet pastures and feed soaked by storms, and animals suffer and have even drowned in flash flood conditions.[170] The Minnesota State Cattlemen's Association president observed in 2024: "With this drastic change in cool to hot and the water stresses, we did have a feedlot call that had fairly higher death loss due to some of this water and stress that they're dealing with in cattle . . . ."[171]

Rising temperatures will further harm livestock health and productivity. For example, "[h]eat-stressed hogs eat less, and heat may interfere with breeding, gestation, and lactation."[172] Indeed, the EAW notes that "[h]igher temperatures and humidity increase the potential for animal heat stress and decreased milk production."[173] However, the EAW fails to fully assess the impact of temperature increases on its herd—and, as discussed above, to propose adequate mitigation strategies to reduce the Expansion Project's contributions to these dangers.

During a heat wave in 2011, an estimated 1,000 cattle died in south central and southwestern Minnesota due to extreme temperatures, causing estimated losses of roughly $1 million.[174] MPCA has itself said that, because "[d]airy cattle operations in Minnesota typically do not currently have the equipment necessary to mitigate the risks of high temperatures," milk production decreases on very hot days.[175] Thus, MPCA modeling of scenarios where GHG emissions continue unabated predict that production value "[l]osses increase later in the century due to more significant temperature increases,

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[168] *Id.*

[169] *Mega-Rains Overwhelm Rivers, Roads, and Budgets*, OUR MINNESOTA CLIMATE, https://climate.state.mn.us/mega-rains-overwhelm-rivers-roads-and-budgets (last visited May 5, 2026) [Exhibit 115]; Alexandra Witze, *Why Extreme Rains Are Getting Worse*, 563 NATURE 458, 458 (2018), https://www.nature.com/articles/d41586-018-07447-1 [Exhibit 116].

[170] *Managing Grazing Livestock During Wet Weather*, UNIV. OF MINN. EXTENSION (reviewed in 2026), https://extension.umn.edu/beef-cow-calf/managing-grazing-livestock-during-wet-weather [Exhibit 117]; *Cows Swept Away by Flash Flooding in Southeastern Minnesota*, FOX5 N.Y. (June 30, 2019), https://www.fox5ny.com/news/cows-swept-away-by-flash-flooding-in-southeastern-minnesota [Exhibit 118].

[171] Mark Dorenkamp, *Flooding Results in Livestock Losses*, BROWNFIELD (June 25, 2024), https://www.brownfieldagnews.com/news/flooding-results-in-livestock-losses [Exhibit 119].

[172] *Farmers Face New Challenges for Crops, Livestock*, *supra* note 162.

[173] *Riverview's EAW for West River Dairy, supra* note 17, at 13.

[174] Elizabeth Baier, *Cattle Dying Due to Heat Wave*, MPR NEWS (July 20, 2011), https://www.mprnews.org/story/2011/07/20/cattle-die-from-heat-wave [Exhibit 120].

[175] MPCA, *Report to the Legislature: Minnesota Climate Adaptation and Resilience Cost Study* (March 2026), 61, https://www.pca.state.mn.us/sites/default/files/lrcc-mn-1sy26.pdf [Exhibit 121].

with more instances of daily temperatures crossing heat stress thresholds."[176] Figure 3 below lists the projected mid-century cost of inaction in three emissions scenarios modeled by MPCA.

		Dairy Milk
		Lost production value
Mid-Century (2040–2059)	Intermediate	$1,000 (-$440 to $3,300)
	High	$1,900 ($780 to $3,300)
	Very High	$1,500 (-$1,100 to $3,700)

Annual costs (in millions, 2024$) for three time periods and three emissions scenarios (see Section 2.2.2 for more details). Costs are incremental to baseline and averaged across six climate models (range across climate models provided in parentheses). See Appendix B for more details on methodology and limitations.

Figure 3. Quantified Costs of Inaction (Millions per Year): Livestock.

Accordingly, climate change driven by GHG emissions poses significant risks to Minnesota's agricultural sector, including increased crop variability, reduced yields under heat stress, and greater input costs associated with water management and adaptation. Ironically, while the Expansion Project is intended to grow agricultural production, its emissions contribute to broader climate impacts that threaten the long-term viability of the sector. In addition, climate-related damages—such as flooding, infrastructure degradation, and water quality impairment—impose significant economic costs on the State and its residents.

The Expansion Project's EAW acknowledges that agriculture emissions have not declined statewide. Yet there is no analysis of cumulative regional dairy expansion, no carbon budget framing, and no comparison against Minnesota climate targets. Moreover, even though Riverview predicts that the Expansion Project's lifetime emissions will total 2.17 million tons CO_2e, the EAW lacks a policy compatibility assessment. The EAW does not quantify economic climate damages, such as by providing a social cost of carbon, and does not compare the Expansion Project's emissions to state-sector reduction needs.

These challenges and deficiencies underscore the urgent need for MPCA to require an EIS that fully evaluates GHG emissions from the proposed feedlot. Addressing these emissions will not only protect against future climate damage but also help stabilize Minnesota's agricultural economy and food supply in the face of increasing environmental volatility.

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The EAW, both on its face and in what it failed to disclose, demonstrates that the Expansion Project has the potential for significant environmental effects from its

[176] *Id.*

contribution to increasing levels of GHG emissions. Emissions from the Expansion Project are not effectively mitigated or offset; and they are contrary to Minnesota law and policy directing steep reductions in emissions. Because the Expansion Project has the potential for significant environmental effects, the MPCA must order an EIS.

III. THERE ARE POTENTIAL SIGNIFICANT ENVIRONMENTAL EFFECTS ASSOCIATED WITH RIVERVIEW'S PROPOSED GROUNDWATER ALLOCATION

The Expansion Project intends to quench its thirst with a truly extraordinary sequence of features. Riverview plans on pumping 226 million gallons of groundwater per year ("MGY") from a well located miles away from the Expansion Project.[177] The groundwater will be pulled from a surficial aquifer hydrologically connected to the Pomme de Terre River, where it will travel three-plus miles in a buried waterline that crosses multiple roads before reaching the Expansion Project. As part of the Expansion Project, Riverview intends to construct two massive water storage basins at the feedlot, each of which needs a dam safety permit from DNR, to store water on-site. Water for the feedlot will be pulled from the storage basins, which will be recharged from groundwater pumped from the surficial aquifer three-plus miles away.

Riverview is seeking to use a well and a water appropriation that DNR previously granted to a proposed ethanol plant nearly two decades ago. The ethanol plant was never built; the permit has expired; and no water was ever appropriated under the permit. Riverview has apparently secured DNR's agreement to provide an appropriation permit to Riverview based on the analysis conducted to support the ethanol plant permit (the "2007 Aquifer Report"). That analysis, from 2007, allegedly assessed the suitability of withdrawing groundwater from a surficial aquifer near the Pomme de Terre River. DNR has not conducted any independent or separate environmental review to justify a water appropriation permit for the proposed Expansion Project and is instead relying on this draft EAW. No analysis is provided in the EAW to justify the water appropriation other than the 2007 Aquifer Report.

The EAW claims that environmental impacts from this plan have been considered and mitigated. But this claim rests upon an outdated aquifer report that considers old information that tells an incomplete story about the environmental impacts of Riverview's water allocation plan. Because the potential for significant environmental effects from Riverview's water appropriation is high, MPCA must prepare an EIS.

A. The 2007 Aquifer Report MPCA Relies Upon In Analyzing Potential Groundwater Impacts Is Almost Two Decades Out-Of-Date

[177] *Riverview's EAW for West River Dairy, supra* note 17, at 35.

Riverview seeks permission to withdraw 226 MGY of water for the Expansion Project. Riverview's proposed water source is an off-site well approximately three miles southeast of the Expansion Project (Well Id No. 740629, "the Off-Site Well").[178] The Off-Site Well was first permitted for a 452 MGY appropriation in 2008 to serve a proposed ethanol plant (Permit #2008-0230).[179] In 2014, this permit was amended to allow 226 MGY to be used for livestock watering, with the other half still allocated for the ethanol plant. As part of this arrangement, Riverview was listed as an "authorized agent."[180] Water was never actually appropriated from this well under either the 2008 permit or the amended 2014 permit.[181] In May 2025, Riverview submitted an application for a new water appropriation permit to pump 226 MGY from the Off-Site Well.[182]

The EAW states that prior to obtaining the 2008 water appropriation permit, the ethanol plan conducted an aquifer test (the "2007 Aquifer Test").[183] The 2007 Aquifer Test reveals that the Off-Site Well is hydraulically connected to the Pomme de Terre River, and that "pumping from the aquifer would . . . reduce the long-term average flow rate in the river by approximately the average pumping rate."[184] Using the 2007 Aquifer Report, DNR imposed pumping restrictions on the Off-Site Well that curtail appropriations based on the flow of the Pomme de Terre River.[185]

These pumping restrictions are to remain in place for Riverview, and the EAW leans on the 2007 Aquifer Report to explain away environmental concerns associated with the proposed water allocation. However, for multiple reasons the accuracy of the 2007 Report has faded with time, resulting in the potential for significant environmental effects not considered and resolved by the 2007 Aquifer Report.

1. The 2007 Aquifer Report is outdated

There are many reasons to doubt the continued utility of the 2007 Aquifer Report. First, the 2007 Aquifer Report uses pre-2007 data and conditions to reach conclusions about protecting the river and natural resources. For example, the report helps justify permit conditions curtailing withdrawals to protect the Pomme de Terre River when flow

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[178] *Id.* at 35.
[179] *Id.* at Attachment 11 (2008 APEC Permit).
[180] *Id.* (2014 APEC Permit). The permit amendment was in response to an agreement between APEC and Riverview, and the conditions of the 2008 permit were incorporated into the amended 2014 permit. *Id.* (Letter from DNR).
[181] Nathan Kestner, Minn. Dep't of Nat. Res., West River Dairy Expansion EAW (Mar. 17, 2026) [Exhibit 122].
[182] *Riverview's EAW for West River Dairy, supra* note 17, at Attachment 11 (Riverview Letter). This letter was in response to an apparent dispute between DNR and Riverview about whether Riverview could use the existing permit for its proposed expansion project. The EAW indicates that the water appropriation permit amendment for the Off-Site Well is pending. *Id.* at 23 (permit number 2008-0230).
[183] *Riverview's EAW for West River Dairy, supra* note 17, at 35.
[184] *Id.* at Attachment 26 (hereinafter "2007 Aquifer Report") at 18.
[185] *Riverview's EAW for West River Dairy, supra* note 17, at 35.

drops to 31 cubic feet per second ("CFS"), the rate determined in 2007 to be when adverse impacts occur. This adverse rate was established by looking at the annual flow rate that occurred for at least 90% of the time for the relevant reach of river in 2005. Flows have changed since then, [186] and given the direct connection between the Pomme de Terre River and the surficial aquifer, more recent data about protected flow rates should be considered.

Second, since 2007, new wells have been dug into the same surficial aquifer that Riverview seeks to access. Well data from the Minnesota Department of Health shows new wells drilled in 2023 and 2013 that are close in proximity to the Off-Site Well.[187] These are active irrigation wells that permitted to access the same water source years after the 2007 Aquifer Test was completed. Because the wells did not exist when the study was completed, the 2007 Aquifer Test's conclusion that the well pump rate will not cause interference drawdown in existing wells or impacts to nearby wetlands is no longer trustworthy.

Third, the quality of the data is low. The nearest flow monitoring device is over 30 river-miles downstream from the Off-Site Well, near the town of Appleton. This is where river flow data that informs the Off-Site Well's permit conditions is collected. In other words, the Expansion Project's water appropriation levels are limited based on river flow data collected far downstream. But this is not a good indication of river levels just downstream of the Off-Site Well, where the natural resource impacts from withdrawing water from the Off-Site Well will be felt because of the hydrologic connection between the Pomme de Terre River and the aquifer. Comparing Pomme de Terre River discharge rates from the flow monitor at Appleton and the nearest upstream monitor, located over 50 river miles north, shows that river flows vary significantly this section of the river.[188] For example, data collected on May 1, 2026 shows river discharge at the Appleton monitor to be 365 CFS, over twice as high as the upstream discharge rate of 165 CFS. This means that Pomme de Terre River flow at Appleton is not a suitable proxy for river conditions adjacent to the Off-Site Well.

Finally, new information and knowledge about groundwater sustainability and water quality in this region has been developed since 2007. The 2007 Aquifer Report explains that the ethanol plant was exploring accessing the surficial aquifer to mitigate

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[186] MPCA, POMME DE TERRE WATERSHED RESTORATION AND PROTECTION STRATEGY REPORT UPDATE 2024 32-36 (Aug. 2024), https://www.pca.state.mn.us/sites/default/files/wq-ws4-100a.pdf [Exhibit 123, hereinafter "Pomme de Terre WRAPS"]; MPCA, POMME DE TERRE RIVER WATERSHED BIOTIC STRESSOR IDENTIFICATION 139-40 (June 2012), https://www.pca.state.mn.us/sites/default/files/wq-iw7-36n.pdf [Exhibit 124].

[187] MN Dep't of Health, Minn. Well Index Well No. 869936, https://mnwellindex.web.health.state.mn.us/mwi/index.xhtml?wellId=869936 [Exhibit 125]; MN Dep't of Health, Minn. Well Index Well No. 792962, https://mnwellindex.web.health.state.mn.us/mwi/index.xhtml?wellId=792962 [Exhibit 126].

[188] Greg Kruse, *Hydrology and Hydrologic Analysis* 10-11, DNR, https://files.dnr.state.mn.us/waters/gwmp/thresholds/gw-thresholds-project_hydrology.pdf [Exhibit 127].

water availability questions from an existing well drilled into a confined aquifer. Concerns about well interference, but not groundwater sustainability, motivated the search for a different source of water. Presently, however, DNR recognizes that there are "potential sustainability concerns" in the surficial aquifer, and that the buried aquifer system in this region of the state "is likely over-allocated,"[189] The 2007 Aquifer Report did not mention groundwater sustainability as a potential concern about the water appropriation. Less than two decades later, however, DNR acknowledges that groundwater levels are being impacted by water appropriations. DNR has explained that decreasing groundwater availability could be due to "intensified local groundwater consumption," and noted a downward trend in groundwater levels for 7.5% of wells between 2000 and 2019 in the area of Minnesota where the Expansion Project would be located.[190] Groundwater demand is "high in western Minnesota, where the groundwater supply is limited."[191] These recent findings undermine the credibility of the 2007 Aquifer Report, which did not cite groundwater sustainability as a risk from the appropriation.

Moreover, new reports assessing water quality trends across the Pomme de Terre River watershed highlight the threat land use change and altered hydrology have on the region's aquatic resources.[192] These studies did not exist when the 2007 Aquifer Report was prepared. Given that they are available now, decisions about water appropriation should be made with this more recent data in mind.

2. The 2007 Aquifer Report fails to identify the potential for significant environmental effects from water appropriation

There are also multiple reasons why the Expansion Project's proposed water allocation has the potential for significant environmental effects despite the 2007 Aquifer Report. First, the 2007 Aquifer Report does not address the potential water quality impacts from withdrawing 226 MGY from an aquifer hydrologically connected to the Pomme de Terre River. Groundwater pulled from the Off-Site Well corresponds to a reduction in Pomme de Terre River flow,[193] which can concentrate pollution in the river. Much of the groundwater pumped from the Off-Site Well will be mixed with manure, and later nearly all the liquid manure will be applied on cropland within the watershed. This is confirmed in the EAW, which reports that Riverview intends to land apply all the

[189] DNR, *Groundwater Technical Review* 1 (Jan. 13, 2025) [Exhibit 128].
[190] DNR, *Water Availability and Assessment Report 2025* 23, https://www.eqb.state.mn.us/sites/eqb/files/appendix_c.pdf [Exhibit 129, hereinafter "*Water A&R Report*"].
[191] *Id.* at 29.
[192] Pomme de Terre WRAPS, *supra* note 186; MPCA, *Pomme de Terre River Watershed Total Maximum Daily Load Report 2024* (Aug. 2024) [Exhibit 130], hereinafter "Pomme de Terre TMDL").
[193] 2007 Aquifer Report, *supra* note 184, at 18 ("Because the river is the primary discharge area for the water-table aquifer, the long-term impact of public from the aquifer would be to reduce the long-term average flow rate in the river by approximately the average pumping rate.).

liquid manure produced by the additional 11,000 cows.[194] This land-applied liquid manure will have high nitrate concentrations and nitrate loads and eventually work its way back into the river, either as groundwater baseflow or via the artificial drainage network, which is a main driver of water quality impairments in the region.[195] Given the extent of the drainage infrastructure in Stevens County, the need to evaluate the potential water quality impacts is paramount.[196] This concern is not discussed in the 2007 Aquifer Report because it was well-beyond the scope of the report—the water intended for the ethanol plant was not going to be mixed with manure and applied on the nearby landscape. Indeed, discharges from an industrial facility like an ethanol plant are specifically regulated to ensure they will not pollute receiving waters; the discharge of Riverview's 226 GPY appropriation will not be regulated.

Second, the appropriation demand on the surficial aquifer has not been adequately reviewed. Since 2007, new irrigation wells have been drilled into the same surficial aquifer the Off-Site Well accesses. The EAW does not discuss these new wells, pointing instead to the 2007 Aquifer Report as proof that the requested appropriation is sustainable. But the 2007 report predated DNR's more recent assessment of water resources in the area that indicates the need to consider all nearby wells for risk of interference.[197] This work appears to remain outstanding.

Last, the EAW does not address the impact altered hydrology has on river flow and thus whether the flow-based permit conditions will protect natural resources. Although the Pomme de Terre's flow is increasing, the additional flow is being driven by artificial drainage, which supplies a significant volume of water from discrete conveyances.[198] The artificial drainage network interrupts natural river hydrology, and can impact the volume and duration of low, medium, and high flow events. This is because drainage systems quickly shunt water off the landscape, where the water traverses the drainage network before reaching a surface water. The volume of water funneled through the drainage network causes rivers to be more "flashy," meaning that average flow figures may not present a clear picture of river conditions.[199] This means that local impacts to wetlands and other aquatic resources cannot be accurately projected

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[194] *Compare Riverview's EAW for West River Dairy, supra* note 17, at 8 (showing 202,744,000 gallons of liquid manure each year if the Expansion Project is constructed) *with id* at 41-42 (explaining that the entirety of the 113,619,000 gallons of liquid manure produced by the additional cows for the Expansion Project will be land-applied in the watershed).

[195] Pomme de Terre WRAPS, *supra* note 186, at 32 – 34.

[196] Stevens Cty., *MN Statutes 103E*, https://www.co.stevens.mn.us/DocumentCenter/View/3223/Ditch-System-Brochure-PDF- [Exhibit 131] ("Stevens County consists of 114 Public Drainage Systems and countless miles of privately owned tile.").

[197] 2007 Aquifer Report, *supra* note 184, at 2.

[198] Pomme de Terre WRAPS, *supra* note 186, at 21, 32.

[199] Minn. Ctr. for Envt'l Advocacy, *Replumbing Minnesota's Landscape* 8-11, https://www.mncenter.org/sites/default/files/pdfs/MCEA-Replumbing-Minnesota-Spreads-072825.pdf [Exhibit 132].

by flow conditions based on data collected far downstream. This data gap should be filled in by an EIS.

Although DNR has indicated that if certain conditions are met (such as pumping restrictions dependent on flow conditions in the Pomme de Terre River) an updated aquifer test will not be needed for the new permit,[200] MPCA nonetheless has an obligation to accurately evaluate potential water quality and other natural resource impacts from pumping groundwater at the Off-Site Well. An updated aquifer test is needed to properly evaluate potential negative impacts to groundwater quantity and quality resulting from the Expansion Project, and MPCA should analyze the results of that test within an EIS.

B. MPCA Must Analyze The Cumulative Impacts Of The Proposed Groundwater Withdrawals For Both The Expansion Project And The Existing Riverview Facility

The EAW indicates that a different well (UN# 768109) exists within the Expansion Project footprint and has an existing DNR water appropriation permit for irrigation and livestock watering (Permit #2009-0492).[201] However, this well is not included in the EAW's list of "water sources," which lists only the Off-Site Well, stormwater collection/reuse, and water storage basins.[202] The amount of water that is used, or will be used, by this well is not stated in the EAW; per DNR comments on the EAW, it has an appropriation limit of 21.3 MGY for livestock watering and 64.4 MGY for irrigation.[203] There is an additional set of wells Riverview uses for livestock watering that is only obliquely mentioned in the EAW (as four commercial wells that exist at the current facility).[204] These wells, per DNR comments, have a water appropriation limit of 95 MGY, with permit number 2004-1023.

MPCA's analysis of groundwater quantity impacts focuses solely on the Off-Site Well. The EAW states that because the Off-Site Well is in a Quaternary Water Table Aquifer, and the five on-site wells are in the Quaternary Buried Artesian Aquifer beneath the Expansion Project site, that Riverview's approach to groundwater is "diversified."[205] As a result, MPCA did not consider the potential for cumulative impacts from the water withdrawals from the Off-Site Well and the five on-site wells on local groundwater resources.

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[200] *Riverview's EAW for West River Dairy, supra* note 17, at Attachment 11.
[201] *Riverview's EAW for West River Dairy, supra* note 17, at 31. Although the EAW indicates that the well has an existing water appropriation permit, elsewhere in the document it describes this permit as "planned." *Id.* at 23.
[202] *Id.* at 35.
[203] Kestner, *supra* note 181.
[204] *Riverview's EAW for West River Dairy, supra* note 17, at 31.
[205] *Id. at* 36.

This is a mistake. As DNR pointed out in its own comments on the EAW, the two aquifers are part of one connected system, and "water availability from these aquifers is limited."[206] Failing to fully describe the water appropriation from the on-site wells is a significant flaw in the EAW, and makes it more difficult to determine what the impacts of the Off-Site Well's water withdrawals will be on local groundwater resources. This problem is exacerbated because, as noted earlier, the most recent aquifer test is from 2007, and so it cannot be assumed to already include the usage of these wells.[207]

C. The Water Storage Basins Are An Inadequate Contingency For Appropriation Restrictions During Low Flow Events

The 2008 water appropriation permit for the Off-Site Well contains restrictions on pumping under certain flow conditions in the Pomme de Terre River, and these would be expected to also be incorporated into the new permit.[208] If pumping needs to be restricted, Riverview's plan is to use two water storage basins as a contingency measure, which would be filled from both the Off-Site Well and from stormwater collection.[209] This plan is not sufficient, and creates a serious risk that Riverview could overdraw from the Off-Site Well even when flow conditions are poor.

The drought conditions that could cause low flow in the Pomme de Terre River (and thus pumping restrictions) are also likely to reduce the amount of stormwater available to be diverted to the water storage basins. Minnesota has experienced severe dry conditions and drought in recent years, which will continue to worsen as the climate changes,[210] and so the risk of drought causing both low flow conditions and reduced stormwater availability is significant.[211]

An additional reason for caution is that Riverview has a history of causing groundwater depletion. Earlier this year, Riverview reached a settlement with the state of Arizona to reduce Riverview's groundwater usage, after Riverview's operations depleted local groundwater and left community members unable to use their own wells.[212] In Minnesota, a DNR technical report found that Riverview's proposed

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[206] Kestner, *supra* note 181.

[207] Additionally, Riverview's plan to capture stormwater for use on the Expansion Project could also have an impact on groundwater recharge for the on-site wells; this possibility should also be evaluated by MPCA to determine potential impacts on groundwater resources.

[208] *Riverview's EAW for West River Dairy, supra* note 17, at Attachment 11.

[209] *Id.* at 35.

[210] S. Clark et al., *Climate Change and Drought in Minnesota and the Midwest*, UNIV. OF MINN. CLIMATE ADAPTATION P'SHIP (2023), https://climate.umn.edu/sites/climate.umn.edu/files/2023-10/Drought%20in%20MN%20-%20V1%20%281%29.pdf [Exhibit 135].

[211] *Water A&R Report*, *supra* note 190, at 5.

[212] Settlement and Release Agreement Between Riverview and Arizona, https://mcusercontent.com/cc1fad182b6d6f8b1e352e206/files/b0aaf293-9839-a6b7-4abb-e3a6e4121d71/Groundwater_Access_Settlement_Agreement_Arizona_Riverview.pdf [Exhibit 136]; Kris Mayes, *Attorney General Mayes Announces Precedent-Setting Settlement with Riverview Dairy to Reduce*

Twelvemile Dairy should not use a deep aquifer as a water source in part because "water levels at the nearby [Riverview] Dollymount Dairy continue to decline and have not yet stabilized."[213] Riverview exceeded its permit limits for pumping at the Dollymount Dairy in both 2020 and 2021.[214]

IV. AN EIS IS NECESSARY TO ASSESS WATER POLLUTION RISKS NOT ADEQUATELY DISCUSSED IN THE EAW

The EAW fails to accurately capture and mitigate the risks the Expansion Project has on water quality. Because of the potential for significant environmental effects on water quality, MPCA should require the Expansion Project to complete an EIS.

A. The EAW Does Not Consider All Pollutants Of Concern

Mega-dairies like the proposed Expansion Project are major sources of water pollution. Manure "is a primary source of nitrogen and phosphorus to surface and groundwater."[215] But, dairy waste is not just nutrients; it also contains a hazardous cocktail of sediments, pesticides, pharmaceuticals, salts, metals and ions such as magnesium, sodium, potassium, and chloride.[216] CAFOs also handle a variety of other potential pollutants including detergents and other chemicals.[217] When discharged to waters, these pollutants pose serious threats to human health and to ecosystems.[218] Yet,

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Groundwater Usage, Securing $11M for Well Drilling, Water-Hauling and Groundwater Access (Jan. 8, 2026), https://www.azag.gov/ag-mayes-announces-riverview-settlement [Exhibit 137].

[213] DNR, *Aquifer Test Technical Review* 1 (Apr. 11, 2022), https://www.co.traverse.mn.us/wp-content/uploads/2022/08/2022-04-11-RiverviewTwelvemileAqTestReportTechReview.pdf [Exhibit 138].

[214] *Id.* at 9.

[215] U.S. EPA, *Estimated Animal Agriculture Nitrogen and Phosphorus from Manure*, https://www.epa.gov/nutrient-policy-data/estimated-animal-agriculture-nitrogen-and-phosphorus-manure [Exhibit 139].

[216] 68 Fed. Reg. 7,176, 7,181 (Feb. 12, 2003); JoAnn Burkholder et al., *Impacts of Waste from Concentrated Animal Feeding Operations on Water Quality*, 115(2) ENV'T HEALTH PERSPS. 308 (Feb. 2007), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1817674/ [Exhibit 140].

[217] EPA, RISK ASSESSMENT EVALUATION FOR CONCENTRATED ANIMAL FEEDING OPERATIONS, EPA/600/R-04/042, at 63, 72-73 (May 2004), https://cfpub.epa.gov/si/si_public_record_Report.cfm?Lab=NRMRL&dirEntryId=85107 [Exhibit 141, hereinafter, "EPA CAFO RISK ASSESSMENT"]; EPA, MANAGING MANURE NUTRIENTS AT CONCENTRATED ANIMAL FEEDING OPERATIONS at 2-1--2-4 (Dec. 2004), https://www.epa.gov/sites/default/files/2015-08/documents/cafo_manure_guidance.pdf [Exhibit 142 hereinafter, "EPA, MANAGING CAFO MANURE"].

[218] *See, e.g.*, 68 Fed. Reg. 7176, 7186, 7263; Xunde Li et al., *Fecal Indicator and Pathogenic Bacteria and Their Antibiotic Resistance in Alluvial Groundwater of an Irrigated Agricultural Region with Dairies*, 44 J. ENVTL. QUALITY 1435, 1435 (2015) [Exhibit 143]; Tucker Burch et al., *Fate of Manure-Borne Pathogens during Anaerobic Digestion and Solids Separation*, 47(2) J. ENVTL. QUALITY 336, 336 (2018) [Exhibit 144]; Laura M. Bexfield et al., *Hormones and Pharmaceuticals in Groundwater Used as a Source of Drinking Water Across the United States*, 53 Envtl. Sci. & Tech 2950, 2950-51, 2958 (2019) [Exhibit 145]; *see also* SCOTT A. BRADFORD ET AL., U.S. DEP'T AGRIC. (2008), REUSE OF CONCENTRATED ANIMAL FEEDING OPERATION WASTEWATER ON AGRICULTURAL LANDS, https://www.ars.usda.gov/arsuserfiles/20360500/pdf_pubs/P2194.pdf [Exhibit 146]; Yernar Amangelsin et al., *The Impact of Tetracycline Pollution on the Aquatic Environment and Removal Strategies*, 12 ANTIBIOTICS 15, https://pmc.ncbi.nlm.nih.gov/articles/PMC10044355/ [Exhibit 147]; Diana Yates, U.

the EAW covering the proposed Expansion Project does not consider impacts from any pollutants other than nutrients. The potential for adverse water quality impacts from other pollutants must be weighed in an EIS, especially because waters adjacent to the Expansion Project area are already impaired by *E. coli* and other pollutants associated with mega-dairy operations.[219]

B. The EAW Downplays Water Quality Threats Posed By Clay-Lined Basins

Riverview's plan to store manure and process wastewater from the proposed expansion in clay-lined basins is likely to cause significant environmental impacts that warrant consideration in an EIS. A growing body of evidence demonstrates that clay liners are insufficient protection against feedlot contaminants leaching to the subsurface.[220] As Riverview is well aware, designing and upkeeping a clay liner to comply with a 1/56 inch per day permeability standard is complicated by clay's tendency to crack during freeze-thaw cycles.[221] In Minnesota, such cycles are common due to

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Illinois, *Team Determines How Estrogens Persist in Dairy Farm Wastewater* (June 5, 2012), https://news.illinois.edu/team-determines-how-estrogens-persist-in-dairy-farm-wastewater/ [Exhibit 148]; Muhammad Adeel et al., *Environmental Impacts of Estrogens on Human, Animal and Plant Life: A Critical Review*, 99 ENV'T INT'L 107 (2017), https://pdf.sciencedirectassets.com/271763/1-s2.0-S0160412016X00104/1-s2.0-S0160412016304494/main.pdf [Exhibit 149]; Edward F. Orlando et al., *Endocrine-Disrupting Effects of Cattle Feedlot Effluent on an Aquatic Sentinel Species, the Fathead Minnow*, 112(3) ENVTL. HEALTH PERSPECTIVES 353, 356 (2004) [Exhibit 150]; Joan A Casey et al., *Industrial Food Animal Production and*
Community Health, 2 CURRENT ENVTL. HEALTH REP. 259, 266 (Sept. 2015) [Exhibit 151]; Fabienne Wichmann, *Diverse Antibiotic Resistance Genes in Dairy Cow Manure*, https://doi.org/10.1128/mbio.01017-13 (2014) [Exhibit 152]; EPA, *National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines and Standards for CAFOs* 44-45 (Dec. 2000) [Exhibit 153]; JoAnn Burkholder et al., *Impacts of Waste from Concentrated Animal Feeding Operations on Water Quality*, 115(2) ENV'T HEALTH PERSPS. 308, 308 (Feb. 2007) [Exhibit 154]; Roberto Picetti et al., *Nitrate and Nitrite Contamination in Drinking Water and Cancer Risk: A Systematic Review with Meta-Analysis*, 210 ENVT'L RES. 112988 (July 2022), https://www.sciencedirect.com/science/article/pii/S0013935122003152 [Exhibit 155]; Daniel F. Gomez Isaza, *Living in Polluted Water: A Meta-analysis of the Effects of Nitrate and Interactions with Other Environmental Stressors on Freshwater Taxa*, 261 Environmental Pollution (2020) [Exhibit 156]; Jason Semprini, Early Prenatal Nitrate Exposure and Birth Outcomes: A Study of Iowa's Public Drinking Water (1970-1988), 4 PLOS Water (2025) [Exhibit 157].

[219] *Riverview's EAW for West River Dairy, supra* note 17, at 29-30.

[220] *See* David J. Erickson, CPG PG, Response to Riverview, LLP Application for the Herberg Dairy 1, 3-6 (2025) [Exhibit 158, hereinafter "Erickson Report"] (hydrologist report evaluating water pollution risks from another Riverview mega-dairy proposed for construction in North Dakota).

[221] *See* Memorandum of Britt Siddoway, PE, to Dakota Resource Council, Re: Abercrombie Dairy Manure Storage Ponds 1&2 – Assessment of Permitted Design w/ Regards to Modern Industry Practices (July 1, 2025) [Exhibit 159] (expert report assessing clay-lined lagoon designs that Riverview proposed to construct at a dairy in North Dakota); American Engineering Testing, Report of Geotechnical Exploration and Review, Herberg Dairy 8 (Nov. 21, 2024) [Exhibit 160] (engineering report prepared for another Riverview-owned dairy in North Dakota); *see also* Noah Rudko et al., Development of a Point-Source Model to Improve Simulations of Manure Lagoon Interactions with the Environment, 325 J. Env't Mgmt. 1, 9 (2023) [Exhibit

extreme seasonal temperatures. Further, though feedlot operators frequently point to compliance with permeability limits as evidence that clay liners prevent pollution from reaching groundwater, these same operators are rarely willing to conduct groundwater monitoring capable of substantiating their claims. Indeed, the EAW does not contemplate that Riverview will conduct any monitoring to detect whether its clay liners are continually performing as designed. Clay lines, without monitoring, provide no assurance that Riverview's lagoons will not contaminate groundwater,[222] and clay liners absent monitoring is an insufficient mitigation[223]

Failure to impose discharge monitoring requirements is particularly concerning at the Expansion Project site because groundwater within the vicinity of the dairy is hydraulically connected to the Pomme de Terre River.[224] Even if Riverview is able to maintain compliance with the permeability limit, the proposed lagoons are so large that they will leach substantial amounts of pollution over the lifetime of the Expansion Project.[225] Pollution that leaches to the subsurface is liable to contaminate not only soil and groundwater surrounding the basins, but also the Pomme de Terre River via subsurface hydrological discharges. MPCA must require that Riverview install synthetic liners with leak detection—as it has agreed to do for its Abercrombie Dairy in North Dakota[226]—to protect against subsurface discharges and the environmental hazards caused by such discharges. Additionally, MPCA must further investigate the interconnection between the basin sites and surface waters in the Pomme de Terre River basin before making a decision on the proposed Expansion Project.

C. The EAW Underestimates Water Quality Threats From Stormwater Management

If Riverview is permitted to store its waste in basins that are designed to—and will—leach pollutants to the subsurface, then its stormwater storage plans are seriously flawed. Of note, Commenters are limited in their ability to assess impacts that would result from Riverview's stormwater management because the facility's Stormwater

161] ("The effects of manure sealing that might reduce leakage rates as earthen structures age are offset by processes such as freezing and thawing cycles, or wetting and drying.").

[222] *See Food & Water Watch v. EPA*, 20 F.4th 506, 517 (2021) ("Without a requirement that CAFOs monitor waste containment structures for underground discharges, there is no way to ensure that production areas comply with the Permit's zero-discharge limit.").

[223] *Citizens Advocating Responsible Dev. v. Kandiyohi Cnty. Bd. of Comm'rs*, 713 N.W.2d 817, 834-35 (Minn. 2006).

[224] *Riverview's EAW for West River Dairy, supra* note 17, at 35.

[225] Erickson Report, *supra* note 220, at 4 (explaining how seepage adds up to significant pollution plumes over time, even when clay-lined basins meet low permeability standards).

[226] Email Exchange between Naomi Miranowski, Citizens for Responsible Growth and Riverview LLP (Oct. 2025) [Exhibit 162].

Pollution Prevention Plan[227] was not included in materials made available for public comment. Nevertheless, at least one problem is evident from the EAW materials that were made available. Riverview plans to install a drain tile system to "control seasonal subsurface saturation" near the 35.2 acres of liquid manure storage basins where Riverview proposes to store nearly 150 million gallons of additional liquid manure.[228] This subsurface water will be diverted to one of the on-site storage basins and then released directly into the environment via a series of drainage ditches that ultimately flow to the Pomme de Terre River.[229]

Riverview's repeated claims that this stormwater is "clean"[230] are belied by their plan to construct the manure basins out of permeable (i.e. leaky) clay. Water that seeps into the ground surrounding the basins will be exposed to pollutants—including nitrates, dangerous pathogens, and pharmaceuticals that breed antibiotic resistant bacteria—that inevitably leach from the basins. Though the EAW makes vague references to "treatment" of this stormwater (an unnecessary step if the water were truly clean, as Riverview claims), but provides no details that allow Commenters or any other members of the public to evaluate the effectiveness of such treatment. This alone provides a sufficient justification for a harder look at the environmental impacts of the proposed expansion in an EIS.[231]

D. The EAW Does Not Disclose Or Evaluate Runoff Risks From Tile Drained Fields

All of the Expansion Project's manure application sites are also within the Pomme de Terre River watershed. The EAW does not consider how leaks from the hoses it uses to pump waste to these fields could impact water quality, nor are there monitoring requirements to ensure any such leaks are discovered and stopped in a timely manner.[232] But even if the hoses remain intact, the proposed expansion would substantially increase loads of contaminated runoff flowing from crop fields to the Pomme de Terre River and its tributaries. Extensive tile drainage installed on agricultural fields in the area exacerbate runoff risks.[233] Notably, Riverview admits that it has not complied with the

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[227] *See Riverview's EAW for West River Dairy, supra* note 17, Attachment 22 at 12 (confirming that MPCA received the Stormwater Pollution Prevention Plan and other supporting materials not made available to the public on December 11, 2025).
[228] *Riverview's EAW for West River Dairy, supra* note 17, at 27.
[229] *Id.* at 27, 39.
[230] *Id.* at 15, 17, 27, 34, 36, 37, 38, 39.
[231] *See* Minn. R. 4410.0300 ("The purpose of parts 4410.0200 to 4410.6500 is to aid in providing that understanding through the preparation and public review of environmental documents.")
[232] *See* Cami Koons, *DNR Monitoring Hog Manure Spill and Clean Up in Carroll County* (Oct. 15, 2025), https://iowacapitaldispatch.com/briefs/dnr-monitoring-hog-manure-spill-and-clean-up-in-carroll-county/ [Exhibit 163] (describing manure spill from leaking hose).
[233] *See Riverview's EAW for West River Dairy, supra* note 17, at Attachment 7a ("All land impacted by the Project Site is currently in crop production and the majority of it is pattern tiled.").

requirement to identify all tile inlets on the proposed manure land application sites.[234] The additional runoff caused by the expansion combined with subsurface leaching from the manure storage basins is likely to significantly increase cumulative impacts on the watershed. These impacts need to be fully assessed and disclosed to the public in an EIS before MPCA makes a decision about Riverview's expansion application.

V. MPCA MUST ORDER AN EIS TO ANALYZE THE CUMULATIVE EFFECTS OF THE EXPANSION PROJECT'S MANURE ON WATER QUALITY

The EAW is also incomplete because, in violation of the Minnesota Rules, it fails to analyze the Expansion's cumulative potential effects on water quality from manure application. The EAW avoids any true analysis of the effect of applying manure from an additional 11,000 dairy cows in the Pomme de Terre River watershed, a region that already has numerous feedlots and impaired waters. To comply with MEPA, MPCA cannot simply proclaim that the Expansion Project will have no cumulative effects on water quality—it must take a hard look at the potential for significant environmental effects. Thus far, it has not done so.

A. The EAW Shows That The Expansion Project Will Add Over 113 Million Gallons Of Liquid Manure To A Watershed Already Containing Impaired Waters

Riverview expects its additional 11,000 dairy cows to produce a truly extraordinary amount of manure—113,619,000 gallons of liquid manure and 15,400 tons of solid manure each year. [235] Combined with the existing feedlot, the expanded facility is expected to produce 202,744,000 gallons of liquid manure and 26,400 tons of solid manure each year.[236] This is far greater than the amount of waste produced by all the people in Minneapolis, Rochester, and Minnetonka combined.[237] That waste, of course, is

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[234] *See Riverview's EAW for West River Dairy, supra* note 17, at 1-2 (mandating that Riverview attach to its EAW maps that show all tile inlets and other sensitive receptors on its land application sites and within a mile of the Dairy); *id* at 44 ("Many of the fields in the MMP belong to third-party farmers who will receive the transferred manure and are responsible for manure application on their land. For those parcels, the location of all tile drains is not easily identifiable by the Proposer.").

[235] *Riverview's EAW for West River Dairy, supra* note 17, at 8; Emily Payne, *Plan for Largest Dairy in Minnesota History Raises Water and Pollution Concerns*, SENTIENT MEDIA (Apr. 1, 2026), https://sentientmedia.org/plan-for-largest-dairy-in-minnesota-history/ [Exhibit 164] (reporting that "Riverview's expansion would more than double its liquid manure storage capacity in Morris, from 102 million gallons to 250 million gallons").

[236] *Riverview's EAW for West River Dairy, supra* note 17, at 8.

[237] *See* Ron Fleming & Marcy Ford, Human Versus Animals-Comparison of Waste Properties (2001), http://clucnorthfork.org/wp-content/uploads/2012/06/Human-versus-AnimalsComparison-of-Waste-Properties.pdf [Exhibit 165] (finding 20 dairy cows produce approximately the same waste as 1,000 humans); Minnesota State Demographic Center, Our Estimates, https://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/ (listing the 2024 population of Minneapolis as 435,233 residents, Rochester as 124,220 and Minnetonka as 56,162 residents).

treated, and ultimately discharged as clean water that meets water quality standards. Not so for Riverview's waste. Riverview intends to transfer the majority of the manure generated by the Expansion Project to 16,500 acres of non-Riverview owned or leased fields in Horton, Darnen, Synnes, and Scott townships within Stevens County, and on fields in Fairfield and Hegbert townships in Swift County. Notably, the Expansion Project is not the only large feedlot in this part of Stevens County. There are over 90 registered feedlots within the general area of the Expansion Project that also generate manure that needs to be managed, typically through land-application.[238]

The 113 million gallons of liquid manure will be added to an area where surface waters are already contaminated with the kinds of pollutants found in manure runoff. The Expansion Project is situated within the Muddy Creek Subwatershed within the Pomme de Terre River Watershed. The fields identified to receive manure from the Expansion Project are located in the Muddy Creek Subwatershed, the Middle Pomme de Terre River Subwatershed, and the Dry Wood Creek Subwatershed. Since at least 2011, MPCA has known about the substandard water quality in this region of the Pomme de Terre River Watershed. The cause of this is clear: fewer natural landscape features and more intensive agriculture.[239] This region of the Pomme de Terre River Watershed has the most stretches of impaired waters and the highest nutrient concentrations and turbidity levels.

The Expansion Project is situated in the lower part of the Pomme de Terre River Watershed and the lower portion of the Muddy Creek Subwatershed, suggesting that the nearby waterways are already impacted by downstream effects from agricultural activities in the watershed's northern region. Additionally, many of the manure-accepting fields are near the Expansion Project or about 10 miles north of it, which will further increase phosphorus downstream in the watershed, particularly in the Lower Pomme de Terre River Subwatershed.[240] The EAW merely suggests that farmers who receive manure to be spread in areas near surface water with already phosphorus-polluted waters will follow the Feedlot Permit rules for land application, with testing every 4 years.[241] But even if all recipients do follow the permit rules, those rules do not attempt to eliminate all water pollution from land application of manure. Some pollution will certainly occur, and there is no consideration in the EAW for the downstream effects on the already polluted water.

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[238] *Riverview's EAW for West River Dairy, supra* note 17, at Attachment 14.

[239] MPCA, Pomme De Terre River Watershed Monitoring and Assessment Report 1 (June 2011), https://www.pca.state.mn.us/sites/default/files/wq-ws3-07020002b.pdf [Exhibit 166, hereinafter "2011 Pomme de Terre WRAPS"].

[240] *Riverview's EAW for West River Dairy, supra* note 17, at 47-8.

[241] *Id*. at 46.

Additionally, *E coli* is present at high levels in multiple reaches of water in the Pomme de Terre River Watershed.[242] Increased concentrations of *E. coli* in rivers and streams are primarily caused by animal waste, with sewage overflows and stormwater also contributing.[243] Over a decade ago, MPCA noted that Muddy Creek was one of two reaches where tests showed elevated concentrations of *E. coli*.[244] Studies of this area revealed a correlation between precipitation and *E. coli* concentrations, suggesting that runoff from manure spread on agricultural fields is largely to blame.[245] In this part of the state, MPCA estimates that a 49% reduction in *E*. coli is needed to meet water quality standards.[246]

The Lower Pomme de Terre River Sub Watershed has similar issues to the Muddy Creek Sub Watershed. The quality in this region is compromised by high turbidity and bacteria.[247] Turbidity is caused by suspended particles and large algal blooms, resulting in murky waters that can degrade water quality and harm aquatic life. These large algal blooms may be related to the high phosphorus levels in the watershed.[248]

Additionally, substantial evidence shows that water quality degrades progressively downstream within a watershed.[249] Although the Expansion Project is situated in the southern portion of the broader watershed, it lies in the northern section of the Lower Pomme de Terre River Sub Watershed, meaning its pollution will inevitably flow downstream and further burden already impaired waters relied upon by downstream users. Yet the current EAW fails to meaningfully account for these downstream impacts. The EAW ignores the cumulative and compounding increases in nitrate and phosphorus pollution, overlooks the broader context of intensive regional agricultural activity, and minimizes the significant additional pollution that an Expansion Project would contribute. This omission understates the true environmental harm and risks, allowing further degradation of already vulnerable water resources.

B. The EAW Does Not Adequately Address The Cumulative Effects Of Manure From All Feedlots In The Region

Minnesota Rules require than an agency consider "cumulative potential effects" in determining whether a project has the potential for significant environmental effects.[250]

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[242] Pomme de Terre TMDL, *supra* note 192, at 32-39

[243] *Id.*

[244] *Minnesota River Basin 2010 Progress Report: Pomme de Terre River Watershed*, https://mrbdc.mnsu.edu/sites/mrbdc.mnsu.edu/files/public/progress/pdf/9.%20Report%20-%20Pomme%20de%20Terre.pdf [Exhibit 167]

[245] *Id*.

[246] Pomme de Terre TMDL, *supra* note 192, at

[247] 2011 Pomme de Terre WRAPS, *supra* note 239, at 45.

[248] *Id*. at 55.

[249] Pomme de Terre WRAPS, *supra* note 186, at 80.

[250] Minn. R. 4410.01700, subp. 1.

This means the agency must analyze "the effect on the environment that results from the incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources, including future projects."[251]As the Rules note, even projects that are individually minor can create significant cumulative effects over time.[252]

The EAW, however, contains only a superficial and incomplete cumulative effects analysis regarding manure application in an already impaired watershed. The EAW recognizes that there is the potential for cumulative potential effects from "overlapping manure application and excess water usage."[253] The concern about manure over-application, however, is waived away entirely by pointing to the number of acres local producers have made available to receive the Expansion Project's manure.

This is an entirely insufficient analysis. For one, it wholly ignores on-the-ground data from this region of the state that reveals 73% of fields received an over-supply of manure,[254] with nearly 60% of fields receiving manure at nitrogen rates averaging 166 pounds per acre, well-beyond the recommended rate of 100 to 140 pounds per acre.[255] Since Riverview intends the Expansion Project's manure to be applied at fields owned or controlled by others, Riverview will not be able to guarantee that farmers follow best management practices or apply at agronomic rates. Thus, the analysis does not seriously consider that waters in the Pomme de Terre River watershed are already impaired, and that runoff from an additional 113 million gallons of liquid manure that will be applied each fall will almost certainly worsen the impairments already present in the watershed. Manure runoff is well known to contaminate surface waters with nitrate, phosphorus, ammonia, and fecal coliform bacteria (like *E.coli*), which can make water undrinkable, harm fish, cause algal blooms, and destroy aquatic habitats.[256] More than half of all Minnesota's surface waterbodies do not meet basic water quality standards, and non-point source pollution, like manure runoff from feedlots and fields, is responsible for about 85% of water pollution.[257]

The EAW also makes no attempt to examine how the combination of manure from the Expansion Project and manure from the approximately 96,300 animal units in the Pomme de Terre River Watershed will affect water quality. While the EAW provides a

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[251] Minn R. 4410.0200, subd. 11a.
[252] *Id.*
[253] *Riverview's EAW for West River Dairy, supra* note 17, at 70.
[254] Pomme de Terre WRAPS, *supra* note 186, at 58.
[255] *Id.* at 59.
[256] Mary Berg & Miranda Meehan, North Dakota State University, Environmental Implications of Excess Fertilizer and Manure on Water Quality (Oct. 2017) [Exhibit 168].
[257] Sarah Graddy, Environmental Working Group, EWG Investigation: Manure Overload Threatens Water in Minnesota's Farm Country (May 28, 2020), https://www.ewg.org/release/ ewg-investigation-manure-overload-threatens-water-minn-farm-country [Exhibit 169].

map that identifies nearly 100 feedlots in the general area,[258] the EAW provides no other information about these nearby feedlots—such as how much manure they produce, where farmers apply that manure, and whether there is overlap with the fields receiving Riverview manure. Since manure cannot be cost-effectively transported far away, the manure from all these nearby feedlots is likely to be applied nearby. For a proper cumulative effects analysis, the EAW must examine "other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources."[259] Here, that means other feedlots and how adding 113 million gallons of manure will impact an area where, presumably, farmers already allow a large amount of manure to fields. But the EAW failed to analyze other feedlots.

The contribution to already significant environmental degradation from the existing dairy is "significant when viewed in connection with other contributions to the cumulative potential effect."[260] The draft EAW itself fails to analyze many of the cumulative impacts, but publicly available information in the form of many agency studies over many years demonstrates the potential for significant environmental impacts on water quality from the addition of an enormous industrial feedlot in an already heavily impacted watershed. This must be studied in a detailed EIS that seriously considers alternatives before MPCA can permit the proposed project.

VI. MPCA MUST CONSIDER THE IMPACT THE EXPANSION PROJECT WILL HAVE ON THE DAIRY MARKET AND NEARBY ECONOMIES

Pursuant to Minn. R. 4410.1700 2a (A), MPCA should order an EIS and include within the scope of the EIS an assessment of the impacts the Expansion Project—in the context of larger expansion and consolidation trends—has on the dairy market and rural economies. MEPA requires RGUs to take "a 'hard look' at all the problems involved."[261] Although the EAW form guides the preparation and completion of an EAW, the assessment of environmental impacts is not limited by what the form asks. Rather, the assessment must consider *all* potentially significant environmental effects, even if not explicitly asked about in the EAW form.[262] Here, that includes assessing the effects the Expansion Project will have on the dairy market and the local economy.

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[258] *Riverview's EAW for West River Dairy, supra* note 17, at 24, Attachment 14.
[259] Minn. R. 4410.0200, subd. 11a.
[260] Minn. R. 4410.1700, subp. 7 (B).
[261] *Citizens Advocating Responsible Development v. Kandiyohi Cty. Bd. of Comm'rs*, 713 N.W.2d 817, 832 (Minn. 2006) (quoting *Reserve Min. Co. v. Herbst*, 256 N.W.2d 808, 825 (Minn. 1977)).
[262] *See In re Denial of a Contested Case Hearing Request & Modification of a Notice of Coverage Under Individual National Pollution Discharge Elimination System Feedlot Permit No. MN0067652*, No. A19-0207, 2019 WL 5106666, at *4-8 (Minn. App. Oct. 14, 2019) (concluding that MPCA's decision not to assess GHG emissions in a feedlot EAW failed MEPA's hard look requirement).

The numbers are striking. In the last two decades, Minnesota has lost nearly 75% of its dairy farms,[263] even as the number of milk cows in Minnesota has remained relatively stable. Far fewer dairy farms exist now than before, but the average size of a Minnesota dairy farm has exploded.

Riverview is leading this charge to expand. According to MPCA's feedlot database, Riverview owns 15 dairy operations totaling more than 133,000 cows, with an average of nearly 9,000 cows per feedlot.[264] By comparison, the average dairy herd in Minnesota is approximately 280 cows,[265] meaning that the average size of a Riverview feedlot is roughly 500 times larger. As a result of this consolidation, nearly 50% of milk cows in Minnesota are confined in the largest 8% of farms.

Consolidation impacts pricing and the ability for smaller dairies to access markets. Most dairy farmers sell milk to regional cooperatives or processors, using a federal pricing system based on marketwide supply and demand.[266] Mega-dairies like Riverview monopolize the market which, they may argue, allows for efficiencies that (at least initially) drive down costs. But monopoly agribusinesses are contrary to public policy and the health of the rural economy. Small dairies cannot compete in a monopolized business environment. Moreover, dairies selling milk to cooperatives or processers typically have a limited number of potential buyers (often just one) in their region.[267] Because milk is perishable and uneconomic for long-distance travel, dairies are constrained from accessing a cooperative or processer unless it is close to the farm.[268] As production becomes more consolidated, research shows that the number of buyers shrinks, limiting the geographies where dairies can sell milk.

Consolidation also impacts rural economies. A 1995 University of Minnesota study examined the impact of dairy farming on the community near Green Isle, Minnesota.[269] The study showed that, between the 1970s and 1990s, the number of farmers serving the local creamery dropped from 1,400 to 960 and larger farms started dominating the area. Economic and social activity in Green Isle plunged; between 1979 and 1989, retail sales dropped by over 80 percent and institutions like the public dance hall and the grade

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[263] United States Dep't of Agric. *Historical Highlights: 2022 and Earlier Census Years*, https://www.nass.usda.gov/Publications/AgCensus/2022/Full_Report/Volume_1,_Chapter_1_State_Level/Minnesota/st27_1_001_001.pdf [Exhibit 170].

[264] MPCA, *Feedlots in Minnesota*, https://gisdata.mn.gov/dataset/env-feedlots.

[265] Land Stewardship Project, *Flooding the Market: How Dairy Consolidation is Drowning Minnesota's Farmers & Rural Communities* (Apr. 23, 2026), https://landstewardshipproject.org/wp-content/uploads/Milk-Flood-C-4-23-26.pdf [Exhibit 171].

[266] *Id.*

[267] *Id.*

[268] *Id.*

[269] Patricia Weir Love, *The Impact of Changes in Dairy Farming on a Local Economy: A Case Study* (May 1995) [Exhibit 172].

school permanently closed.[270] This is consistent with more recent assessments that conclude having more dairy farms is associated with a more positive economic and socioeconomic environment than higher dairy sales.[271]

These forces have impacted Minnesota's rural landscape. According to Minnesota Attorney General Keith Ellison, "when you hear about giant producers who are going to increase production drive prices even further down what it really means is that we are running small dairy producers out of business."[272] When a small dairy closes, Minnesota loses more than a supply of milk. "The closing of small dairy farms has contributed to the diminishing of small towns across greater Minnesota. Each closure has meant less demand for local mechanics, fewer students in the public schools, fewer farmers shopping at the local hardware store, fewer buyers at the local tractor dealer."[273]

Given Riverview's dominance in the Minnesota dairy market and its current effort to expand an existing facility to become the State's largest ever feedlot, MPCA's environmental review must consider how the Expansion Project will impact the dairy market and local economies. The EAW's silence on this issue means that it has "entirely failed to consider an important aspect of the problem."[274] Importantly, these consolidation efforts are not separate from environmental review.[275] A production model centered on fewer, larger operations concentrates manure generation, land-application pressure, air emissions, water demand, truck traffic, and energy use at particular sites and in surrounding communities. The EAW fails to evaluate whether the Expansion Project would further entrench this consolidated production model and whether that concentration would cause or contribute to significant environmental effects requiring further review.

Consolidation in industrial farming and agribusiness presents very significant economic and social repercussions for rural families and communities. Regulators can

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[270] *Id.*

[271] C. D. Dechow, *Short Communication: Farm and Socioeconomic Characteristics of the Top 100 Dairy Farm Counties in the United States*, J. DAIRY SCI. (2011), https://doi.org10.3168/jds.2010-3909

[272] Greener Pastures, *Small Dairies are Disappearing. Here's why it matters* (May 4, 2026), https://www.youtube.com/watch?v=CP0bAjjyEP4 at 3:39 – 3:50.

[273] Karen Tolkkinen, *Let's Reconsider Allowing Massive Dairies in Rural Minnesota*, Minn. Star Tribune (May 3, 2026), https://www.startribune.com/tolkkinen-lets-reconsider-allowing-massive-dairies-in-rural-minnesota/601798066.

[274] *Citizens Advocating Responsible Development v. Kandiyohi Cty. Bd. of Comm'rs*, 713 N.W.2d 817, 832 (Minn. 2006).

[275] Minn. Stat. § 4410.1200(E) (requiring EAWs to include "major issues sections identifying potential environmental impacts *and issues* that may require further investigation before the project is commenced") (emphasis added); *id.* § 4410.2300(H) (requiring an EIS to assess the "[e]nvironmental, economic, employment, and sociological impacts" for the proposed project).

scrutinize large agribusiness to ensure the marketplace is fair through anti-trust laws.[276] But in Minnesota, MEPA also requires state agencies to consider these economic and social impacts *before* a project is approved. Because the draft EAW wholly fails to address this aspect of the problem, MPCA must order an EIS which will include an inquiry into Minnesota's dairy industry and the economic and social impacts consolidation, driven by Riverview, is having on the State.

CONCLUSION

To comply with Minnesota law, an EIS must be conducted to fully analyze the GHG emissions expected from the Expansion Project, their effects on climate change, and potential mitigation measures that could be used to reduce those effects. The EIS must also consider the water quality impacts attendant from appropriating over 200 million gallons of water per year from an aquifer hydrologically connected to the Pomme de Terre River. Additionally, an adequate plan to protect water quality from the massive amount of manure the Expansion Project will add to the Pomme de Terre River Watershed is required. The analysis must include a full assessment of the cumulative effects of applying so much additional manure to fields in a region where surface waters are already impaired with agricultural pollutants. Finally, the EIS must assess the Expansion Project's impact on the Minnesota dairy market.

Given all the missing and incomplete information in the EAW, MPCA currently cannot make an informed decision regarding the Expansion Project's potential for significant environmental effects. Accordingly, the undersigned organizations ask that MPCA order an EIS, so that the full effects of what would be Minnesota's largest CAFO can be fully reviewed.

Respectfully submitted,

Minnesota Center for Environmental Advocacy

The Climate Change & Animal Agriculture Legal Initiative, part of the Law, Environment & Animals Program at Yale Law School*

Land Stewardship Project

FarmSTAND

Food & Water Watch

[276] U.S. Dep't of Justice, *Acting Attorney General Blanche Announces Antitrust Investigations on Meatpacking Operations* (May 4, 2026), https://www.justice.gov/opa/video/acting-attorney-blanche-announces-antitrust-investigations-meatpacking-operations.

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