March 11, 2022

Submitted via ca.gov

Liane M. Randolph, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Tier 2 Pathway Application No. B0216

Dear Chair Randolph,

The Association of Irritated Residents, Leadership Counsel for Justice & Accountability, Animal Legal Defense Fund, and Food & Water Watch (collectively, "Commenters") write in opposition to DTE Energy Trading, LLC's Tier 2 pathway application. As Commenters have explained through numerous comments and the Petition for Rulemaking to Exclude All Fuels Derived from Biomethane from Dairy and Swine Manure from the Low Carbon Fuel Standard Program (included and incorporated here as Attachment A), California Air Resources Board's ("CARB") treatment of factory farm gas under the Low Carbon Fuel Standard ("LCFS") is flawed and perversely incentivizes the factory farm industry to generate *more* pollution on ever larger factory farms. Given CARB's recognition that important issues have been raised regarding the integrity and legality of how factory farm gas currently is treated under the LCFS, Commenters request that CARB either deny this application or stay its consideration pending resolution of the upcoming public workshop and reporting of findings and facts back to the Board for consideration.[1]

Commenters oppose this application for several reasons. First, the application applies CARB's unlawfully truncated system boundary that ignores feedstock production at the factory farm and other emissions such as those from disposal of digestate, resulting in exaggerated Carbon Intensity values. In other words, this application fails to apply the required "well-to-wheels" analysis, which must include "feedstock production."[2] Liquified manure decomposing anaerobically in massive waste lagoons is not an unavoidable and natural consequence of dairy or pork production. This waste management practice, and the methane emissions caused by it, is the result of intentional management decisions designed to maximize profits and externalize pollution costs. It is therefore entirely inappropriate to ignore the upstream emissions associated with the Kinnard factory farm where this feedstock is intentionally produced.

Second, this application is a good example of how CARB's flawed approach to factory farm gas pathways is rewarding the biggest polluters and incentivizing larger factory farms with more pollution problems. These impacts are often borne by low income, minority, or other underrepresented communities that are already overburdened by pollution.

Kinnard Farms ("Kinnard"), one of the largest dairies in Wisconsin, has a long history of pollution problems and staunch opposition from local community members impacted by its harmful practices. The Wisconsin Supreme Court recently recognized the "very unusual" environmental contamination on and around the Kinnard factory farm, which an Administrative Law Judge noted "could fairly be called a groundwater contamination crisis." *Clean Wis., Inc. v. Wis. Dep't of Nat. Res.*, 398 Wis. 2d 386, 392–93 (2021). The Court also acknowledged Kinnard's "recent history of noncompliance." *Id.* at 393.

Kinnard's history of environmental violations is well documented. Since just 2014, Kinnard Farms has been charged by the Wisconsin Department of Natural Resources

[1] CARB has discretion to withhold Tier 2 pathway certifications in accordance with its LCFS regulations codified at 17 Cal. Code of Regs. §§ 95488.6 and 95488.7. CARB is not subject to any timetables for reviewing and processing applications, including the Executive Officer's assessment and determination of whether a Tier 2 applicant's response to public comments is "adequate." *See* Cal. Code of Regs. Tit. 17 § 95488.7(d)(5)(B). CARB has no obligation to even consider Provisional pathway applications, such as this one. Cal. Code of Regs. Tit. 17 § 95488.9(c) ("Executive Officer *may* consider Provisional pathway applications" (emphasis added)).

[2] Cal. Code Regs. Tit. 17 § 95481(a)(66).

("Wisconsin DNR") with unlawfully spilling its waste on at least fourteen occasions. *See* Attachment B.[3] More recently, Wisconsin DNR issued a Notice of Violation to Kinnard on March 2, 2021, for improper land application, and a September 28, 2021, audit of a land application field used by Kinnard discovered more problems. *See* Attachment C. And in January of this year, Wisconsin DNR informed Kinnard that it was not in substantial compliance after conducting a permit reissuance inspection. *See* Attachment D. The LCFS regulations call on CARB to invalidate credits generated "in violation of any provision of … laws, statutes or regulations."[4] Given the long track record of operating in violation of Wisconsin environmental protection regulations and contaminating drinking water, CARB should presume that Kinnard and its associated factory farm gas infrastructure will continue to have compliance issues that preclude it from generating LCFS credits. Therefore, certifying this pathway that monetizes the very waste that is causing Kinnard to violate the law and contaminate the environment and local residents' air and water would be patently inappropriate.

Furthermore, Kinnard is currently seeking new permit terms that would allow it to expand its already extremely large herd, in parallel with applying to participate in the LCFS. The new permit would allow the factory farm to nearly *double* its herd, from 11,369 animal units to 21,450 units.[5] While Commenters understand that Kinnard has not yet professed an intention to immediately expand, these new permit terms would open the door for expansion and LCFS incentives would provide the means and motive. As Commenters have been warning CARB, the LCFS is incentivizing factory farms to increase herd sizes in conjunction with digester buildouts and expectations of financial windfall via the LCFS.

Finally, the inflated Carbon Intensity values CARB proposes here work an additional environmental injustice on California citizens who will be exposed to higher levels of pollution from fossil transportation fuel and dirty vehicles made possible by excessive credit generation at factory farms. CARB has acknowledged that pollution from transportation fuels inflicts a racially

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[3] This list can also be obtained at https://dnr.wi.gov/botw/SetUpSearchAction.do, by entering "Kinnard" in the "Activity or Location Name" box and running the search.
[4] Cal. Code Regs. Tit. 17 § 95495(b)(1)(E).
[5] Kinnard Farms Inc. Permit Fact Sheet, available at https://midwestadvocates.org/assets/resources/Kinnard-Permit-Fact-Sheet.pdf.

disparate impact, so this continued certification of fuel pathways with extreme negative Carbon Intensities to allow more pollution from deficit holders contributes to this injustice.[6]

As this application highlights, CARB's unlawful administration of the LCFS program is causing environmental and public health harms not just in California, but to communities and ecosystems across the United States – in this case Wisconsin – by incentivizing and rewarding some of the worst factory farm practices. If California is serious about being a climate leader, this is not the example to set.

For these reasons, Commenters request that CARB deny the application, or in the alternative stay its consideration pending resolution of the upcoming fact-finding process and Board consideration so as to avoid locking in even more pathways for factory farm gas that violate California law, destroy the integrity of the LCFS market, undermine the state's climate change mitigation efforts, and harm communities in California and across the country.

Respectfully,

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[6] *See* 2020 Mobile Source Strategy at 26–27, https://ww2.arb.ca.gov/sites/default/files/2021-12/2020_Mobile_Source_Strategy.pdf.

Attachment A: Petition for Rulemaking to Exclude All Fuels Derived from Biomethane from Dairy and Swine Manure from the Low Carbon Fuel Standard Program

BEFORE THE CALIFORNIA AIR RESOURCES BOARD

PETITION FOR RULEMAKING TO EXCLUDE ALL FUELS DERIVED FROM BIOMETHANE FROM DAIRY AND SWINE MANURE FROM THE LOW CARBON FUEL STANDARD PROGRAM

PETITION FOR RULEMAKING

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I. INTRODUCTION

The California Air Resources Board (CARB) allows inflated and non-additional credits derived from factory farm gas[1] to undermine the integrity of the Low Carbon Fuel Standard (LCFS) pollution trading scheme and exacerbate discriminatory environmental and public health harms in the San Joaquin Valley. The LCFS increases harmful pollution to air, water, and land in rural low-income and Latina/o/e communities; inflates factory farm gas reductions by excluding upstream and downstream emissions; allows non-additional reductions from other factory farm gas incentive programs to generate credits; fails to achieve reductions from transportation fuels when these inflated and non-additional factory farm credits justify excessive fossil fuel emissions; and perversely incentivizes increased greenhouse gas emissions and pollution from dairy and pig factory farms.

To remedy these deficiencies, the Association of Irritated Residents (AIR), Leadership Counsel for Justice & Accountability, Food & Water Watch, and Animal Legal Defense Fund petition the CARB for rulemaking to amend the LCFS to exclude all fuels derived from factory farm gas. In the alternative, CARB must reform the LCFS program to account for the full life cycle of factory farm gas emissions – including all upstream and downstream emissions from activities and inputs at dairy and pig facilities – and exclude non-additional emissions reductions that occur as a result of other factory farm gas incentives, including the Dairy Digester Research Development Program. CARB must also take steps to ensure that its policies and practices do not impose discriminatory harms on low-income and Latina/o/e communities in the San Joaquin Valley.

In 2006, the California Legislature determined that climate change posed "a serious threat to the economic well-being, public health, natural resources, and the environment of California."[2] To address these threats, CARB designed a range of programs that would monitor, regulate, and ultimately reduce greenhouse gas emissions, including the LCFS.[3] But as written and as implemented, the LCFS pathways for factory farm gas do not effectively reduce greenhouse gas emissions, violating CARB's obligation to achieve the maximum cost-effective and technologically feasible emissions reductions.

The LCFS intentionally promotes factory farm gas, a fusion of Big Ag and Big Oil & Gas, two of the industries most responsible for the climate crisis and whose entire business model relies on extraction and exploitation. Big Ag brought us polluted wells, foul air, antibiotic-resistant pathogens, methane-spewing manure lagoons, and workplace conditions that caused rampant outbreaks of COVID-19. Big Ag has driven family farmers off their farms, stripped wealth from our communities, and gutted our rural main streets. Big Oil & Gas brought us countless oil spills, tanker wrecks, pipeline explosions, and climate damage. There is no reason to entrust our future to the very industries responsible for the harms the LCFS seeks to address.

[1] Factory farm gas refers to the fuel the LCFS designates "biomethane from the anaerobic digestion of dairy and swine manure."
[2] CAL. HEALTH & SAFETY CODE § 38501.
[3] CAL. HEALTH & SAFETY CODE § 38510.

The results of CARB's embrace of these false solutions to the benefit of Big Ag and Big Oil & Gas are clear: due to the LCFS's deficient accounting of the emissions from factory farm gas, the program encourages increased production of the liquified manure necessary to generate factory farm gas, resulting in *more* intentionally created methane from new and expanding dairy and pig facilities. By propping up factory farm gas, the LCFS provides a new way for big corporations to get rich off a problem they created. In CARB's accounting of the carbon intensity of factory farm gas, the LCFS fails to include the full quantity of associated upstream and downstream greenhouse gas emissions, leading to an exaggerated negative carbon intensity value and a corresponding inflation of LCFS credit prices for factory farm gas. The resulting inflated credits do not encourage emissions reductions, instead, they reward factory farms for the production of toxic manure as though it were a cash crop. This "hot air" in the credit market, along with the award of credits for reductions from other incentive programs that would have occurred anyway, undermines the LCFS framework by allowing transportation fuel producers to emit more climate pollution based on illusory reductions.

No amount of corporate public relations spin, greenwashing, or deficient carbon intensity calculations can hide the fact that factory farm gas is created from massive harm. By incentivizing increased manure production and liquification, the LCFS program also fails to maximize additional environmental benefits in violation of the *Global Warming Solutions Act of 2006* (AB 32), and even increases the well-documented environmental and public health harms caused by pig and dairy factory farms. These facilities release enormous quantities of solid, liquid, and gaseous waste. In addition to greenhouse gas emissions, the waste from both pigs and dairy cows releases various co-pollutants including ammonia, hydrogen sulfide, volatile organic compounds (VOCs), and severe odor. The factory farm system relies on disposing the manure nitrogen on crops, which also leads to both nitrous oxide emissions and nitrate contamination of groundwater. Experience tells us that racism, exploitation, and extraction are embedded in the factory farm system – we know these harms are disproportionately imposed on Black, Indigenous, People of Color, and low-income communities around the country. In California, these harms discriminatorily impact low-income and Latina/o/e communities in the San Joaquin Valley in violation of state and federal law.[4]

CARB has an affirmative duty under Government Code section 11135 (CA 11135) and Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d, to ensure that its policies and practices do not have a discriminatory impact on the basis of race.[5] CARB has an affirmative duty under AB 32 to ensure that "activities undertaken to comply with the regulations do not disproportionately impact low-income communities" and to design regulations in a manner that is equitable.[6] Finally, Government Code section 12955 (CA 12955) prohibits any practice or program that has a discriminatory effect on members of protected classes with respect to housing opportunities, including with respect to the use and enjoyment of dwellings.[7] Furthermore, the

[4] Addressing discriminatory impacts resulting from the LCFS's inclusion of factory farm gas in other parts of the country where dairy and pig factory farms are concentrated is beyond the scope of this petition. However, CARB should also evaluate these potential impacts, given that the program includes applicants from around the country. CAL. AIR RES. BD., *LCFS Pathways Requiring Public Comments*, https://ww2.arb.ca.gov/resources/documents/lcfs-pathways-requiring-public-comments#t2.
[5] CAL. GOV'T CODE § 11135; 42 U.S.C. § 2000d.
[6] CAL. HEALTH & SAFETY CODE § 38562(b).
[7] CAL. GOV'T CODE § 12955.8; CAL. CODE REGS. TIT. 2 § 12161.

accountability our democracy depends on the public knowing the truth: who is benefiting, where the money is coming from, who is defining the problem, who is being impacted, and how they are harmed by the LCFS. By failing to even conduct a transparent disparity analysis of this highly-technical program, CARB impedes the public's ability to fairly evaluate CARB's choice to prop up Big Ag and Big Oil & Gas.

A people's government – our government – protects and serves the people's interests. It invests in food and climate solutions that create a healthy future for our children and grandchildren. It invests in good jobs that strengthen our rural communities. But CARB has created and implemented a pollution trading scheme that benefits polluters rather than uses the power granted by the people of California to prevent harms. On top of decades of discriminatory impacts in the San Joaquin Valley, California is facing the dire impacts of the climate crisis. We cannot afford a scheme that serves corporate interests over the people's needs.

To remedy these harms and to bring the LCFS regulation into compliance with state and federal law, the petitioners request that CARB amend section 95488.9 of the LCFS to exclude any "fuel pathway that utilizes biomethane from dairy and swine manure digestion."[8] In the alternative, petitioners request that CARB amend the LCFS regulation to (a) ensure that the life cycle analysis for biomethane from dairy and swine manure is expanded to include a full accounting of life cycle emissions; (b) amend section 95488.9 to ensure additionality of reductions; (c) properly classify methane from swine and dairy factory farms as intentionally occurring; (d) ensure compliance with state and federal civil rights law, including but not limited to conducting disparity analyses of LCFS pathways and credit trading; and (e) ensure the LCFS provides environmental benefits and does not degrade water quality and interfere with efforts to improve air quality in the San Joaquin Valley.

II. BACKGROUND

A. THE LCFS PROGRAM

AB 32 set a statewide target to reduce California's greenhouse gas emissions to 1990 levels by 2020.[9] In 2007, Governor Arnold Schwarzenegger issued Executive Order S-01-07, which directed CARB to adopt the LCFS pollution trading scheme to diversify California's transportation fuels and curb dependence on petroleum.[10] The California Office of Administrative Law approved the LCFS regulation in 2010 and the regulation has since undergone four rounds of amendments.[11]

According to CARB, "[T]he LCFS is designed to encourage the use of cleaner low-carbon transportation fuels in California, encourage the production of those fuels, and therefore, reduce

[8] CAL. CODE REGS. TIT. 17 § 95488.9.
[9] CAL. HEALTH & SAFETY CODE § 38550.
[10] CAL. EXEC. DEP'T, Exec. Order No. S-01-07, (Jan. 22, 2007), *available at* https://www.library.ca.gov/Content/pdf/GovernmentPublications/executive-order-proclamation/5107-5108.pdf; *see also generally,* CAL. HEALTH & SAFETY CODE § 38560.5 (requiring CARB to establish GHG reduction measures).
[11] CAL. CODE REGS. TIT. 17 § 95480 et seq.

greenhouse gas emissions and decrease petroleum dependence in the transportation sector."[12] The LCFS, like similar pollution trading schemes, constructs a market where credits and deficits that represent emissions in relation to a declining baseline can be traded. These tradeable LCFS credits provide a new revenue stream for producers of fuels that have been deemed low-carbon intensity with the goal of incentivizing increased production and displacing the use of more greenhouse gas-intensive fuels. The LCFS requires entities that produce conventional transportation fuels to report the carbon intensity of these fuels, while certain alternative fuel producers may opt into the program and demonstrate their fuel's carbon intensity in their application.[13]

Every year, CARB sets progressively lower benchmarks for the carbon intensity of fuels.[14] Transportation fuels with carbon intensity values above the annual benchmark generate deficits, and transportation fuels with carbon intensity values below the benchmark generate credits (see Figure 1, Appendix C).[15] While obligated parties are required to either meet the benchmark or purchase credits to offset the extra emissions associated with their fuel, voluntary parties that produce alternative, low-CI fuels are incentivized to participate because fuels with carbon intensities below the benchmark generate revenue through the sale of LCFS credits.[16]

The LCFS regulation defines "carbon intensity" as "the quantity of life cycle greenhouse gas emissions, per unit of fuel energy, expressed in grams of carbon dioxide equivalent per megajoule (gCO_2e/MJ)."[17] The emissions included in each fuel's carbon intensity calculation are usually bounded by "fuel pathways," defined as "the collective set of processes, operations, parameters, conditions, locations, and technologies throughout all stages that CARB considers appropriate to account for in the system boundary of a complete well-to-wheel analysis of [a given] fuel's life cycle greenhouse gas emissions."[18] Accurate and thorough life cycle analyses for each fuel and the accurate accounting of the baseline against which each fuel's carbon intensity is compared are independent and necessary preconditions for the program to identify which fuels to encourage to decrease net greenhouse gas emissions.

The LCFS classifies fuel pathways into three groups: Lookup Table, Tier 1, and Tier 2 pathways.[19] Regulated parties can register their fuels using the standard pathways in the Lookup

[12] *Low Carbon Fuel Standard: About,* CAL. AIR RES. BD., https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/about (last visited Oct. 12, 2021).
[13] CAL. CODE REGS. TIT. 17 §§ 95483-95483.1.
[14] CAL. CODE REGS. TIT. 17 § 95484.
[15] *Id.*
[16] CARB accounts for credits and implements credit transfers with the LCFS Reporting Tool and Credit Bank & Transfer System. CAL. AIR RES. BD., *LCFS Registration and Reporting*, https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/lcfs-registration-and-reporting (last visited Oct. 12, 2021).
[17] CAL. CODE REGS. TIT. 17 § 95481(a)(26). "Life Cycle Greenhouse Gas Emissions," in turn, is defined as "the aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions, such as significant emissions from land use changes) as determined by the Executive Officer, related to the full fuel life cycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential. CAL. CODE REGS. TIT. 17 § 95481(a)(88).
[18] CAL. CODE REGS. TIT. 17 § 95481(a)(66).
[19] CAL. CODE REGS. TIT. 17 § 95488.1(a).

Table if the fuel produced "closely corresponds" to a Lookup Table pathway.[20] Tier 1 and Tier 2 pathways are open to voluntary applicants, including those seeking credit for factory farm gas. Tier 1 is for "the most common low carbon fuels" and uses a Simplified CI calculator, where Tier 2 is for "innovative, next generation fuel pathways," and uses the full CA-GREET3.0 model.[21] Tier 1 includes fuels like ethanol and biomethane anaerobic digesters of dairy and swine manure, among others.[22] Tier 2 includes fuels from sources not in Tier 1 as well as pathways included in Tier 1 that use "innovative production methods."[23] The majority of factory farm gas producers apply for Tier 2 pathways rather than the Tier 1 pathway.

Ten years after enacting AB 32, the California Legislature set a new target for greenhouse gas emissions in Senate Bill 32 (SB 32) – 40 percent below 1990 levels.[24] The Legislature stipulated, however, that SB 32 would only be operative if it also enacted Assembly Bill 197 (AB 197), which amended AB 32 in several ways.[25] AB 197 added Section 38562.5, which required that regulations promulgated to achieve emissions reductions beyond the statewide greenhouse gas limit, including the LCFS, consider the social costs of greenhouse gases, prioritize direct emissions reductions, and incorporate the requirements of Section 38562(b).[26] These requirements include crucial mandates to design the regulations in a manner that is equitable; ensure that activities taken to comply with the regulations "do not disproportionately impact low-income communities" and "do not interfere with, efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminant emissions;" and consider the overall societal benefits, including reductions in other air pollutants and other benefits to the environment.[27]

B. THE SAN JOAQUIN VALLEY

California's San Joaquin Valley, as discussed in this petition, refers to eight counties that compose the valley floor from San Joaquin County in the north, to Kern County in the south. While disadvantaged communities within the region confront air pollution, toxic emissions, and unsafe drinking water at rates and degrees disproportionate to other communities in the state, the San Joaquin Valley is also home to resilient, diverse communities and networks that have worked together over decades to promote robust mutual aid networks, expand civic engagement, and lead

[20] CAL. CODE REGS. TIT. 17 § 95488.5(a)(1)-(6) ("Closely corresponds" means that the applicant's fuel pathway and a pathway on the Lookup Table are consistent in feedstock, production technology, the region in which the feedstock and fuel is produced, transport distance (if applicable), types and amount of thermal and electrical energy used in feedstock and finished fuel production, and that the CI of the entity's product is lower than or equal to the CI of the pathway in the lookup table.)

[21] CAL. AIR RES. BD., LCFS Guidance 19-01, Book and Claim Accounting for Low-CI Electricity 2, *available at* https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/guidance/lcfsguidance_19-01.pdf. While Tier 1 applicants provide a "discrete set of inputs" based on the specifics of their operations to be used by one of the pre-existing Tier 1 Simplified CI Calculators, Tier 2 applicants must conduct and submit a full life cycle analysis using the CA-GREET3.0 model for their own customized pathway. CAL. CODE REGS. TIT. 17 § 95488.3.

[22] CAL. CODE REGS. TIT. 17 § 95488.1(c).

[23] CAL. CODE REGS. TIT. 17 § 95488.1(d).

[24] CAL. HEALTH & SAFETY CODE § 38566.

[25] SB 32, 2016 CAL. LEGIS. SERV. CH. 249.

[26] AB 197, 2016 CAL. LEGIS. SERV. CH. 250.

[27] CAL. HEALTH & SAFETY CODE §§ 38562(2), (4), (6).

efforts from the household to the community level to model climate resilience and environmental stewardship.

The region is known for and, to a great extent, characterized by industrial agricultural operations, including large confined animal feeding operations. Decades of similar investment, land use, and economic development strategies have failed and continue to fail to prioritize the economic well-being and health of San Joaquin Valley residents, leading to severe income inequality, poverty, and environmental degradation despite the inherent assets of the region.

The "disadvantaged communities" of California, as defined pursuant to Senate Bill 535, are concentrated in the San Joaquin Valley.[28] Seven of the eight counties in the Valley (all except San Joaquin County) report mean income well below the 120% limit that defines low-income.[29] Every county in the San Joaquin Valley has lower household and per capita incomes, and higher poverty rates than California as a whole.[30] While median household income in California in 2019 was $75,235, countywide household median incomes for San Joaquin Valley Counties ranged from $49,687 to $64,432. The highest producing dairy counties in the state and in the San Joaquin Valley, Merced and Tulare, show median household incomes at $53,672 and $49.687 – both at 71 percent or below statewide median income.[31] Notably, nine of ten of the most recent applications for consideration for Low Carbon Fuel Standard Tier 2 Pathways from California factory farm gas were in Tulare County and Kern County. Kern County, like Merced and Tulare, faces disproportionately high poverty rates at 19 percent. Even this data likely inflates reported income level, because it may exclude the San Joaquin Valley's thousands of undocumented residents and residents of the Valley's unincorporated communities.[32]

San Joaquin Valley residents are disproportionately Latina/o/e as compared to California as a whole. All eight San Joaquin Valley Counties have higher Latino populations than the state,[33] with populations ranging from 42 percent to 65.6 percent, as compared to the state population with

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[28] CAL. ENV'T PROT. AGENCY, *Designation of Disadvantaged Communities Pursuant to Senate Bill 535 (De León)* 1-32 (Apr. 2017), https://calepa.ca.gov/wp-content/uploads/sites/6/2017/04/SB-535-Designation-Final.pdf.

[29] Section 39711 of the Health and Safety Code sets the ceiling for low-income communities at 120% of the area median income. Additionally, Section 39711 designates communities with disproportionate environmental impacts and concentrations of low income, high unemployment, low educational attainment, and other burdensome socioeconomic factors as disadvantaged communities. All eight counties of the San Joaquin Valley fall within these categories. *See Maps & Data,* CAL. OFFICE OF ENV'T HEALTH HAZARD ASSESSMENT, https://oehha.ca.gov/calenviroscreen/maps-data (last visited Apr. 9, 2021) (flagging areas of California that exhibit high to low pollution burdening scores). *Income Limits*, U.S. DEP'T OF HOUSING AND URBAN DEV., https://www.huduser.gov/portal/datasets/il.html#2020_data (last updated Apr. 1, 2020) (choose 30% Income Limit for ALL Areas (Excel)); *FY 2020 State Income Limits* (2020), U.S. DEP'T OF HOUSING AND URBAN DEV., https://www.huduser.gov/portal/datasets/il/il20/State-Incomelimits-Report-FY20r.pdf.

[30] *Quick Facts*, U.S. CENSUS, https://www.census.gov/quickfacts/fact/table/POP645219 (last visited Oct. 12, 2021).

[31] Poverty rates in every single county in the San Joaquin Valley also exceed poverty rates in California, with Merced, Tulare facing 17 and 18.9 percent poverty rates (as compared to 11.8 percent at the statewide level). *Quick Facts*, U.S. CENSUS, https://www.census.gov/quickfacts/fact/table/POP645219 (last visited Oct. 12, 2021).

[32] 310,000 people live in low-income unincorporated communities in the San Joaquin Valley – "this is 70,000 more than what the Census Bureau included in its low-income Census Designated Places in the San Joaquin Valley." POLICYLINK, *California Unincorporated: Mapping Disadvantaged Communities in the San Joaquin Valley* 9 (2013), https://www.policylink.org/sites/default/files/CA%20UNINCORPORATED_FINAL.pdf.

[33] Latino is the term used by the U.S. Census.

39.4 percent of residents classified as Latino. At least seven of eight San Joaquin Valley communities have a lower proportion of white residents as compared to the state as a whole.[34] Merced and Tulare counties have white, non-Latino populations of 26.5 and 27.7 percent, and Latino populations of 65.6 and 61 percent, respectively.[35] Like Merced and Tulare, Kern County also demonstrates much higher Latino populations than the rest of the state, with a Latino population of 54.6 percent.

The disproportionately low-income and Latina/o/e residents of the San Joaquin Valley are exposed to the worst air quality in the state by most measures and lower income communities in the San Joaquin Valley are disproportionately subject to water contaminated with nitrates, arsenic, and 1,2,3 TCP, among others. The San Joaquin Valley is classified as an area that fails to meet several federal health-based standards for fine particulate matter ($PM_{2.5}$).[36] According to the American Lung Association, the San Joaquin Valley cities of Fresno-Madera-Hanford and Bakersfield are the second and third most polluted with respect to short-term exposure to $PM_{2.5}$.[37] The Valley cities of Bakersfield, Fresno-Madera-Hanford, and Visalia are the first, second, and third most polluted with respect to long-term exposure to $PM_{2.5}$.[38] The Valley also violates health-based standards for ozone.[39] Bakersfield, Visalia, and Fresno-Madera-Hanford are the second, third, and fourth most ozone-polluted cities in the in United States.[40] The San Joaquin Valley contains about half of California's 300 public water systems that currently serve unsafe drinking water.[41] Over the past three decades, nitrate levels in drinking water have exceeded the federal maximum contaminant level of 45 mg/L NO_3 (equivalent to 10 mg/L nitrate-N) in an estimated 24 to 40% of domestic wells in different counties in the San Joaquin Valley, compared to 10 to 15% of California's overall water supply.[42]

This pollution impacts the health and well-being of San Joaquin Valley residents.[43] Short-term exposure to $PM_{2.5}$ pollution causes premature death, decreased lung function, exacerbates respiratory disease such as asthma, and causes increased hospital admissions.[44] Long-term

[34] According to recent census data, 36.5 percent of the state population is classified as white, non-Latino, while 7 of the 8 counties in the San Joaquin Valley have white, non-Latino populations that range from only 26.5 to 33.2 percent. *Quick Facts*, U.S. CENSUS, https://www.census.gov/quickfacts/fact/table/POP645219 (last visited Oct. 12, 2021).

[35] *Quick Facts*, U.S. CENSUS, https://www.census.gov/quickfacts/fact/table/POP645219 (last visited Oct. 12, 2021).

[36] 80 FED. REG. 18,528 (April 7, 2015); 81 FED. REG. 2,993 (January 20, 2016); 80 FED. REG. 2,206, 2,217 (January 15, 2015).

[37] AM. LUNG ASSN., *State of the Air 2021* 37, *available at* https://www.lung.org/getmedia/17c6cb6c-8a38-42a7-a3b0-6744011da370/sota-2021.pdf.

38 *Id.* at 38.

[39] 75 FED. REG. 24409 (May 5, 2010); 77 FED. REG. 30088, 30092 (May 21, 2012).

[40] AM. LUNG ASSN., *supra* note 37 at 36.

[41] Del Real, J.A., *They Grow the Nation's Food, but They Can't Drink the Water*, N.Y. TIMES (May 21, 2019), https://www.nytimes.com/2019/05/21/us/california-central-valley-tainted-water.html.

[42] Eli Moore, et al., *The Human Costs of Nitrate-contaminated Drinking Water in the San Joaquin Valley*, PAC. INST., 11 (2011), https://pacinst.org/publication/human-costs-of-nitrate-contaminated-drinking-water-in-the-san-joaquin-valley/.

[43] The COVID-19 pandemic has made exposure to particulate matter even more dangerous, further highlighting the health risks associated with air pollution from factory farm dairies and factory farm gas. Xiao Wu et al., *Air pollution and COVID-19 mortality in the United States: Strengths and limitations of an ecological regression analysis*, 6 SCI. ADVANCES 1 at 1-2 (Nov. 4, 2020), https://advances.sciencemag.org/content/6/45/eabd4049.

[44] AM. LUNG ASSN., *supra* note 37 at 37-38.

exposure can cause asthma and decreased lung function in children, increased risk of death from cardiovascular disease, and increased risk of death from heart attacks.[45] Nitrates in drinking water can cause serious illness and death in infants ("blue baby syndrome") and are linked to pregnancy complications and birth defects, Sudden Infant Death Syndrome, and respiratory tract infections and a number of different cancers in adults and children.[46]

CARB has acknowledged that $PM_{2.5}$ exposure alone "is responsible for about 1,200 cases of premature death in the Valley each year."[47] San Joaquin Valley residents, who CalEnviroScreen designate a "sensitive population," experience higher rates of asthma, low birth weight, and cardiovascular disease compared to state incidence rates.[48] The California Institute for Rural Studies estimates that the costs of these air quality-related health harms total over $6 billion per year in the San Joaquin Valley.[49] This pollution also impacts residents' quality of life. For example, children in the San Joaquin Valley suffer from lack of access to outdoor recreation – on days with especially poor air quality, which occurred 40 days in Kern County in 2018, local authorities recommend that schools hold recess indoors.[50]

III. CARB MUST EXCLUDE BIOMETHANE FROM DAIRY AND SWINE MANURE FROM THE LCFS OR IN THE ALTERNATIVE AMEND THE REGULATION TO ACCURATELY ACCOUNT FOR THE FULL CARBON INTENSITY OF THESE FUELS AND PROHIBIT CREDITS FROM NON-ADDITIONAL REDUCTIONS.

The LCFS violates sections 38560.5, 38562(b), 38562(d)(2), 38562.5 of the Health & Safety Code because it fails to achieve the maximum technologically feasible and cost-effective emissions reductions, fails to maximize additional environmental benefits, fails to ensure additionality of reductions, and exacerbates harms associated with industrial animal agriculture, including toxic air contaminants and dangerous water pollution. These failures prevent the state from maximizing greenhouse gas emissions reductions from transportation fuels and constitute a failure to use best scientific practices, as required by section 38562(e). Moreover, they harm San

[45] *Id*. at 38-39.
[46] WIS. DEP'T OF HEALTH SERV., *Infant Methemoglobinemia (Blue Baby Syndrome)*, https://www.dhs.wisconsin.gov/water/blue-baby-syndrome.htm (last updated Mar. 12, 2021).
[47] CAL. AIR RES. BD., *Clean-air plan for San Joaquin Valley first to meet all federal standards for fine particle pollution* (Jan. 24, 2019), https://ww2.arb.ca.gov/news/clean-air-plan-san-joaquin-valley-first-meet-all-federal-standards-fine-particle-pollution.
[48] *Indicators Overview*, CAL. OFFICE OF ENV'T HEALTH HAZARD ASSESSMENT, https://oehha.ca.gov/calenviroscreen/indicators#:~:text=Sensitive%20population%20indicators%20measure%20the,of%20their%20age%20or%20health (last visited Oct. 21, 2021); *see* AM. LUNG ASSN., *supra* note 37 at 23; Ashley E. Larsen et al., *Agricultural pesticide use and adverse birth outcomes in the San Joaquin Valley of California*, 6 NATURE COMMC'N 1, AT 4-8 (2007); Amy M. Padula et al., *Traffic-Related Air Pollution and Risk of Preterm Birth in the San Joaquin Valley of California*, 24(12) ANN EPIDEMIOL 1, 6-9; *see also* Robbin Marks, Nat. Res. Def. Council, *Cesspools of Shame: How Factory Farm Lagoons and Sprayfields Threaten Environmental and Public Health* (2001), https://www.nrdc.org/sites/default/files/cesspools.pdf.
[49] Lisa Kresge and Ron Strochlic, *Clearing the Air: Mitigating the Impact of Dairies on Fresno County's Air Quality and Public Health*, CAL. INST. FOR RURAL STUDIES 8, (Jul. 2007).
[50] Brendan Borrell, *California's Fertile Valley is Awash with Air Pollution*, MOTHERJONES (Dec. 10, 2018), https://www.motherjones.com/environment/2018/12/californias-fertile-valley-is-awash-in-air-pollution/. *See also Policies and Procedures for Poor Outdoor Air Quality Days*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DIST., http://www.valleyair.org/programs/ActiveIndoorRecess/intro.htm (last visited Oct. 12, 2021).

Joaquin Valley communities with increased air and water pollution from factory farm dairies subsidized by the LCFS – harms the Legislature sought to address when it enacted AB 32 and AB 197.[51] For all of these reasons, CARB should amend the LCFS to exclude all fuels derived from biomethane from swine and dairy manure.[52] If CARB fails to do so, it must at a minimum amend the regulation to capture the full life cycle of associated greenhouse gas emissions in both the established Tier 1 pathway and the customized Tier 2 pathways and amend the regulation to ensure credited reductions are additional.[53]

A. The fuel pathways for biomethane from dairy and swine manure fail to achieve the maximum technologically feasible and cost-effective emissions reductions.

AB 32 mandates that the early action measure regulations adopted by CARB "shall achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions from those sources or categories of sources, in furtherance of achieving the statewide greenhouse gas emissions limit."[54] CARB explicitly premised the adoption of the LCFS regulation on this mandate.[55] As written and in practice, however, the LCFS regulation does not incentivize, let alone achieve, the maximum emissions reductions in this sector due to the program's inflation of carbon intensity values for factory farm gas. These inflated credit values are the result of CARB's narrow interpretation of the life cycle emissions for factory farm gas. Moreover, CARB's failure to ensure that credited emissions reductions are additional to what otherwise would have occurred inject invalid credits into the overall market and allow fuel producers to emit more pollution.

By setting overly narrow system boundaries for the life cycle analysis of factory farm gas, the LCFS fails to account for emissions associated with a true "well-to-wheels" analysis, exaggerating the emissions reductions attributed to this fuel. AB 32 requires that market-based compliance mechanisms only credit "additional" emissions reductions, and thus exclude reductions already required by law or that otherwise would occur.[56] However, CARB has allowed the LCFS program to award credits generated from non-additional reductions at factory farms. Factory farm gas projects rely on multiple sources of revenue from grant programs, federal programs, and the Aliso Canyon settlement – all of this supplementary revenue renders reductions from factory farm gas projects either partially or fully non-additional, yet CARB has made no effort to prevent these non-additional credits from entering the market.

Because CARB has allowed grossly inflated carbon intensity scores to distort the market, and allowed non-additional reductions to generate credits, the LCFS perversely incentivizes bigger dairy and pig operations to generate more methane. As a result, credit revenue from dairy factory

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[51] CAL. HEALTH & SAFETY CODE § 38501 (the Legislature named the "exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems" as potential adverse impacts of climate change.)

[52] CAL. CODE REGS. TIT. 17 § 95488.3; CAL. CODE REGS. TIT. 17 § 95488.9(f)(1). *See* proposed amendments in Appendix A.

[53] *See* proposed amendments in Appendix B.

[54] CAL. HEALTH & SAFETY CODE § 38560.5.

[55] CAL. AIR RES. BD., RES. 19-27, (Nov. 21, 2019).

[56] CAL. HEALTH & SAFETY CODE § 38562(d)(2).

farm gas can be a more reliable income stream than milk revenue, propping up this high-emissions industry and further polluting nearby communities. Additionally, the financial windfall from these over-valued credits is traded to offset emissions from LCFS deficit holders. Together and separately, each of these violations undermines the LCFS program and constitutes a failure to achieve the maximum technologically feasible and cost-effective emissions reductions from transportation fuels in violation of AB 32.

1. The fuel pathways for biomethane from dairy and swine manure fail to incorporate life-cycle emissions, leading to inflated credits.

The LCFS over-values credits awarded to factory farm gas operations because the program omits significant emissions from the factory farm gas life cycle. Neither the established Tier 1 nor the customized Tier 2 pathways for biomethane from dairy and swine manure capture the greenhouse gas emissions associated with the full life cycle of factory farm gas. The pathways ignore both upstream and downstream emissions. In addition to setting overly narrow system boundaries, the factory farm gas life cycle analyses fail to properly account for the fact that the methane purportedly captured in the production of factory farm gas is intentionally created, resulting in an even more misleading accounting of associated climate harms. When the resulting inflated credits are traded, they allow LCFS deficit holders to achieve less than the required maximum technologically feasible and cost-effective reductions.

The LCFS requires a full "well-to-wheels" life cycle analysis to account for all emissions associated with a given fuel.[57] Such well-to-wheels accounting requires Tier 2 pathways to include "a description of all fuel production feedstocks used, including all pre-processing to which feedstocks are subject."[58] Likewise, applicants must provide:

> a detailed description of the calculation of the pathway CI. This description must provide clear, detailed, and quantitative information on process inputs and outputs, energy consumption, greenhouse gas emissions generation, and the final pathway carbon intensity, as calculated using CA-GREET3.0. Important intermediate values in each of the primary life cycle stages shall be shown. *Those stages include but are not limited to feedstock production and transport*; fuel production, fuel transport, and dispensing; co-product production, transport and use; waste generation, treatment and disposal; and fuel use in a vehicle.[59]

Feedstocks are the raw materials processed into fuel. The feedstock for factory farm gas is manure. Therefore, emissions from manure production and "pre-processing" must be included in the life cycle analysis for Tier 2 applicants. But the LCFS and CARB's implementation does not require their inclusion. For example, CalBioGas Kern Cluster's recent application begins the data-listing portion of its lifecycle analysis with the Dairy Livestock Input Data table.[60] This table does not provide an adequate analysis of the feedstock production energy input. In fact, this lifecycle

[57] CAL. CODE REGS. TIT. 17 § 95481(a)(66).
[58] CAL. CODE REGS. TIT. 17 § 95488.7(a)(2)(A)(2).
[59] CAL. CODE REGS. TIT. 17 § 95488.7(a)(2)(B) (emphasis added).
[60] CAL. AIR RES. BD., Low Carbon Fuel Standard Tier 2 Pathway Application B0198, *available at* https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/b0198_cover.pdf.

analysis contains no analysis pertaining to the emissions from the generation and processing of manure to produce the feedstock.

Accounting for the greenhouse gas emissions from the production and "pre-processing" of dairy or pig manure must include the inputs and infrastructure necessary to sustain a dairy cow or a pig: its food and water, the methane animals produce through enteric fermentation, the construction and maintenance of the lagoons required to hold manure, trucking livestock and other inputs, combustion of fuels at the dairy facility for electricity, and more. But the LCFS factory farm gas pathways only begin after the production of the manure itself, leaving out all upstream emissions generated formulating that manure.[61]

The regulation further enumerates that, "for fuels utilizing agricultural crops for feedstocks, the description [of feedstocks in the life cycle analysis report] shall include the agricultural practices used to produce those crops. This discussion shall cover energy and chemical use, typical crop yields, feedstock harvesting, transport modes and distances, storage, and pre-process (such as drying or oil extraction)."[62] In the Tier 2 pathways for ethanol production, this provision has been interpreted to include production and pre-processing of corn, the feedstock for ethanol. Similarly, the LCFS requires pathways that utilize organic material to "demonstrate that emissions are not significant beyond the system boundary of the fuel pathway," upon request.[63] Yet in the case of factory farm gas, none of the production and pre-processing of the feedstock is considered, making it an outlier in the LCFS program and out of compliance with section 95488.7.

The failure to include production and pre-processing of manure when calculating life cycle emissions is even more problematic because a common feed for dairy cows in California is distillers grains, a "co-product" of ethanol production. The designation of distillers grains as a "co-product" allows ethanol producers to split the emissions from corn production between the ethanol and distillers grains by weight, decreasing ethanol's carbon intensity in the LCFS analysis.[64] One ethanol industry blog noted that "the biggest factor for most of the low-CI scoring [ethanol] plants is the proportion of wet distillers grains sold locally."[65] Distillers grains are granted the "co-product" designation by virtue of the revenue they generate when sold as animal feed but because LCFS factory farm gas pathways do not account for production and pre-processing of manure, the emissions associated with distillers grains are never accounted for by the LCFS at all despite its

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[61] CAL. AIR RES. BD., *Compliance Offset Protocol Livestock Projects* (Nov. 14, 2014), Table 4.1, Description of all GHG Sources, GHG Sinks, and GHG Reservoirs; *see also* CAL. AIR RES. BD., Response to Animal Defense Legal Fund Comment, https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/new_temp_carb_response.pdf (CARB arguing that "Emissions from existing CAFO operations are accounted for, but do not include emissions associated with enteric methane and animal feed use because these emissions should more appropriately be allocated to and associated with the preexisting underlying, non-fuel product stream, and are thus excluded from the system boundary in the Board approved Tier 1 Calculator.")

[62] CAL. CODE REGS. TIT. 17 § 95488.7(a)(2)(A)(2).

[63] CAL. CODE REGS. TIT. 17 § 95488.9(f)(2)(B).

[64] CAL. AIR RES. BD., *Tier 1 Simplified CI Calculator Instruction Manual: Starch and Fiber Ethano*l (Aug. 13, 2018), *available at* https://ww2.arb.ca.gov/resources/documents/lcfs-life-cycle-analysis-models-and-documentation.

[65] Susanne Retka Schill, *Meeting the California Low Carbon Challenge*, ETHANOL PROD. MAGAZINE (Feb. 8, 2016), http://ethanolproducer.com/articles/13000/meeting-the-california-low-carbon-challenge.

role in two transportation fuel life cycles.[66] Some ethanol plants also incorporate factory farm gas from dairies as a process fuel, further lowering the ethanol's carbon intensity.[67] These "negative" upstream emissions from factory farm gas and negative downstream emissions from the use of distillers grains as dairy feed both reduce the LCFS carbon intensity of ethanol, which would likely not receive credits otherwise.

While downstream emissions from distillers grains in ethanol production are accounted for by excluding them from that fuel's carbon intensity calculation, the by-product of dairy and swine factory farm gas, digestate – which would *increase* the carbon intensity of factory farm gas – remains largely unaccounted for, even though the LCFS requires all Tier 2 pathway application lifecycle analyses to include:

> a description of all co-products, byproducts, and waste products associated with production of the fuel. That description shall extend to all processing, such as drying of distiller's grains, applied to these materials after they leave the fuel production process, including processing that occurs after ownership of the materials passes to other parties.[68]

Demonstrably, any storage, land-application, or composting of digestate falls within the meaning of the term 'process,' but the LCFS does not require, and no factory farm gas lifecycle analyses include emissions from digestate.

The process of anaerobic digestion can result in "changes in the manure composition" that alter ammonia (NH_3) and nitrous oxide (N_2O) emissions, depending upon the management strategy used.[69] In the United States, liquid effluent from factory farm gas production is primarily applied to land as fertilizer and digestate solids are composted and then land applied or used for bedding on-farm (See Figure 4 in Appendix C).[70] Digestate land application and composting result in emissions of nitrous oxide, which has a global warming potential 265 to 298 times that of carbon dioxide.[71] A recent study found that digested solids that were composted released such significant

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[66] Somerville, Scott, Daniel A. Sumner, James Fadel, Ziyang Fu, Jarrett D. Hart, and Jennifer Heguy, *By-Product Use in California Dairy Feed Has Vital Sustainability Implications*, ARE UPDATE 24(2) (2020) 5, University of California Giannini Foundation of Agricultural Economics.

[67] For example, a Tier 2 ethanol pathway for a plant in Pixley, California uses biomethane from dairies as a process fuel to transform starch from corn into ethanol. *GFP Ethanol, LLC dba Calgren Renewable Fuels GREET Pathway for the Production of Ethanol from Corn and Fueled by NG and Biogas from Two Local Dairy Digesters* (Sept. 20, 2018), https://ww2.arb.ca.gov/sites/default/files/classic//fuels/lcfs/fuelpathways/comments/tier2/t2n-1279_report.pdf.

[68] CAL. CODE REGS. TIT. 17 § 95488.7(a)(2)(A)(8).

[69] Michael A. Holly et al., *Greenhouse gas and ammonia emissions from digested and separated dairy manure during storage and after land application Agriculture*, 239 ECOSYSTEMS AND ENV'T 410, 418 (Feb. 15, 2017), https://doi.org/10.1016/j.agee.2017.02.007.

[70] Ron Alexander, *Digestate Utilization in The U.S.*, 53 BIO CYCLE 56 (Jan. 2012), https://www.biocycle.net/digestate-utilization-in-the-u-s/. Mohanakrishnan Logan & Chettiyappan Visvanathan, *Management strategies for anaerobic digestate of organic fraction of municipal solid waste: Current status and future prospects*, 37 WASTE MGT. & RES. 27, 27 (Jan. 28, 2019), https://doi.org/10.1177/0734242X18816793.

[71] Holly, *supra* note 69 at 411. Alun Scott & Richard Blanchard, *The Role of Anaerobic Digestion in Reducing Dairy Farm Greenhouse Gas Emissions*, 13 SUSTAINABILITY 2 (Mar. 1, 2021) https://doi.org/10.3390/su13052612; *Understanding Global Warming Potentials*, ENV'T PROT. AGENCY, https://www.epa.gov/ghgemissions/understanding-global-warming-potentials (last visited Oct. 21, 2021).

nitrous oxide emissions relative to undigested manure solids that the climate benefits of the captured methane from the digestion process were cancelled out.[72] Additionally, many operators choose to store digestate in open-air lagoons. Open-air storage can release methane, potentially negating methane captured during digestion, as well as ammonia, which is harmful to nearby communities in the San Joaquin Valley and a $PM_{2.5}$ precursor.[73]

Despite the significant emissions associated with digestate and the high global warming potential of methane and nitrous oxide, the LCFS fails to fully account for this inevitable by-product of factory farm gas production. Digestate treatment and storage is within the Tier 1 system boundary for anaerobic digestion of dairy and swine manure (described as "effluent"), but the pathway does not contemplate emissions associated with effluent after storage.[74] In contrast to Tier 1, the Tier 2 system boundary in the CA GREET3.0 calculator includes emissions from "AD Residue Applied to Soil," in other words, digestate that is land applied.[75] In practice, however, digestate is not mentioned in several recent Tier 2 applications for cluster projects.[76] Further, in responding to a comment criticizing a project's lack of accounting for digestate emissions, the applicant responded in a letter to CARB that "land application of effluent is outside of the scope of the project."[77] These contradictory descriptions of the system boundary as related to digestate highlight an inconsistent approach to the quantification of emissions from digestate. Moreover, neither the pathways nor the project application materials seem to account for digestate uses other than land application. This excludes any emissions associated with the solids composting. By failing to account for downstream emissions associated with land application and the massive nitrous oxide emissions from solids composting, CARB's life cycle analysis omits significant greenhouse gas emissions from factory farm gas production and further inflates the factory farm gas credit value.

The factory farm gas life cycle analyses also fail to include downstream emissions associated with transport. The LCFS factory farm gas pathways mention, but do not require reporting of inputs to calculate emissions generated from the refining and transport of factory farm gas. For example, the Tier 1 Calculator for factory farm gas *can* quantify emissions leaked or

[72] Holly, *supra* note 69 at 414, 418.
[73] *See generally* Yun Li et al., *Manure digestate storage under different conditions: Chemical characteristics and contaminant residuals*, 639 SCI. OF THE TOTAL ENV'T 19 (Oct. 15, 2018), https://doi.org/10.1016/j.scitotenv.2018.05.128 (discussing the impacts of open storage).
[74] CAL. AIR RES. BD., Tier 1 Simplified CI Calculator Instruction Manual: Biomethane from Anaerobic Digestion of Dairy and Swine Manure (Aug. 13, 2018), https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/ca-greet/tier1-dsm-im.pdf?_ga=2.63225775.1254208748.1633995805-239480191.1598055085.
[75] *LCFS Life Cycle Analysis Models and Documentation: California GREET3.0 Model,* CAL. AIR RES. BD., https://ww2.arb.ca.gov/resources/documents/lcfs-life-cycle-analysis-models-and-documentation (last visited July 29, 2021).
[76] *See* CAL. AIR RES. BD., *Fuel Pathway Table: Current Fuel Pathways*, *available at* https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities (last visited Oct. 19, 2021).
[77] Letter from Michael D. Gallo, Gallo Cattle Company Regarding "Tier 2 Pathway Application: Application No. B0089" (June 26, 2020), on file with CAL. AIR RES. BD., https://ww2.arb.ca.gov/sites/default/files/classic//fuels/lcfs/fuelpathways/comments/tier2/b0089_response.pdf.

vented from the digester and associated pipeline infrastructure—but the applicant is not *required* to calculate it.[78]

In addition to the failure to account for various upstream and downstream emissions from factory farm gas production, the LCFS life cycle analyses do not address the fact that these emissions are associated with *intentionally created* methane. LCFS factory farm gas pathways are intended to credit "reduction[s] of greenhouse gas emissions achieved by the voluntary capture of methane" or "avoided methane emissions."[79] This structure is premised on the idea that the manure used to produce the gas is unavoidable waste, whose emissions would not otherwise be diverted. But the massive quantity of manure methane emissions that CARB seeks to mitigate is the result of the intentional liquification of the manure, one of multiple manure management methods. While necessary to produce factory farm gas, the production of vast quantities of liquified manure is by no means an inevitable result of dairy or pig farming.[80] Alternative manure management techniques are available. Techniques such as solid-liquid separation, scrape and vacuum collection of manure, composting, and pasture-based practices are all viable methods of manure management that would avoid the methane emissions caused by open-air lagoons of liquid manure. Preliminary findings from CARB's Dairy and Livestock Greenhouse Gas Emissions Working Group indicate that these methods of manure management may offer more cost-effective methane emissions reductions than anaerobic digestion and may deliver additional environmental and health benefits, such as reduced impact on water quality.[81] Avoiding manure generation and reducing the amount of manure that has to be managed is the best way to protect human and animal health, along with the environment (see Figure 3 in Appendix C on Waste Management Hierarchy).[82] But the LCFS program does the opposite of promoting dairy manure avoidance or even lower-emissions manure management practices. Instead, the LCFS program has created a new revenue stream for factory farms based on the manure itself – the source of the methane the program seeks to reduce – incentivizing the production and liquification of manure as though it were a cash crop.

Additionally, "even RNG from waste methane can have negative climate impacts relative to the most likely alternative of flaring, not venting, the methane."[83] Flaring, like other forms of combustion, converts methane to carbon dioxide, reducing the net emissions impact. Flaring is a ubiquitous, low cost means of reducing methane. Though flaring is not a sustainable means to

[78] CAL. AIR RES. BD., *Tier 1 Simplified CI Calculator Instruction Manual: Biomethane from Anaerobic Digestion of Dairy and Swine Manure* 1, 8–9, 13–14 (Aug. 13, 2018), https://ww2.arb.ca.gov/sites/default/files/classic//fuels/lcfs/ca-greet/tier1-dsm-im.pdf?_ga=2.153600376.1744114239.1608082460-1114251839.1598731081.
[79] CAL. CODE REGS. TIT. 17 § 95488.9(f).
[80] *Animal Agriculture in the U.S. – Trends in Production and Manure Management*, LIVESTOCK AND POULTRY ENV'T LEARNING CMTY. (Mar. 5, 2019), https://lpelc.org/animal-agriculture-in-the-u-s-trends-in-production-and-manure-management/.
[81] CAL. AIR RES. BD., *Findings and Recommendations: Subgroup 1: Fostering Markets for Non-digester Projects, Senate Bill 1383 Dairy and Livestock Working Group* 3 (Oct. 12, 2018), https://ww2.arb.ca.gov/sites/default/files/2020-11/dsg1_final_recommendations_11-26-18.pdf.
[82] A reduction of waste is the preferred management method in the Environmental Protection Agency's waste management hierarchy for decision-making. *Waste Management Hierarchy and Homeland Security Incidents,* ENV'T PROT. AGENCY, https://www.epa.gov/homeland-security-waste/waste-management-hierarchy-and-homeland-security-incidents (last visited Oct. 12, 2021).
[83] Emily Grubert, *At Scale, Renewable Natural Gas Systems Could be Climate Intensive: The Influence of Methane Feedstock and Leakage Rates*, 15 084041 ENV'T RES. LETTERS Aug. 2020, 2.

reduce emissions, it should be the baseline to which any emissions reductions associated with anaerobic digestion are compared.

Moreover, because factory farm gas can be sold as a fuel and used to generate significant supplemental revenue from LCFS credits, over time "it is not only possible but expected…to increase methane production beyond what would have happened anyway."[84] Any manure production that has been incentivized by LCFS credit revenue will also result in intentionally created methane, which according to one recent study, *is always GHG-positive*.[85]

Finally, the Agro-Ecological Zone Emissions Factor (AEZ-EF) used to measure emissions from land-use change by CA-GREET3.0, and therefore by Tier 2 applicants, fails to account for the full impacts from the industrial dairy and pig facilities producing factory farm gas.[86] CARB's Executive Officer may require fuel producers to include six specific "feedstock/finished biofuel combinations," in their calculations.[87] These feedstocks include corn, sugarcane, sorghum grain ethanol, soy, canola, and palm biomass-based diesel.[88] Apart from land-use change related to livestock grazing (which is rarely relevant to industrial livestock operations), the AEZ-EF model does not address the land-use change associated with industrial dairy farming which are required for the production of factory farm gas.[89]

The overly narrow life cycle analysis in the factory farm gas pathways not only undermines the program's capacity to incentivize reductions, but violates AB 32's mandate that "[T]he state board shall rely upon the best available economic and scientific information and its assessment of existing and projected technological capabilities when adopting the regulations required by this section."[90] Scientific literature provides a more complete account of greenhouse gases emitted during the life cycle of factory farm gas produced from dairy and pig facilities. These analyses incorporate emissions from feed production, enteric fermentation, farm management and operations, and the treatment, use, or disposal of digestate residues produced during anaerobic digestion in addition to manure management emissions.[91] Omitting these essential stages from the LCFS factory farm gas pathways neglects a significant portion of emissions involved in producing

[84] *Id.* at 5.
[85] *Id*. at 4.
[86] CAL. CODE REGS. TIT. 17 § 95488.3.
[87] CAL. CODE REGS. TIT. 17 § 95488.3(d).
[88] *Id*.
[89] Richard J. Pelvin et al., *Agro-ecological Zone Emission Factor (AEZ-F Model): A model of greenhouse gas emissions from land-use change for use with AEZ-based economic models* 3, 31 (Feb. 21, 2014), https://ww2.arb.ca.gov/sites/default/files/classic//fuels/lcfs/lcfs_meetings/aezef-report.pdf.
[90] CAL. HEALTH & SAFETY CODE § 38562 (e). In Resolution 19-27, CARB itself stated that the LCFS "was developed using the best available economic and scientific information and will achieve the maximum technologically feasible and cost-effective reductions in GHG emissions from transportation fuel used in California." CAL. AIR RES. BD., RES. 19-27, *supra* note 55.
[91] *See, e.g.,* E. M. Esteves et al., *Life cycle assessment of manure biogas production: A review,* 218 J. CLEAN PROD. 411–423 (2019), https://doi.org/10.1016/j.jclepro.2019.02.091; E. Cherubini et al., *Life cycle assessment of swine production in Brazil: a comparison of four manure management systems*, 87 J. CLEAN PROD. 68–77 (2015), https://doi.org/10.1016/j.jclepro.2014.10.035; V. Paolini et al., *Environmental impact of biogas: A short review of current knowledge*, 53, J. ENV'T SCI. HEALTH A 899–906 (2018), https://doi.org/10.1080/10934529.2018.1459076.

manure and, as a result, the pathway treats manure as if it is produced from thin air or as if lagoons of liquid manure occur naturally in the San Joaquin Valley. [92]

The LCFS regulation mandates a full accounting of the aggregate life cycle emissions from a given fuel. In CARB Resolution 19-27, the agency reiterated that the "[d]etermination of a fuel's energy demand and carbon intensity value is based on a "well-to-wheel" analysis, which includes production and processing, distribution, and vehicle operation.[93] And yet the factory farm gas pathways leave glaring gaps in the life cycle analysis beyond the narrow system boundaries. The premise that manure originates in manure lagoons ready for capture with no attendant emissions defies logic, yet CARB has embraced this to create an absurdly low carbon intensity value and inflated credit generating industry.

2. The fuel pathways for biomethane from dairy and swine manure fail to ensure that credited emissions reductions are additional to reductions that would have otherwise occurred.

The LCFS prohibits awarding credits for emissions reductions that are already required by law.[94] As a market-based compliance mechanism, however, the LCFS must also prohibit the award of credits for "any other greenhouse gas emission reduction that otherwise would occur."[95] While CARB promulgated the LCFS as an early action measure, CARB designed and implemented the LCFS as a market-based compliance mechanism. CARB itself described the LCFS as a market-based mechanism when promulgating amendments to the LCFS:

> The LCFS is a market-based approach designed to reduce the carbon intensity of transportation fuels by 10 percent by 2020, from a 2010 baseline. It is important to note that the Cap-and-Trade Program and the LCFS program have complementary, but not identical programmatic goals: Cap-and-Trade is designed to reduce greenhouse gasses from multiple sources by setting a firm limit on GHGs; the LCFS is designed to reduce the carbon intensity of transportation fuels. As a market-based, fuel-neutral program, the LCFS provides regulated parties with flexibility to achieve the most cost-effective approach for reducing transportation fuels' carbon intensity. . . .

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92 A Naranjo et al., *Greenhouse Gas, Water, and Land Footprint Per Unit of Production of the California Dairy Industry Over 50 Years*, 103 J. DAIRY SCI. 3760–3773 (2020), https://www.journalofdairyscience.org/article/S0022-0302(20)30074-6/pdf; C. Alan Rotz et. al., *The Carbon Footprint of Dairy Production Systems Through Partial Life Cycle Assessment*, 93 J. DAIRY SCI. 1266–1282 (2010), https://doi.org/10.3168/jds.2009-2162; C. Alan Rotz, *Modeling Greenhouse Gas Emissions from Dairy Farms*, 101 J. DAIRY SCI. 6675–6690 (2018) https://www.sciencedirect.com/science/article/pii/S002203021731069X.

93 CAL. AIR RES. BD., RES. 19-27, *supra* note 55; *see also* CAL. AIR RES. BD., *Appendix D: Draft Environmental Analysis* (Jan. 2, 2015), https://ww2.arb.ca.gov/sites/default/files/classic/regact/2015/lcfs2015/lcfs15appd.pdf.

94 *See* CAL. CODE REGS. TIT. 17 § 95488.9(f)(1)(B) ("A fuel pathway that utilizes biomethane from dairy cattle or swine manure digestion may be certified with a CI that reflects the reduction of greenhouse gas emissions achieved by the voluntary capture of methane, provided that… the baseline quantity of avoided methane reflected in the CI calculation is additional to any legal requirement for the capture and destruction of biomethane.")

95 CAL. HEALTH & SAFETY CODE § 38562(d)(2).

> ARB staff disagrees that the LCFS is fundamentally a command-and-control system. The LCFS is a fuel-neutral, market-based program that does not give preference to specific transportation fuels and instead bases compliance on a system of credits and deficits based on each fuel's carbon intensity. Carbon intensity (CI) is a measure of the GHG emissions associated with the various production, distribution, and consumption steps in the "life cycle" of a transportation fuel. It is difficult to respond with depth to this assertion because the commenter provides no specifics to support the claim that the LCFS is not market-based. Notably, the commenter does not describe what components of the program could be considered command-and-control.[96]

Additionally, CARB's descriptions of the LCFS program closely parallel the statute's definition of "market-based compliance mechanism." The defintion states in relevant part that a market-based compliance mechanism is: "A system of market-based declining annual aggregate emissions limitations for sources or categories of sources that emit greenhouse gases."[97] CARB explains that the LCFS has a "market for credit transactions," where "entities with credits to sell can opt to pledge credits into the market and entities needing credits must purchase their pro-rata share of these pledged credits."[98] CARB explains that credits are generated relative "to a declining CI benchmark for each year."[99] The LCFS exhibits many if not most of the features of a market-based compliance mechanism, including a Cap-and-Trade allowance-like system with yearly declinations,[100] transaction rules,[101] recordkeeping and auditing requirements,[102] an account system to manage credit transfers – the LCFS Reporting Tool and Credit Bank & Transfer System (LRT-CBTS),[103] and a portal that applicants must use to demonstrate compliance,[104] among others. In addition to CARB's interpretation, designation, and treatment of the program as a market-based

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[96] CAL. AIR RES. BD., *Final Statement of Reasons for Rulemaking, Including Summary of Comments and Agency Response* 679-681 (2015), *available at* https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2015/lcfs2015/fsorlcfs.pdf. *See also* CAL. AIR RES. BD., *Responses to Comments on the Draft Environmental Analysis for the Amendments to the Low Carbon Fuel Standard and Alternative Diesel Fuel Regulations* at B4-42 (2018), https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2018/lcfs18/rtcea.pdf (CARB responding, "Because the LCFS is a market-based mechanism…"); CAL. AIR RES. BD., *Staff Discussion paper: Renewable Natural Gas from Dairy and Livestock Manure 6* (April 13, 2017), https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/lcfs_meetings/041717discussionpaper_livestock.pdf (in which CARB staff note in 2017 discussion paper that additionality requirements for the LCFS *are* intended to be identical to those of the compliance offset protocol, "ensure any crediting is for GHG reductions resulting from actions not required by law or beyond business as usual").

[97] CAL. HEALTH & SAFETY CODE § 38505(k). Note that this is one of two definitions provided.

[98] CAL. AIR RES. BD., *LCFS Basics* (2019), *available at* https://ww2.arb.ca.gov/sites/default/files/2020-09/basics-notes.pdf (last visited Oct. 12, 2021).

[99] *Low Carbon Fuel Standard: About*, CAL. AIR RES. BD., https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/about (last visited Oct. 12, 2021).

[100] *See* CAL. CODE REGS. TIT. 17 §§ 95482 – 95486.

[101] *See* CAL. CODE REGS. TIT. 17 § 95491.

[102] *See* CAL. CODE REGS. TIT. 17 § 95491.1.

[103] CAL. CODE REGS. TIT. 17 § 95483.2(b). ("The LRT-CBTS is designed to support fuel transaction reporting, compliance demonstration, credit generation, banking, and transfers.").

[104] *See* CAL. AIR RES. BOARD, *Low Carbon Fuel Standard – Annual Reporting and Verification User Guide* 3-4 (Aug. 9, 2021), https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/guidance/Reporting_and_Verification_User_Guide.pdf.

mechanism and the overall structure of the regulation evincing the same, the designation of California's LCFS as a market-based mechanism is ubiquitous in academic and technical literature.[105]

Because the LCFS is a market-based compliance mechanism, section 38562(d)(2) of the Health & Safety Code requires that CARB ensure greenhouse gas emissions reductions in the LCFS are "in addition to any greenhouse gas emission reduction otherwise required by law or regulation, and any other greenhouse gas emission reduction that otherwise would occur."[106] Additionality requirements are essential for market-based programs that operate with a declining emissions benchmark, like the LCFS. Because regulated parties are permitted to emit above the benchmark so long as they offset these emissions with the purchase of credits, the LCFS must ensure that credits reflect reductions that are additional to claim a net reduction. The additionality requirement enumerated in the LCFS currently is far too narrow. It requires only that reductions are "additional to any legal requirement for the capture and destruction of biomethane."[107] This weak language incorporates only one of the two prongs required by AB 32 and does not ensure that reductions are additional to those from other LCFS incentives. CARB should grant this petition and amend the LCFS to include the broader additionality requirement.

As implemented to date, the LCFS program allows generation, sale, and use of factory farm gas credits that are plainly not additional when the methane reductions attributed to these LCFS credits result from, and are attibuted to, other programs and revenue sources. The LCFS 1) allows the same emissions reductions to be counted and credited by multiple emission reductions programs; and 2) awards credits to facilities receiving public funding for anaerobic digesters and related infrastructure, even when that funding is contingent on the construction of this equipment.

Numerous state and federal funding opportunities, incentives, and other subsidies are available for anaerobic digestors at factory farms. The Aliso Canyon Mitigation Agreement that CARB negotiated with Southern California Gas Company (SoCalGas) legally requires SoCalGas to pay for methane reductions at factory farm dairies in California.[108] The parties intended the agreement to mitigate the harms from the most damaging man-made greenhouse gas leak in United States history – SoCalGas' ruptured well that released at least 109,000 metric tons of methane before it was sealed.[109] SoCalGas funds the construction of digesters, which are intended to mitigate the leaked methane, and receives "mitigation credits" for the associated emissions reductions. The conditions of the agreement legally require changes intended to reduce emissions

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[105] *See, e.g.,* CENTER FOR CLIMATE AND ENERGY SOLUTIONS, *Policy Considerations for Emerging Carbon Programs* 2 (June 2016), https://www.c2es.org/wp-content/uploads/2016/06/emerging-carbon-programs.pdf (describing Low Carbon Fuel Standards as an example of a market-based policy option, specifically of a baseline-and-credit program); *Regional Activities*, NATIONAL LOW CARBON FUEL STANDARD PROJECT, https://nationallcfsproject.ucdavis.edu/regional-activities/ (stating California's "LCFS is a market-based mechanism") (last visited Oct. 12, 2021).

[106] CAL. HEALTH & SAFETY CODE § 38562(d)(2).

[107] CAL. CODE REGS. TIT. 17 § 95488.9(f)(1).

[108] *People v. Southern California Gas Company,* Case Nos. BC602973 & BC628120, Appendix A to Consent Decree, Mitigation Agreement, *available at* https://www.arb.ca.gov/html/aliso-canyon/aliso-canyon-mitigation-agreement.pdf?_ga=2.146452402.708596706.1633463951-1172357510.1559256345.

[109] CAL. AIR RES. BD., *Responses to Frequently Asked Questions: Aliso Canyon Litigation Mitigation Settlement*, https://ww3.arb.ca.gov/html/aliso-canyon/aliso-canyon-faqs.pdf?_ga=2.67705041.1139070712.1533833674-1489205872.1532954259.

and yet at least eight facilities that receive this funding have also applied for LCFS credits for biomethane production. California Bioenergy sought LCFS credits for the S&S, Moonlight, Hamstra, Trilogy, Maple, T&W, BV Dairy, and Western Sky dairies.[110] These eight dairies are among seventeen that participate in the Aliso Canyon Mitigation Agreement.[111] Under no circumstances should mitigation for the Aliso Canyon disaster simultaneously qualify for credits generated and used in the LCFS.

Furthermore, the Legislature has appropriated public funds from the Greenhouse Gas Reduction Fund (GGRF) for several years to secure climate benefits. The California DDRDP, funded through the GGRF, provides funding for factory farm gas infrastructure. The California Department of Food and Agriculture describes the DDRDP as "financial assistance for the installation of dairy digesters in California, which will result in reduced greenhouse gas emissions."[112] Since 2015, the DDRDP has funded 117 dairy projects through the DDRDP, for a total of $195,025,884, and for which the CDFA claims 21,023,793 MTCO2e of methane reductions.[113] CARB also claims these reductions in a report to the Legislature on the climate benefits from these grants.[114] At least eight of these dairy projects, and likely many more, have received DDRDP grants and sought LCFS credits. For instance, California Bioenergy sought LCFS credits for the S&S, Moonlight, Hamstra, Trilogy, Maple, T&W, BV Dairy, and Western Sky dairies, all of which received DDRDP grants.[115] Importantly, the DDRDP purports to limit how grant monies may be used, but it does not prohibit a project from generating LCFS credits.[116]

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[110] *See* CAL. AIR RES. BD., Low Carbon Fuel Standard Tier 2 Pathway Application B0185, *available at* https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/b0185_cover.pdf; CAL. AIR RES. BD., Low Carbon Fuel Standard Tier 2 Pathway Application B0198, *available at* https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/b0198_cover.pdf.

[111] CAL. AIR RES. BD., *Aliso Canyon Natural Gas Leak, List of dairies involved in the mitigation agreement*, https://www.arb.ca.gov/html/aliso-canyon/aliso-canyon-mitigation-project-dairy-sites.pdf?_ga=2.216890962.535652136.1632321175-1949797088.1632171356.

[112] *Dairy Digester Research & Development Program*, CAL. DEPT. OF FOOD & AG., https://www.cdfa.ca.gov/oefi/ddrdp/ (last visited Oct. 19, 2021).

[113] CAL. DEPT. OF FOOD & AG., *CDFA Dairy Digester Research and Development Program Flyer (Sept. 2021)*, *available at* https://www.cdfa.ca.gov/oefi/ddrdp/docs/DDRDP_flyer_2021.pdf. (A list of all project recipients can be found at CAL. DEPT. OF FOOD & AG., *Dairy Digester Research and Development Program Project-Level Data (Sept. 17, 2021),* https://www.cdfa.ca.gov/oefi/DDRDP/docs/DDRDP_Project_Level_Data.pdf.)

[114] CAL. CLIMATE INVESTMENTS, *2021 California Climate Investments Annual Report*, Table 2 (2021), *available at* http://ww2.arb.ca.gov/sites/default/files/cap-and-trade/auctionproceeds/2021_cci_annual_report.pdf.

[115] *See* CAL. AIR RES. BD., Low Carbon Fuel Standard Tier 2 Pathway Application B0185 *available at* https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/b0185_cover.pdf; CAL. AIR RES. BD., Low Carbon Fuel Standard Tier 2 Pathway Application B0198, *available at* https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/b0198_cover.pdf.

[116] *See 2020 DDRDP Request for Grant Applications,* CAL. DEPT. OF FOOD & AG., https://www.cdfa.ca.gov/oefi/DDRDP/docs/2020_DDRDP_RGA_Public_Comments.pdf (last visited Oct. 5, 2021) ("Once a project has been awarded funds, the project may not: • Change or alter their biogas end-use during the project term. • Change the herd size beyond the limits established by the existing dairy operation's permits during the project term. • Change ownership of the dairy and/or partnership entities… • Duplicate equipment or activities that will receive funding from the California Public Utilities Commission (CPUC) pilot project authorized by California Health and Safety Code Section 39730.7(d)(2) (e.g., interconnection costs). *Note: Biogas conditioning and clean-up costs are allowable under the DDRDP.* • Commercial dairy operations that have already accepted, or plan to accept a grant award by CDFA's Alternative Manure Management Program (AMMP).") (emphasis added). Note that by allowing DDRDP funds to cover upgrade costs and other costs that the CPUC incentives program cannot, the CDFA has ensured that factory farm gas projects can benefit from multiple funding sources.

Other public funds authorized by the Legislature subsidize factory farm gas projects seeking to interconnect with utility natural gas pipelines.[117] This additional source of funds quickly became oversubscribed, prompting the California Public Utilities Commission to double the size of the program, all paid for with proceeds from sales of Cap-and-Trade allowances.[118] The California Public Utilities Commission went a step further, proposing in 2017 that participants in the SB1383 dairy biomethane Pilot Program could avoid the costs associated with gas production equipment, specifically gathering lines and "treatment equipment."[119] In what would be a major break with California energy precedent, ratepayers got to foot the bill.[120]

Projects receiving public funds should not, under the principles of additionality, also generate LCFS credits that allow emissions elsewhere; in this situation public funds essentially allow a transportation fuel deficit holder to emit more greenhouse gases and allow the factory farm gas project to generate a financial windfall. Under no circumstances did the Legislature intend for this perverse result to occur.

This is not a hypothetical concern: CARB recently proposed approval of Tier 2 Pathway applications B0185 and B0198 for eight dairy digester projects that have received both Dairy

[117] *See* CAL. PUB. UTILITIES COMM'N, Decision Adopting the Standard Renewable Gas Interconnection and Operating Agreement, R.13-02-008 COM/CR6/jnf at 12 (Dec. 17, 2020), *available at* https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M356/K244/356244030.PDF ("D.15-06-029 created a $40 million monetary incentive program "to encourage potential biomethane producers to build and operate biomethane projects within California that interconnect with the utilities" in accordance with AB 1900 (Gatto, 2012). This monetary incentive program was subsequently codified by AB 2313 (Williams, 2016)…The $40 million approved by the CPUC for the monetary incentive program is currently fully subscribed and there is a wait list for an additional $38.5 million worth of project funding.").

[118] *See Id.* at 14 ("After weighing the benefit of increased biomethane capture and use against the modest reduction in the California Climate Credit necessary to fully fund all existing biomethane projects, including those on the waitlist, we find it appropriate to provide an additional $40 million in funding from Cap-and-Trade allowance proceeds for the monetary incentive program to fund the biomethane projects that are currently on the wait list, bringing total funding to $80 million.").

[119] Decision establishing the implementation and selection framework to implement the dairy biomethane pilots required by Senate Bill 1383 at 7-8 (Dec. 18, 2017), *available at* https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M201/K352/201352373.PDF (". . . [T]he biomethane producers should own and operate the digesters and the biogas collection lines and treatment equipment to remove hydrogen sulfide and water from the raw biogas. Although we do not allow utilities to own these facilities, the costs associated with the biogas collection lines and treatment equipment will be recovered from the transmission rates of utility ratepayers through a reimbursement to the dairy biomethane producer. Natural gas utilities will own and operate all facilities downstream of the biogas conditioning and upgrading facilities, including pipeline laterals from such facilities, to the point of receipt and any pipeline extensions.").

[120] *Id.* ("Historically the costs of gathering, gas conversion to pipeline quality specifications, transportation from a gas production site to a conversion facility, transportation from the conversion facility to the pipeline, and pipeline interconnection costs have been borne by California natural gas producers as part of the commodity cost of gas since the late 1980s, as 'gathering costs' that the CPUC has ruled should be assigned to gas producers . . . . For the purposes of the Dairy Pilots, and consistent with the language of SB 1383, we are allowing cost recovery of the biogas collection lines owned by dairy biomethane producers, and allowing utilities to own and operate pipelines that carry biomethane from biogas conditioning and upgrading facilities to existing utility transmission systems and the interconnection facilities, without changing the requirements of D.89-12-016 for non-renewable natural gas producers . . . .").

Digester Research Development Program (DDRDP) and Aliso Canyon settlement funds.[121] Both programs claim credit for the methane reductions associated with the digester projects. If the LCFS system grants credits for these same reductions and allows a deficit holder to use those credits to demonstrate compliance with the LCFS, the reductions will be without question not additional. This absurd result allows excessive emissions and CARB must grant this petition to ensure LCFS program integrity.[122]

A wide range of other state and federal financial assistance is available to factory farms to support the construction and implementation of factory farm gas systems. This public financing comes in the form of grants, "production incentive payments, low-interest financing, tax exemptions and incentives, and permitting assistance."[123] The California Energy Commission provides funding for factory farm gas development through its Natural Gas Research and Development program.[124] The program provides $100 million annually to various fuel transportation projects, including factory farm gas.[125] The Environmental Quality Incentives Program (EQIP) is a federal program that provides matching funds for agricultural operations to contract with Natural Resources Conservation Service to develop technology or infrastructure with environmental benefits, including the construction of anaerobic digestion infrastructure.[126] The Rural Energy for America Program also provides federal funds to develop factory farm gas systems. *See* 7 U.S.C. § 8107.

The LCFS is demonstrably and avowedly a market-based compliance mechanism and is thus properly subject to the requirements of section 38562(d)(2). As the forgoing demonstrates,

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[121] These dairy digester projects also may participate in the California Public Utilities Commission pilot projects, as California Bioenergy projects, which would confer additional public funds. *See* CAL. PUB. UTILITIES COMM'N, Press Release: CPUC, CARB, and Department of Food and Agriculture Select Dairy Biomethane Proejcts to Demonstrate Connection to Gas Pipelines (December 3, 2018), *available at* https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M246/K748/246748640.PDF.

[122] This has caused confusion in Tier 2 application comments. For example, in comments on several applications, the Chair of the Board for the Kings County Board of Supervisors commented to ask how these applicants could participate in the LCFS without double counting reductions, given that they also participated in bioMAT. CARB did not respond to the comments. *See* CAL. AIR RES. BD., Comment Log Display, Doug Verboon, Comment 61 for Public Comments for LCFS Pathway Applications (tier2lcfspathways-ws) - 2nd Workshop (Nov. 25, 2020), https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/b0106_verboon_comments.pdf (commenting on Tier 2 Application B0106); CAL. AIR RES. BD., Comment Log Display, Doug Verboon, Comment 60 for Public Comments for LCFS Pathway Applications (tier2lcfspathways-ws) - 2nd Workshop (Nov. 25, 2020), https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/b0105_verboon_comments.pdf (commenting on Tier 2 Application B0105); CAL. AIR RES. BD., Comment Log Display, Doug Verboon, Comment 59 for Public Comments for LCFS Pathway Applications (tier2lcfspathways-ws) - 2nd Workshop (Nov. 25, 2020), https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/b104_verboon_comments.pdf (commenting on Tier 2 Application B0104).

[123] CAL. DAIRY CAMPAIGN, *Economic Feasibility of Dairy Digester Clusters in California: A Case Study* 45, (June 2013) https://archive.epa.gov/region9/organics/web/pdf/cba-session2-econ-feas-dairy-digester-clusters.pdf.

[124] *Natural Gas Research and Development Program*, CAL. ENERGY. COMM'N., https://www.energy.ca.gov/sites/default/files/2019-05/naturalgas_faq.pdf (last visited Oct. 18, 2021).

[125] *Clean Transportation Program*, CAL. ENERGY. COMM'N., https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program (last visited Oct. 18, 2021).

[126] Environmental Quality Incentives Program, NAT'L RES. CONS. SERVICE, https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/.

private and public funding either have been or could be used to reduce methane emissions from pig and dairy facilities.[127] The LCFS should not allow fuel producers to generate credits from such non-additional reductions that deficit holders then use to justify their excess emissions, undermining the integrity of the LCFS program.

3. CARB's crediting of non-additional reductions and the inflated credit value from CARB's failure to account for the full quantity of life-cycle emissions both incentivize increased manure generation and manure liquification and constitute a failure to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions.

Including inflated credits and credits for non-additional reductions contravenes the fundamental purpose of the LCFS: to reduce greenhouse gas emissions associated with transportation fuels. Inflated credits and credits for non-additional reductions have the effect of increasing manure generation and liquification, and its associated greenhouse gas emissions. Additionally, by purchasing inflated credits, deficit generators can more easily meet their compliance obligations without reducing their emissions. As a result of these deficiencies, the LCFS fails to achieve the maximum technologically feasible and cost-effective emissions reductions.

The factory farm gas industry is currently made profitable by the LCFS and similar programs. In fact, "[w]ell over 50% of the revenue from most projects generating credits comes from the [LCFS and Federal RIN] credits."[128] A recent report by a private investment firm on the promising growth prospects for factory farm gas concluded that "operators are not in the business of producing RNG, they are in the business of monetizing RNG's environmental attributes through various federal and state programs."[129] This is by design: the goal of the LCFS factory farm gas pathways is to incentivize the development of factory farm gas as an alternative fuel. This goal assumes incentivizing development of factory farm gas will result in a net decrease in manure methane emissions. But this assumption – the result of the deficient life cycle analysis and inclusion of non-additional reductions – is mistaken.

Increased profitability and growth of the factory farm gas industry does not necessarily entail a reduction in manure methane emissions from participating factory farms. Due to the poor design of the LCFS pathways for factory farm gas, the program encourages not only capture of manure methane, as intended, but increased production of that methane. Revenue from LCFS credits is an increasingly enticing source of potential profit for many factory farms. In the case of

[127] For this reason, LCFS credits also should not be issued to facilities that already operate digesters to produce low-CI electricity but seek to convert to producing biomethane, as no truly additional emissions reductions occur upon switching fuel production pathways.

[128] Annie AcMoody & Paul Sousa, *Western United Dairies, Interest in California Dairy Manure Methane Digesters Follows the Money*, CoBANK, at 4, (Aug. 2020), https://www.cobank.com/documents/7714906/7715329/Interest-in-California-Dairy-Manure-Methane-Digesters-Follows-the-Money-Aug2020.pdf/be11d7d6-80df-7a7e-0cbd-9f4ebe730b25?t=1603745079998.

[129] STIFEL EQUITY RESEARCH, *Energy & Power – Biofuels: Renewable Natural Gas, A Game-Change in the Race for Net-Zero* (March 8, 2021), *available at* https://static1.squarespace.com/static/53a09c47e4b050b5ad5bf4f5/t/60ad5a8802a04b71ca252414/1621973643907/Stifel+RNG+Analysis.pdf.

industrial dairy operations, these inflated credits provide certainty for operators seeking to maintain or expand herd sizes by providing significant additional income to supplement volatile milk revenue.[130] In 2017, CARB itself "assume[d] that California's LCFS credits [would] contribute revenue of $865,000" (assuming $100 per metric ton of CO_2).[131] The average LCFS credit price has increased significantly since this estimate was made, with 2020 prices hovering around $200 per metric ton of CO_2 (see Figure 5 in Appendix C). As a result, LCFS credits can be a more reliable income stream than milk. The LCFS not only encourages the development of factory farm gas systems but entrenches the underlying factory farms and even incentives expansion of these operations – the very sources of manure methane the factory farm gas credits are intended to reduce.

LCFS credits derive their value from recipients' ability to sell these credits to LCFS participants that generate deficits. Deficit-generating facilities include producers of conventional, high carbon intensity fuels such as gasoline and diesel fuels. This means that the life cycle analysis deficiencies and granting of credits for non-additional reductions not only incentivize increased emissions from factory farms, but also function to allow emissions in other transportation fuel industries.

Additionally, because economies of scale for anaerobic digesters favor larger herd sizes, factory farm gas producers have an incentive to produce more liquid manure, by either increasing herd size or participating in a digester cluster. This is the case for factory farm gas from both cows and pigs. In California, where most digesters use manure from lagoons to produce gas for pipeline transport, the technology requires a minimum of 2,000 cows to be economically feasible.[132] Scale is central to making the technology investment profitable, and "each additional 1,000 cows reduce the cost per cow of digester projects by 15-20%."[133] EPA AgSTAR admits that most methane digesters "are not economically viable until greater than 10,000 hogs are incorporated."[134]

The programmatic distortions described in parts III(A)(1) and (2) will drive the expansion of factory farms to supply factory farm gas, intentionally creating greenhouse gas emissions and localized pollution. CARB should rescind the factory farm gas pathways and preclude factory farm

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130 The milk price that dairy farmers receive has fluctuated considerably over the past two decades while costs have remained relatively constant. In 2015 and 2016, dairies experienced negative average residuals (see Table 2 in Appendix C). In 2017, annual milk revenue from "a farm with 2,000 cows producing 230 hundredweight per cow per year (the average in the San Joaquin Valley)" totaled nearly $7.6 million based on the milk price of $16.50 per hundredweight. After factoring in 2017 cost estimates by the California Department of Food and Agriculture (CDFA), the "net revenue at the typical dairy in the southern San Joaquin Valley amounted to zero." *See* Justin Ellerby, CAL. CENTER FOR COOP. DEV., *Challenges and Opportunities for California's Dairy Economy* 5 (2010); William Matthews and Daniel Sumner, *Contributions of the California Dairy Industry to the California Economy in 2018*, UNIV. OF CAL. AGRIC. ISSUES CENTER 17-18 (2019), https://aic.ucdavis.edu/wp-content/uploads/2019/07/CMAB-Economic-Impact-Report_final.pdf; Hyunok Lee. & Daniel A. Sumner, *Dependence on policy revenue poses risks for investments in dairy digester,* 72 CAL. AG. 226-235, 231 (2018), https://doi.org/10.3733/ca.2018a0037.

131 Hyunok Lee & Daniel A. Sumner, *supra* note 130 at 232.

132 GLOBAL DATA POINT, *California Incentives Spur Dairy Manure Methane Digester Developments*, GALE: BUSINESS INSIGHTS (Doc. No. A631672444) (Aug. 6, 2020).

133 *Id.*

134 ENV'T PROT. AGENCY, *AgSTAR, Project Development Handbook: A Handbook for Developing Anaerobic Digestion/Biogas Systems on Farms in the United States* 7-2, n. 58, https://www.epa.gov/sites/default/files/2014-12/documents/agstar-handbook.pdf (3rd Ed.).

gas from the LCFS program. In the alternative, CARB must amend the regulation to ensure that the carbon intensity values account for the full life cycle of dairy and pig facility emissions, including production and pre-processing of manure feedstock and downstream emissions associated with digestate land application and composting, and prohibit credits from non-additional reductions.

B. The fuel pathways for biomethane from dairy and swine manure fail to maximize additional environmental benefits and interfere with efforts to improve air quality.

The California Legislature directed CARB to design regulations in a manner that considers overall societal benefits, including other benefits to the environment and public health, and ensure that activities taken pursuant to the regulations do not interfere with the state's efforts to improve air quality.[135] The Legislature also declared, in enacting AB 32, that it intended that CARB design reduction measures in a manner that "maximizes additional environmental and economic cobenefits for California, and complements the state's efforts to improve air quality."[136] But so long as the LCFS program includes factory farm gas and incentivizes factory farm expansions and the resulting air pollution, it cannot maximize environmental benefits or improve air quality. Moreover, given these impacts, CARB has not adequately considered overall societal costs in the regulation's design.

Monetizing a waste stream, like manure, does not eliminate that waste. The material impacts of manure (and later digestate) remain, whether or not it generates revenue for confined animal feeding operations. Nearby communities must still contend with the harms from the production, transportation, storage, and processing of this waste. If anything, monetizing a waste stream like manure exacerbates these harms by disincentivizing waste reduction. Incentivizing larger herd sizes and the liquification of more manure exacerbates existing pollution to air, water, and land, and the associated public health harms from industrial dairy and pig facilities, in addition to increased greenhouse gas emissions.[137] Additionally, factory farm gas technology creates new and additional environmental and public health harms, including through the storage, composting, and land application of digestate.

The 3.9 million residents of the San Joaquin Valley face increased health risks from breathing polluted air.[138] Industrial dairy operations emit the ammonia that contributes to the some

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[135] CAL. HEALTH & SAFETY CODE § 38562(b)(4) ("Ensure that activities undertaken pursuant to the regulations complement, and do not interfere with, efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminant emissions."); CAL. HEALTH & SAFETY CODE § 38562(b*)(*6) ("Consider overall societal benefits, including reductions in other air pollutants, diversification of energy sources, and other benefits to the economy, environment, and public health."). *See also* CAL. HEALTH & SAFETY CODE § 38562.5 (making section 38562(b) applicable to regulations adopted to achieve reductions beyond the statewide greenhouse gas emissions limit).
[136] CAL. HEALTH & SAFETY CODE § 38501.
[137] *EPA Activities for Cleaner Air - San Joaquin Valley,* U.S. ENV'T PROT. AGENCY, https://www.epa.gov/sanjoaquinvalley/epa-activities-cleaner-air (last updated Mar. 6, 2019).
[138] Rory Carroll, *Life in San Joaquin valley, the place with the worst air pollution in America*, THE GUARDIAN (May 13, 2016), https://www.theguardian.com/us-news/2016/may/13/california-san-joaquin-valley-porterville-pollution-poverty.

of the worst long-term and short-term $PM_{2.5}$ pollution in the United States, which causes health problems such as asthma and has been linked to premature death as described *supra* in part II.[139] Industrial dairies are also the largest source of volatile organic compounds (VOCs), which contribute to the Valley's ozone (smog) air pollution crisis.[140] The digestate from factory farm gas production can emit even more hazardous VOCs during storage. An analysis of digestate from pig manure identified nearly 50 VOCs, 22 of which are labeled hazardous by the EPA.[141] Of these 22 hazardous VOCs, "8 were identified to be or likely to be carcinogenic, and 14 were identified to be harmful to other human organs or systems."[142]

Biogenic and anthropogenic emissions of VOCs and nitrogen oxides (NOx) both form ground-level ozone, the concentration of which is "directly affected by temperature, solar radiation, wind speed and other meteorological factors."[143] VOCs from corn silage at dairies alone would be the largest source in the Valley, with such emissions forming more ozone than the VOCs emitted by passenger vehicles.[144] Breathing in ground-level ozone can trigger a variety of dangerous health problems like throat irritation, chest pain, and congestion. It can also lead to severe lung damage, making infants and the elderly more vulnerable to health effects.[145] Ozone causes respiratory inflammation, increased hospital admissions for respiratory illness, decreased lung function, enhanced respiratory symptoms for people with asthma, increased school absenteeism, and premature mortality.[146] Evidence indicates that "adverse public health effects occur following exposure to elevated levels of ozone, particularly in children and adults with lung disease."[147] The San Joaquin Valley is classified as an extreme ozone nonattainment area for the 1997 and 2008 8-hour ozone standards.[148]

Industrial dairies are also the largest source of ammonia.[149] Factory farm gas production adds even more ammonia to San Joaquin Valley air: ammonia emissions from digestate increased 81% relative to raw manure.[150] Anaerobic digestion causes this increase in ammonia emissions, "due to an increased concentration of ammoniacal nitrogen."[151] In addition to its unpleasant odor,

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139 *Id.*

140 *See* SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DIST., *2016 Plan for the 2008 8-Hour Ozone Standard, Appendix B*, *available at* http://valleyair.org/Air_Quality_Plans/Ozone-Plan-2016/b.pdf.

141 Yu Zhang et al., *Characterization of Volatile Organic Compound (VOC) Emissions from Swine Manure Biogas Digestate Storage*, 10 ATMOSPHERE 1, 7 (2019), https://doi.org/10.3390/atmos10070411.

142 *Id.* at 8.

143 73 FED. REG. 16436, 16437 (March 27, 2008).

144 *See* Cody J. Howard, et al., *Reactive Organic Gas Emissions from Livestock Feed Contribute Significantly to Ozone production in Central California*, 44 ENV'T SCI. TECHNOL. 7 2309–2314 (2010), https://pubs.acs.org/doi/abs/10.1021/es902864u.

145 *Id.*

146 73 Fed. Reg. 16436, 16440 (March 27, 2008).

147 83 FED. REG. 61346, 61347 (November 29, 2018).

148 75 FED. REG. 24409 (May 5, 2010); 77 FED. REG. 30088, 30092 (May 21, 2012).

149 SAN JOAQUIN VALLEY AIR CONTROL DIST., 2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards, Appendix B and Appendix G, *available at* http://valleyair.org/pmplans/documents/2018/pm-plan-adopted/B.pdf and http://valleyair.org/pmplans/documents/2018/pm-plan-adopted/G.pdf.

150 *See* Holly, et al., *Greenhouse gas and ammonia emissions from digested and separated dairy manure during storage and after land disposal*, AG., ECOSYSTEMS AND ENV'T 239 (2017) 410–419, https://www.researchgate.net/publication/313731233_Greenhouse_gas_and_ammonia_emissions_from_digested_and_separated_dairy_manure_during_storage_and_after_land_application.

151 *Id.*

which degrades quality of life for nearby residents, ammonia "is corrosive and can be a powerful irritant to skin, eyes, and digestive and respiratory tissues."[152] Ammonia also reacts with oxides of nitrogen to form ammonium nitrate, the most significant component of the San Joaquin Valley's $PM_{2.5}$ pollution problem.[153] Homes located within a quarter mile of a dairy confined animal feeding operation have experienced higher concentrations of both ammonia and particulate matter.[154] In addition to the harms of PM2.5 describes above, larger particles of dust pollution from factory farm dairies also carry harmful allergens and endotoxins to nearby homes.[155] Endotoxins are a "powerful inflammatory agent" that can interact with other components and lead to respiratory issues, and allergens can worsen asthma symptoms.[156] A study in rural Washington found that higher exposure to pollution from confined animal feeding operations was associated with degraded lung function in children with asthma living nearby.[157]

Depending on the physical characteristics (temperature, pH, total solid content) and the speed and frequency of the mixing process used to treat it, digestate from factory farm gas production can release dangerous concentrations of hydrogen sulfide.[158] High hydrogen sulfide emission levels are associated with a total solid content of seven percent, "which is the most appropriate for pumping and mixing of dairy manure."[159] Increasing the speed and frequency of mixing while in storage can also contribute to higher hydrogen sulfide emissions from digestate.[160] These emissions can have severe impacts on human health, particularly farm workers, and can even lead to death.[161] Furthermore, hydrogen sulfide may be detected on fields where manure is sprayed for fertilizer, and the gaseous substance can be dispersed by the wind.[162] Hydrogen sulfide gas is a respiratory tract irritant and in higher concentrations or with longer exposure, it can cause a pulmonary edema.[163] The acute symptoms of hydrogen sulfide exposure include nausea, headaches, delirium, disturbed equilibrium, tremors, convulsions, and skin and eye irritation.[164]

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[152] D'Ann L. Williams et al., *Airborne cow allergen, ammonia and particulate matter at homes vary with distance to industrial scale dairy operations: an exposure assessment*, 10 ENV'T HEALTH 1, 3 (2011), https://doi.org/10.1186/1476-069X-10-72.

[153] SAN JOAQUIN VALLEY AIR CONTROL DIST., *2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards*, Appendix B and Appendix G, *available at* http://valleyair.org/pmplans/documents/2018/pm-plan-adopted/B.pdf and http://valleyair.org/pmplans/documents/2018/pm-plan-adopted/G.pdf.

[154] D'Ann Williams et al., *Cow allergen (Bos d2) and endotoxin concentrations are higher in the settled dust of homes proximate to industrial-scale dairy operations*, 26 J. EXPOSURE SCI. ENV'T EPIDEMIOLOGY 42, 46 (2016) https://doi.org/10.1038/jes.2014.57.

[155] *Id.*

[156] *Id.* at 42.

[157] Christine Loftus et al., *Estimated time-varying exposures to air emissions from animal feeding operations and childhood asthm*a, 223 INT. J. OF HYGIENE AND ENV'T HEALTH 192 (2020) https://doi.org/10.1016/j.ijheh.2019.09.003.

[158] Fetra J. Andriamanohiarisoamanana et al., *Effects of handling parameters on hydrogen sulfide emission from stored dairy manure*, 154 J. ENV'T MGMT. 110, 112-115 (2011), https://doi.org/10.1016/j.jenvman.2015.02.003.

[159] *Id.* at 115.

[160] *Id.* at 114.

[161] *Id.* at 110.

[162] *See* Agency for Toxic Substances and Disease Registry, Toxicological Profile for Hydrogen Sulfide and Carbonyl Sulfide, DEP'T OF HEALTH AND HUMAN SERVICES 27-138 (2016), https://www.atsdr.cdc.gov/toxprofiles/tp114.pdf; *See also* Amy Schultz et al., *Residential proximity to concentrated animal feeding operations and allergic and respiratory disease*, 130 ENV'T INT. 104911, 1 (2019), https://doi.org/10.1016/j.envint.2019.104911.

[163] *See* Agency for Toxic Substances and Disease Registry, *supra* note 162 at 27-138.

[164] *Id.*

Finally, inhalation of high concentrations or long-term exposure to hydrogen sulfide can result in extremely rapid unconsciousness and eventual death.[165]

Factory farm dairies also pollute the San Joaquin Valley's groundwater, primarily through the disposal of manure by land application on crops, which causes severe public health impacts to nearby communities. The Valley contains about half of California's 300 public water systems that currently serve unsafe drinking water.[166] This number does not include private wells and water systems serving fewer than 15 households. Unsafe water systems are concentrated in small towns and unincorporated communities.[167] Common pollutants in water from factory farm runoff include nitrogen, phosphorus, heavy metals, and pharmaceuticals.[168]

Nitrate contamination of water resources is one of the most widely documented environmental impacts in California's dairy-producing regions. Most nitrate contamination comes from chemical fertilizers and animal manure applied to fields.[169] Nitrogen application often far exceeds the crops' rate of nutrient intake and the soil's ability to absorb nutrients, which then leach into groundwater.[170] A study by University of California Davis found that 96% of nitrate pollution in the region comes from nitrogen applied to cropland, a third of which is in the form of animal manure.[171] The 2019 Central Valley Dairy Representative Monitoring Program reported that nitrate concentrations exceeded the maximum contaminant level in groundwater at all of the 42 dairy facilities.[172] The program identified the application of manure to crop fields as the main source of groundwater contamination, while finding other unaccounted nitrogen sources – too many cows – at the dairy facilities contributing to the excessive nitrate contamination.[173]

Between 1999 and 2008, seven out of eight counties in the San Joaquin Valley had above-average rates of Sudden Infant Death Syndrome which can be caused by nitrate contamination. 70% of San Joaquin Valley households believed their tap water to be unsafe when surveyed in 2011, and nitrate pollution still appears to be rising.[174] A 2016 study that mapped out the mass flows of nitrogen in the San Joaquin Valley, estimated that the health costs of total nitrate leaching to groundwater caused $500 million per year in health damages.[175] Application of biogas digestate, either as a liquid or composted solids,[176] will continue the trend in nitrate contamination in the San

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165 *Id.*
166 J.A. Del Real, *They Grow the Nation's Food, but They Can't Drink the Water*, N.Y. TIMES (May 21, 2019), https://www.nytimes.com/2019/05/21/us/california-central-valley-tainted-water.html.
167 *Id.*
168 JoAnn Burkholder et al., *Impacts from Waste from Concentrated Animal Feeding Operations on Water Quality*, 115 ENV'T HEALTH PERSPECTIVES 308, 308 (2007), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1817674/.
169 *The Sources and Solutions: Agriculture*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/nutrientpollution/sources-and-solutions-agriculture (last updated July 30, 2020).
170 *Id.*
171 Harter et al., *Addressing Nitrate in California's Drinking Water with a Focus on Tulare Lake Basin and Salinas Valley Groundwater*, CENTER FOR WATERSHED SCI., UNIV. CAL., DAVIS, 17 (2012).
172 CENTRAL VALLEY DAIRY REP. MONITORING PROG., *Summary Representative Monitoring Report* at 8 (Revised 2020).
173 *Id.*
174 *Id.* at 28.
175 Ariel I. Horowitz et al., *A multiple metrics approach to prioritizing strategies for measuring and managing reactive nitrogen in the San Joaquin Valley of California*, 11 ENV'T RES. LETTERS 1, 11 (2016).
176 Roger Nkoa, *Agricultural benefits and environmental risks of soil fertilization with anaerobic digestates: A review*, 34 AGRON. SUSTAIN. DEV. 473, 473–492 (2014).

Joaquin Valley in particular, compounding the increase from the LCFS's subsidizing increased manure production.

In addition to the emissions from digestate storage and land application, certain Tier 2 anaerobic digester facilities generate additional air pollutants using factory farm gas to power internal combustion engines that generate electricity onsite.[177] According to a 2015 study commissioned by CARB, this form of electricity generation produces criteria air pollutants, like NOx and particulate matter.[178] Furthermore, the study found this technology would increase NOx emissions by 10 percent, exacerbating air quality in the Valley, in violation of CARB's duty to ensure that its programs do not interfere with efforts to reduce air pollution.[179] The San Joaquin Valley Unified Air Pollution Control District also documents criteria pollutant emissions from electricity generation from factory farm gas.

For example, the Lakeview Dairy Biogas project in Kern County uses two internal combustion engines to produce over 1,000 kW of electricity on-site.[180] And this project, as permitted by the Air District with required pollution control technology, still emits 4.58 tons/year of NOx, 1.98 tons/year of PM10, and 3.18 tons/year of VOC.[181] Compared to a natural gas combined cycle plant in Avenal permitted by the Air District, the Lakeview digester project produces much higher levels of NOx, SOx, and VOC emissions per unit of electricity generated.[182] However, unlike the natural gas plant, Lakeview Dairy Biogas is not required to purchase offset emission reduction credits for the toxic air pollution emitted.[183] This facility *increases* air pollution. But California Bioenergy also sought for LCFS credits under a Tier 2 pathway application for the Lakeview Dairy project.[184] By allowing polluting facilities like Lakeview Dairy to generate credits for "renewable" natural gas, despite the harmful health impacts associated with emissions from the use of factory farm gas to generate electricity, CARB ignores its statutory obligation not to "interfere with, efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminant emissions."[185]

Because the LCFS has resulted in and will continue to incentivize an increase in dangerous pollution to the air, water, and land of the San Joaquin Valley, it fails to comply with section

[177] Arnaud Marjollet, *District Notice of Preliminary Decision*, San Joaquin Valley: Air Pollution Control (Mar. 22, 2016), http://www.valleyair.org/notiCes/Docs/2016/03-22-16_(S-1143770)/S-1143770.pdf; *see also* CAL. AIR RES. BD., Staff Summary, Tier 2 Pathway Application B0104, Lakeview Dairy, https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/b0104_summary.pdf.
[178] Marc Carreras-Sospedra et al., *Assessment of the Emissions and Energy Impacts of Biomass and Biogas Use in California* at 9-10 (Feb. 2015), https://ww2.arb.ca.gov/sites/default/files/classic//research/apr/past/11-307.pdf.
[179] *Id*. at 4, 13.
[180] Arnaud Marjollet, *supra* note 177.
[181] *Id*. at 14.
[182] Brent Newell, *Comments filed to California Energy Commission*, 4 (July 11, 2017), *available at* https://efiling.energy.ca.gov/GetDocument.aspx?tn=220110&DocumentContentId=29811; Arnaud Marjollet, *supra* note 177 at 20.
[183] *Id*.
[184] CAL. AIR RES. BD., Staff Summary, Tier 2 Pathway Application B0104, Lakeview Dairy, https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/b0104_summary.pdf.
[185] CAL. HEALTH & SAFETY CODE § 38562 (b).

38562(b) (4) and (6) of the Health and Safety Code. Additionally, the LCFS program violates the Legislature's intent, expressed in section 38501(h) of the Health and Safety Code, to maximize additional environmental benefits. CARB should grant this petition and exclude factory farm gas from the program to address these violations.

IV. CARB MUST EVALUATE AND AMEND THE LCFS TO REMEDY ITS DISPROPORTIONATE ADVERSE AND CUMULATIVE IMPACTS ON LOW-INCOME AND LATINA/O/E COMMUNITIES IN VIOLATION OF STATE AND FEDERAL LAW.

CA 11135 and Title VI of the Civil Rights Act impose an affirmative duty on CARB to ensure that its policies and practices do not have a discriminatory impact on the basis of race.[186] CA 12955 additionally prohibits any practice or program that has a discriminatory effect on members of protected classes with respect to housing opportunities, including with respect to the use and enjoyment of dwellings.[187] AB 32 requires CARB to ensure any activities undertaken in compliance with the statute do not disproportionately impact low-income populations, consider the social costs of greenhouse gas emissions, and design regulations in a manner that is equitable. CARB must assess and prevent the disparate impacts imposed by the LCFS to avoid further harm to communities and to comply with California and federal law.

A. LCFS credits and the subsequent trading of those credits incentivize activities that result in public health and environmental harms in disproportionately low-income and Latina/o/e communities, particularly in the San Joaquin Valley.

The LCFS harms communities that are disproportionately Latina/o/e and low-income. These harms stem from (1) the generation of revenue for factory farms in proportion to the amount of manure they produce, (2) the encouragement of anaerobic digestion resulting in additional environmental harms related to digestate, and (3) allowing credits to offset emissions and toxic air pollutants elsewhere in California. Each of these harms impact disproportionately low-income and Black, Indigenous, or People of Color communities.

In California, the award of LCFS credits for factory farm gas and the harms these credits incentivize are concentrated in the San Joaquin Valley.[188] Part III(A)(3) shows how the LCFS has the effect of exacerbating existing adverse impacts from factory farms by incentivizing increased production and liquification of manure. Part III(B) describes the extensive environmental and public health harms associated with the increase in liquified manure, as well as the new harms

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[186] CAL. GOV'T CODE § 11135; 42 U.S.C. § 2000d.

[187] CAL. GOV'T CODE § 12955.8; CAL. CODE REGS. TIT. 2 § 12161.

[188] The San Joaquin Valley hosts 89% of the state's dairy cow population, and all but one of its counties are ranked nationally for milk sales (See Table 3, Appendix C). CAL. DEP'T OF FOOD AND AGRIC., Small Dairy Climate Action Plan 1 (2018), https://www.cdfa.ca.gov/oefi/research/docs/CDFA_Summary_of_Final_Report.pdf; *See* Lori Pottinger, *California's Dairy Industry Faces Water Quality Challenges*, Public Institute of California (May 20, 2019), https://www.ppic.org/blog/californias-dairy-industry-faces-water-quality-challenges/ (all 117 DDRDP projects are in the Valley).

from digestate. Incentivizing expansion of factory farms may also negatively affect community and economic growth.[189] Part II shows that San Joaquin Valley communities impacted by these new and exacerbated harms are disproportionately Latina/o/e and disproportionately low-income. Part II also describes the preexisting cumulative harms impacting these communities: San Joaquin Valley residents experience "the worst" air pollution nationally, and high levels of drinking water and groundwater contamination, largely due to agricultural runoff.[190]

The LCFS's market-based structure shapes the distribution of adverse impacts imposed by its incentives. In addition to the harmful activities incentivized at credit-generating factory farm gas facilities, the LCFS facilitates harm by the deficit-generating facilities that purchase credits. In order to provide for the trading of credits and deficits, LCFS treats greenhouse gas emissions as fungible. This approach allows CARB to justify the greenhouse gas emissions from gasoline and diesel, for example, in excess of the program's benchmark when the producers of these fuels purchase the equivalent credits. This is viewed by CARB as a positive attribute of the LCFS program because it "lets the market decide" how to achieve the targeted emissions reductions. But treating emissions as fungible ignores the localized impacts of co-pollutants associated with the production, transport, and combustion of various transportation fuels. These harms do not disappear simply because a gasoline producer pays to justify its polluting practices. The sale of factory farm gas credits to LCFS deficit generators prolongs their ability to pollute, rather than make direct emissions reductions.

Given that LCFS deficit generators include producers of conventional fuels, such as gasoline, diesel, and compressed natural gas, there is good reason to believe that LCFS deficit generating industries may disproportionately harm low-income and Black, Indigenous, and People of Color – specifically Latina/o/e – communities. The vast majority of California oil and gas production is concentrated in the San Joaquin Valley and around Los Angeles.[191] California communities living in proximity to oil and gas extraction are known to be disproportionately low income and Latina/o/e.[192] In the San Joaquin Valley, the oil and gas industries are concentrated in Kern County, where residents are subject to the cumulative harms of petrochemical extraction in

[189] Research indicates that "concentration and industrialization of agricultural production removes more money from the community of which the farm is located than when smaller farms operate in the area." CHELSEA MACMULLAN, HUMANE SOC'Y OF THE U.S., DAIRY CAFOS IN CALIFORNIA'S SAN JOAQUIN VALLEY at 26 (2007), https://www.humanesociety.org/sites/default/files/archive/assets/pdfs/farm/macmullan_apa-2007_final.pdf. The ratio of payroll versus emissions produced by concentrated factory farm dairies ranks worse than the petroleum industry. *Id*. at 27. Additionally, factory farm dairy employees face greater health risks because of their proximity to air pollutants and bacteria. Working in the industry has been associated with respiratory diseases such as Chronic Bronchitis, Occupational Asthma, and Pharyngitis. *Id*. at 29. Lack of access to healthcare due to language barriers or undocumented status likely exacerbates these harms. *Id*.

[190] *See* Carroll, *supra* note 138; *see also* Burkholder, *supra* note 168 at 308.

[191] Judith Lewis Mernit, *The Oil Well Next Door: California's Silent Health Hazard*, YALE ENV'T 360 (March 31, 2021), https://e360.yale.edu/features/the-oil-well-next-door-californias-silent-health-hazard ("Kern County, as the southern end of the San Joaquin Valley, produces 70 percent of California' oil; the bulk of the rest comes out of Los Angeles.")

[192] *See, e.g.* Kyle Ferrar, *People and Production: Reducing Risk in California Extraction,* FRACTRACKER ALLIANCE, (Dec. 17, 2020), https://www.fractracker.org/2020/12/people-and-production/; John C. Fleming et al., *Disproportionate Impacts of Oil and Gas Extraction on Already "Disadvantaged" California Communities: How State Data Reveals Underlying Environmental Injustice*, https://www.essoar.org/doi/pdf/10.1002/essoar.10501675.1 (concluding that 77% of permits for oil and gas wells were issued in "communities with a higher-than-average percentage of residents living in poverty and/or communities with a majority non-white population").

addition to those of factory farm dairies. As noted in part II, Kern County has seen a recent increase in LCFS applications for factory farm gas pathways. Residents of Kern County already experience higher than average rates of Chronic Lower Respiratory Disease (CLRD), asthma, and respiratory system cancers.[193] The death rate from CLRD in Kern County from 2013 to 2016 was twelve times higher than the state's CLRD death rate during the same time period.[194] Exacerbation of CLRD cases is a primary reason for CLRD-related deaths.[195] In 2015 to 2016, 31.1% of children in Kern County had been diagnosed with asthma at some point in their life, compared to 15.2% of children statewide and 13.7% and 10.3% in Los Angeles County and Sacramento County, respectively.[196]

In addition to emissions from extraction and refining of these polluting fuels, LCFS credits can also be used to offset emissions from the combustion. The co-pollutants from these emissions likely impose disproportionate adverse impacts on low-income and Black, Indigenous, and People of Color communities in California. A 2014 analysis found that exposure to $PM_{2.5}$ from cars, trucks, and buses "is not equally distributed" across California.[197] More specifically, the analysis concluded that on average, "African American, Latino, and Asian Californians are exposed to more $PM_{2.5}$ pollution from cars, trucks, and buses than white Californians. These groups are exposed to $PM_{2.5}$ pollution 43, 39, and 21 percent higher, respectively, than white Californians."[198] Additionally, "[T]he lowest-income households in the state live where $PM_{2.5}$ pollution is 10 percent higher than the state average, while those with the highest incomes live where PM2.5 pollution is 13 percent below the state average."[199] Given that California's major diesel trucking corridors, Interstate 5 and State Highway 99, both run north-south directly through the San Joaquin Valley,[200] emissions from combustion of deficit-generating transportation fuels may well impose additional cumulative impacts on the same communities impacted by dairy factory farms as well as fossil fuel extraction and refining.

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[193] Yongping Hao et al., *Ozone, Fine Particulate Matter, and Chronic Lower Respiratory Disease Mortality in the United States*, 192(3) AM. J. OF RESPIRATORY AND CRITICAL CARE MED. 337, 337–341, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4937454/.

[194] Nick Perez, *Despite decades of cleanup, respiratory disease deaths plague California county*, ENV'T HEALTH NEWS (Dec. 4, 2018) https://www.ehn.org/chronic-respiratory-disease-california-2621765230/pollution-persists.

[195] Elizabeth Oelsner et al., *Classifying Chronic Lower Respiratory Disease Events in Epidemiologic Cohort Studies*, 13 ANNALS OF THE AM. THORACIC SOC'Y 1057, 1057 (July 2016) https://doi.org/10.1513/AnnalsATS.201601-063OC.

[196] *Summary: Asthma*, KIDSDATA, https://www.kidsdata.org/topic/45/asthma/summary?gclid=Cj0KCQiAst2BBhDJARIsAGo2ldWxDuxZNs3gzxS4Qj3s048YVqkp4LWQ_nwYs7DSID4FDRTTdSsgq1waAgyxEALw_wcB (last visited Oct. 21, 2021).

[197] UNION OF CONCERNED SCI., *Inequitable Exposure to Air Pollution from Vehicles in California 1 (Feb. 2019)*, https://www.ucsusa.org/sites/default/files/attach/2019/02/cv-air-pollution-CA-web.pdf

[198] *Id.*

[199] *Id.* at 2.

[200] David Lighthall and John Capitman, *The Long Road to Clean Air in the San Joaquin Valley: Facing the Challenge of Public Engagement* 8 (Dec. 2007), CENTRAL VALLEY HEALTH POL'Y INST., https://chhs.fresnostate.edu/cvhpi/documents/cvhpi-air-quality-report07.pdf

B. CARB must amend the LCFS regulation to come into compliance with CA 11135, CA 12955, and Title VI of the Civil Rights Act of 1964 and to prevent further discrimination.

CARB has an affirmative duty under CA 11135 to ensure that its policies and practices do not disproportionately impact residents on the basis of race, color, national origin, or ethnic group identification.[201] CA 11135's prohibition on discrimination applies to the LCFS because it meets the criteria of a program that is "conducted, operated, or administered" by CARB, a California state agency.[202] CA 12955 prohibits activities that limit housing opportunities for members of protected classes, including activities and programs that interfere with the use and enjoyment of one's dwelling or that results in the location of toxic, polluting, and/or hazardous land uses in a manner that adversely impacts the enjoyment of residence, land ownership, tenancy, or any other land use benefit related to residential use. The state is subject to the prohibitions included in the Fair Employment and Housing Act.[203] Title VI of the Civil Rights Act of 1964 and implementing regulations prohibit disparate impact discrimination on the basis of race by recipients of federal funds.[204] As a recipient of federal funding, CARB is subject to Title VI.[205]

As described above, the LCFS exacerbates harms in some San Joaquin Valley communities twice over: once when it incentives the expansion of factory farm dairies and anaerobic digestion, and again when the resulting credits are sold to justify the pollution from conventional transportation fuel production, distribution, and combustion. Some (and likely all) of these harms are imposed on communities that are disproportionately Latina/o/e. Additionally, the LCFS has the effect of defeating one of the objectives of AB 32 on a discriminatory basis: to maximize additional environmental benefits and complement efforts to reduce air pollution.

Not only are there "equally effective alternative practices" to achieve the goal of reducing transportation emissions, there are alternative practices that are demonstrably both more effective and less discriminatory.[206] Reducing net greenhouse gas emissions from transportation fuels is an important and legitimate goal. Sadly, the LCFS factory farm gas pathways fail to accomplish it. Therefore, California's greenhouse gas emissions targets provide no credible justification for the LCFS's discriminatory impacts. Moreover, there are other, less harmful agricultural practices that CARB could encourage to reduce net emissions. Rather than monetize the source of greenhouse gas emissions and related co-pollutants, CARB could encourage the direct reduction of emissions at their source by supporting practices such as solid-liquid separation, scrape and vacuum

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[201] CAL. GOV'T CODE § 11135.
[202] *Id.*
[203] CA Legis. 352 (2021), CAL. LEGIS. SERV. CH. 352 (A.B. 948), amending CAL. GOVT CODE 12955; 2 CCR 12005(v); 2 CCR 12060.
[204] 42 U.S.C. §2000d; 40 C.F.R. §7.
[205] CARB has received funds EPA, including, for example, over $11.8 million in 2020 to administer the Diesel Emissions Reduction Act. Soledad Calvino, *U.S. EPA awards over $11.8 million for clean diesel projects in California*, U.S. ENV'T PROT. AGENCY (San Francisco), Aug. 30, 2020, News Release, https://www.epa.gov/newsreleases/us-epa- awards-over-118-million-clean-diesel-projects-california.
[206] *See, e.g., Elston v. Talladega Count.*, 997 F. 2d at 1413.

collection of manure, composting, and pasture-based practices. Similarly, there are less harmful policy tools that could be used to produce these reductions.[207]

CARB bears the duty to evaluate the potentially discriminatory impacts of its policies and practices and to prevent these harms in the first place, which it failed to do in the design of the LCFS regulation and fails to do on an ongoing basis. To bring the LCFS into compliance with its civil right obligations, CARB must cease and desist from operating the LCFS program in such a way that results in unlawful, discriminatory impacts as proscribed by CA Gov't Code Sections 11135 and 12955, et seq., and Title VI of the Civil Rights Act of 1964. To this end, CARB must a) conduct a disparity analysis to evaluate the program and b) amend the LCFS regulation to ensure that it does not continue to disproportionately harm low-income and Latina/o/e communities. A disparity analysis must include an evaluation of the distribution of impacts from incentives created by credit generation, direct emissions from deficit generators facilitated by the trading of LCFS credits, and the distribution of emissions from the combustion of these fuels.[208]

C. CARB failed to design the LCFS regulation in a manner that is equitable and fails on an ongoing basis to consider the social costs of greenhouse gas emissions and ensure that the LCFS does not disproportionately impact low-income communities.

AB 32 mandated several safeguards to ensure equity and protect low-income communities in California from potential adverse impacts associated with the act's implementation. Section 38562(b)(2) of California Health and Safety Code requires that CARB design regulations "in a manner that is equitable" and "[ensure] that activities undertaken to comply with the regulations do not disproportionately impact low-income communities" to the extent feasible.[209] Section 38562(b)(2) also mandates that CARB "consider overall societal benefits, including reductions in other air pollutants, diversification of energy sources, and other benefits to the economy, environment, and public health."[210] Section 38562.5 further mandates that, "when adopting rules and regulations pursuant to this division to achieve emissions reductions beyond the state greenhouse gas emissions limit and to protect the state's most impacted and disadvantaged

[207] Environmental justice critiques of pollution trading schemes for their tendency to result in localized pollution that disproportionately impacts low-income and people of color communities are longstanding. *See, e.g., Environmental Justice Advocates Blast Emissions Trading Guide*, 10 INSIDE EPA'S CLEAN AIR REPORT 9, 6-7 (April 29, 1999), *available at* https://www.jstor.org/stable/48520963; Lily N. Chinn, *Can the Market Be Fair and Efficient? An Environmental Justice Critique of Emissions Trading*, 26 *Ecol. L. Quart.* 1 (1999), http://www.jstor.org/stable/24114004; Letter to the Biden-Harris Transition Team Re: EPA Administrator Appointment from Over 70 Environmental Justice Groups (December 2, 2020), *available at* https://1bps6437gg8c169i0y1drtgz-wpengine.netdna-ssl.com/wp-content/uploads/2020/12/2020-12-2-Nichols-letter.pdf.

[208] LCFS fuels originating from factory dairy farms include electricity, renewable natural gas, hydrogen, bio-compressed natural gas, bio-liquefied natural gas, and bio-liquefied-regasified-and recompressed (Bio-L-CNG). CAL. CODE REGS. TIT. 17, § 95481 (defining biogas, biomethane, and all LCFS fuels produced from biomethane).

[209] CAL. HEALTH & SAFETY CODE § 38562(b)(2). See also *Ass'n of Irritated Residents v. State Air Res. Bd.*, 206 Cal. App. 4th 1487, 1489 (2012).

[210] CAL. HEALTH & SAFETY CODE § 38562.

communities," the state board shall consider social costs.[211] CARB is currently out of compliance with each of these mandates and, accordingly, must cease and desist operation of the LCFS factory farm gas pathways unless and until it comes into compliance.

Section 38562(b)(2)'s charge to protect "low-income communities" includes "persons and families whose income does not exceed 120 percent of the area median income, adjusted for family size [...] in accordance with adjustment factors adopted and amended from time to time by the United States Department of Housing and Urban Development pursuant to Section 8 of the United States Housing Act of 1937."[212] Area median income covers "the median family income of a geographic area of the state."[213] The residents of the San Joaquin Valley are precisely the low-income communities Sections 38562 seek to protect. As demonstrated above, the LCFS factory farm gas pathways have a disproportionate adverse impact on the basis of race and income, demonstrating CARB's failure to have designed the regulations in a manner that is equitable.

Finally, 38562(b)(2) requires consideration of overall societal benefits. CARB must amend the LCFS regulation to account for this and remedy these violations to come into compliance with AB 32. In Section 38562.5 of California Health and Safety Code, social costs means "an estimate of the economic damages, including, but not limited to, changes in net agricultural productivity; impacts to public health; climate adaptation impacts, such as property damages from increased flood risk; and changes in energy system costs, per metric ton of greenhouse gas emission per year."[214] The greenhouse gas emissions and associated co-pollutants from the production of factory farm gas has significant socials costs to public health, as discussed extensively in parts III and IV(B). Amending the LCFS to account for a serious consideration of the social costs of the emissions associated with both factory farm gas and the conventional fuels that generate deficits would not only bring CARB into compliance with Section 38562.5, but it would assist CARB in understanding and evaluating the inequitable distribution of adverse impacts in a manner that supports civil rights compliance, a described above.

V. CARB'S LACK OF TRANSPARENCY DENIES THE PUBLIC THE ABILITY TO REVIEW AND CHALLENGE EXISTING REGULATIONS, INCLUDING THE LCFS PATHWAYS FOR BIOMETHANE FROM DAIRY AND SWINE MANURE.

Meaningful public participation and advocacy regarding the impacts of the LCFS program have been hindered by CARB's lack of transparency. Locations of facilities purchasing the credits generated by factory farm dairies in the San Joaquin Valley are unknown to the public and attempts to obtain trading data through the California Public Records Act has produced only heavily redacted records. Without readily available trading data, it is difficult to determine potential disparate impacts caused by both the incentives produced by credit generation and the offsetting role of credit trading within the LCFS program. Community groups and advocates should not have

[211] CAL. HEALTH & SAFETY CODE § 38562.5. Note that the 2018 amendments made the LCFS generate reductions beyond the statewide limit.
[212] CAL. HEALTH & SAFETY CODE § 50093.
[213] *Id.*
[214] CAL. HEALTH & SAFETY CODE § 38506.

to seek out this information to conduct their own analyses of CARB's potentially discriminatory policies. CARB's control over the trading data places the agency in the best position to assess the disparate impact produced by the LCFS. Moreover, CARB has a clear, affirmative duty to comply with AB 32, CA 11135, and Title VI and prevent a disparate impact from its policies and practices.

VI. CONCLUSION

Since the Legislature enacted AB 32 in 2006, both the predicted and actual climate change-related harms have become more dire.[215] The methane generated by factory farm dairies in California alone accounts for approximately 45 percent of the state's total methane emissions that contribute to these harms.[216] And the Intergovernmental Panel on Climate Change recently declared a climate code red when it called for strong, sustained, and rapid methane reductions to stabilize our climate.[217]

CARB must grant this petition and reform the LCFS. Rather than allow factory farm gas reductions to substitute for emissions increases from the transportation sector, CARB should amend the LCFS to exclude factory farm gas from this pollution trading scheme.[218] If CARB instead decides to continue allowing Big Oil & Gas to offset their transportation fuel emissions with factory farm gas, then CARB must (1) ensure that the LCFS does not inflict disparate impacts in violation of CA 11135, CA 12955, and Title VI of the Civil Rights Act; and (2) adopt all alternative LCFS amendments requested here to ensure LCFS integrity and protections for rural communities.

CARB must take this opportunity to reform a pollution trading scheme that has gone off the rails. The LCFS incentivizes more of that which it purports to control, allows inflated and illusory credits from factory farm gas to authorize more emissions from transportation fuel, refuses to acknowledge the truth that liquefied manure is intentionally created and not somehow naturally occurring awaiting only abatement, and authorizes non-additional credits generated at projects receiving massive incentives from public funds and the Aliso Canyon settlement agreement. This pollution trading scheme merely shifts emissions; it benefits Big Oil & Gas to allow more pollution from their transportation fuels. It benefits, entrenches, and expands the industrial dairy and pig industry with a revenue stream more valuable than milk. And it benefits the gas utilities that

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[215] *See, e.g.*, Thomas Fuller and Christopher Flavelle, *A Climate Reckoning in Fire-Stricken California*, N.Y. TIMES (Sept. 10, 2020), https://www.nytimes.com/2020/09/10/us/climate-change-california-wildfires.html; Christopher Flavelle, *How California Became Ground Zero for Climate Disasters*, N.Y. TIMES (Sept. 20, 2020), https://www.nytimes.com/2020/09/20/climate/california-climate-change-fires.html; Nadja Popovich, *How Severe Is the Western Drought? See For Yourself.*, N.Y. TIMES (Sept. 20, 2020), https://www.nytimes.com/interactive/2021/06/11/climate/california-western-drought-map.html.

[216] CAL. AIR RES. BD., Short-Lived Climate Pollutant Reduction Strategy 56, Figure 4 (March 2017), https://ww2.arb.ca.gov/sites/default/files/2020-07/final_SLCP_strategy.pdf.

[217] IPCC, *Climate Change 2021: the Physical Science Basis, which represents the findings of Working Group I and its contribution to the Sixth Assessment Report*, *available at* https://www.ipcc.ch/report/ar6/wg1/.

[218] Petitioners do not suggest that methane from industrial dairy and pig facilities should be unabated. CARB has authority to adopt mandatory regulations to achieve up to a 40 percent reduction from manure methane emissions pursuant to Health & Safety Code § 39730.5.

desperately attempt to perpetuate the combustion of gas in the face of a future where electrified buildings and transportation are the only routes to achieve California's climate goals. San Joaquin Valley communities should not suffer the discriminatory effects of CARB's pollution trading scheme, and CARB should grant this petition and deliver environmental justice.

Respectfully Submitted this 27th of October, 2021,

Ruthie Lazenby
Vermont Law School
Environmental Justice Clinic

Brent Newell
Public Justice

Phoebe Seaton
Leadership Counsel for
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Tom Frantz
Association of Irritated Residents

Tarah Heinzen
Tyler Lobdell
Food & Water Watch

Cristina Stella
Christine Ball-Blakely
Animal Legal Defense Fund

I. APPENDICES

A. APPENDIX A: PROPOSED AMENDMENTS TO THE LCFS TO REMOVE ALL FUELS DERIVED FROM BIOMETHANE FROM DAIRY AND SWINE MANURE

§ 95488.3. Calculation of Fuel Pathway Carbon Intensities

(a) Calculating Carbon Intensities. Fuel pathway applicants and the Executive Officer will evaluate all pathways based on life cycle greenhouse gas emissions per unit of fuel energy, or carbon intensity, expressed in gCO2e/MJ. For this analysis, the fuel pathway applicant must use CA-GREET3.0 model (including the Simplified CI Calculators derived from that model) or another model determined by the Executive Officer to be equivalent or superior to CA-GREET3.0.

(b) CA-GREET3.0. The CA-GREET3.0 model (August 13, 2018) contains emission factors for calculating greenhouse gas emissions from site-specific inputs to fuel pathways and standard values for parts of the life cycle not included in applicant-specific data submission. The model is open source and publicly available at http://www.arb.ca.gov/fuels/lcfs/lcfs.htm and is incorporated herein by reference. CA-GREET3.0 includes contributions from the Oil Production Greenhouse Gas Estimator (OPGEE2.0) model (for emissions from crude extraction) and Global Trade Analysis Project (GTAP-BIO) together with the Agro-Ecological Zone Emissions Factor (AEZ-EF) model for land use change (LUC).

Tier 1 Simplified CI Calculators, which incorporate emission factors and life cycle inventory data from the CA-GREET3.0 model, are used to calculate carbon intensities for Tier 1 pathways. The eight Simplified CI Calculators listed below are publicly available at http://www.arb.ca.gov/fuels/lcfs/lcfs.htm and are incorporated herein by reference:

(1) Tier 1 Simplified CI Calculator for Starch and Fiber* Ethanol (August 13, 2018)

(2) Tier 1 Simplified CI Calculator for Sugarcane-derived Ethanol (August 13, 2018)

(3) Tier 1 Simplified CI Calculator for Biodiesel and Renewable Diesel (August 13, 2018)

(4) Tier 1 Simplified CI Calculator for LNG and L-CNG from North American Natural Gas (August 13, 2018)

(5) Tier 1 Simplified CI Calculator for Biomethane from North American Landfills (August 13, 2018)

(6) Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Wastewater Sludge (August 13, 2018)

~~(7) Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Organic Waste (August 13, 2018)~~

© OPGEE2.0. The OPGEE2.0 model is used to generate carbon intensities for crude oil used in the production of ultra-low sulfur diesel (ULSD) and California Reformulated Gasoline Blendstock for Oxygenate Blending (CARBOB).

(d) Accounting for Land Use Change. The Executive Officer calculates LUC effects for certain crop-based biofuels using the GTAP model (modified to include agricultural data and termed GTAP-BIO) and the AEZ-EF model. LUC values for six feedstock/finished biofuel combinations are provided in Table 6 below. The Executive Officer may use the same modeling framework to assess LUC values for other fuel or feedstock combinations, not currently found in Table 6, as part of processing a pathway application. Alternatively, the Executive Officer may require a fuel pathway applicant to use one of the values in Table 6, if the Executive Officer deems that value appropriate to use for a fuel or feedstock combination not currently listed in Table 6.

Table 6. Land Use Change Values for Use in CI Determination

Biofuel	LUC (gCO<2>/MJ
Corn Ethanol	19.8
Sugarcane Ethanol	11.8
Soy Biomass-Based Diesel	29.1
Canola Biomass-Based Diesel	14.5
Grain Sorghum Ethanol	19.4
Palm Biomass-Based Diesel	71.4

* Fiber in this case refers to corn and grain sorghum fiber exclusively.

§ 95488.9. Special Circumstances for Fuel Pathway Applications.

(f) Carbon Intensities that Reflect Avoided Methane Emissions from Dairy and Swine Manure or Organic Waste Diverted from Landfill Disposal.

(1) A fuel pathway that utilizes biomethane from dairy cattle or swine manure digestion ~~may~~ shall not be certified.~~ With a CI that reflects the reduction of greenhouse gas emissions achieved by the voluntary capture of methane, provided that:~~

~~(A) A biogas control system, or digester, is used to capture biomethane from manure management on **dairy** cattle and swine farms that would otherwise be vented to the atmosphere as a result of livestock operations from those farms.~~

~~(B) The baseline quantity of avoided methane reflected in the CI calculation is additional to any legal requirement for the capture and destruction of biomethane.~~

B. APPENDIX B: PROPOSED AMENDMENTS TO REFORM THE LCFS PATHWAYS FOR BIOMETHANE FROM DAIRY AND SWINE MANURE

§ 95488.3. Calculation of Fuel Pathway Carbon Intensities

(a) Calculating Carbon Intensities. Fuel pathway applicants and the Executive Officer will evaluate all pathways based on life cycle greenhouse gas emissions per unit of fuel energy, or carbon intensity, expressed in gCO2e/MJ. For this analysis, the fuel pathway applicant must use CA-GREET3.0 model (including the Simplified CI Calculators derived from that model) or another model determined by the Executive Officer to be equivalent or superior to CA-GREET3.0.

(b) CA-GREET3.0. The CA-GREET3.0 model (August 13, 2018) contains emission factors for calculating greenhouse gas emissions from site-specific inputs to fuel pathways and standard values for parts of the life cycle not included in applicant-specific data submission. The model is open source and publicly available at http://www.arb.ca.gov/fuels/lcfs/lcfs.htm and is incorporated herein by reference. CA-GREET3.0 includes contributions from the Oil Production Greenhouse Gas Estimator (OPGEE2.0) model (for emissions from crude extraction) and Global Trade Analysis Project (GTAP-BIO) together with the Agro-Ecological Zone Emissions Factor (AEZ-EF) model for land use change (LUC).

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(5) Tier 1 Simplified CI Calculator for Biomethane from North American Landfills (August 13, 2018)

(6) Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Wastewater Sludge (August 13, 2018)

(7) Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Organic Waste (August 13, 2018)

(c) OPGEE2.0. The OPGEE2.0 model is used to generate carbon intensities for crude oil used in the production of ultra-low sulfur diesel (ULSD) and California Reformulated Gasoline Blendstock for Oxygenate Blending (CARBOB).

(d) Accounting for Land Use Change. The Executive Officer calculates LUC effects for certain crop-based biofuels using the GTAP model (modified to include agricultural data and termed GTAP-BIO) and the AEZ-EF model. LUC values for six feedstock/finished biofuel combinations are provided in Table 6 below. The Executive Officer may use the same modeling framework to assess LUC values for other fuel or feedstock combinations, not currently found in Table 6, as part of processing a pathway application. Alternatively, the Executive Officer may require a fuel pathway applicant to use one of the values in Table 6, if the Executive Officer deems that value appropriate to use for a fuel or feedstock combination not currently listed in Table 6.

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Grain Sorghum Ethanol	19.4
Palm Biomass-Based Diesel	71.4

* Fiber in this case refers to corn and grain sorghum fiber exclusively.

<u>(e) Accounting for life cycle emissions for all fuel pathways from manure feedstock. In calculating the carbon intensity of any fuel derived from manure feedstock, the Executive Officer shall include all upstream and downstream greenhouse gas emissions from all activities associated with manure production, including but not limited to feed emissions, mobile and stationary source combustion emissions, enteric emissions, emissions from composting digestate solids, emissions following land application, and indirect source emissions.</u>

§ 95488.9. Special Circumstances for Fuel Pathway Applications.

(f) Carbon Intensities that Reflect Avoided Methane Emissions from Dairy and Swine Manure or Organic Waste Diverted from Landfill Disposal.

(1) A fuel pathway that utilizes biomethane from dairy cattle or swine manure digestion may be certified with a CI that reflects the reduction of greenhouse gas emissions achieved by the voluntary capture of methane, provided that:

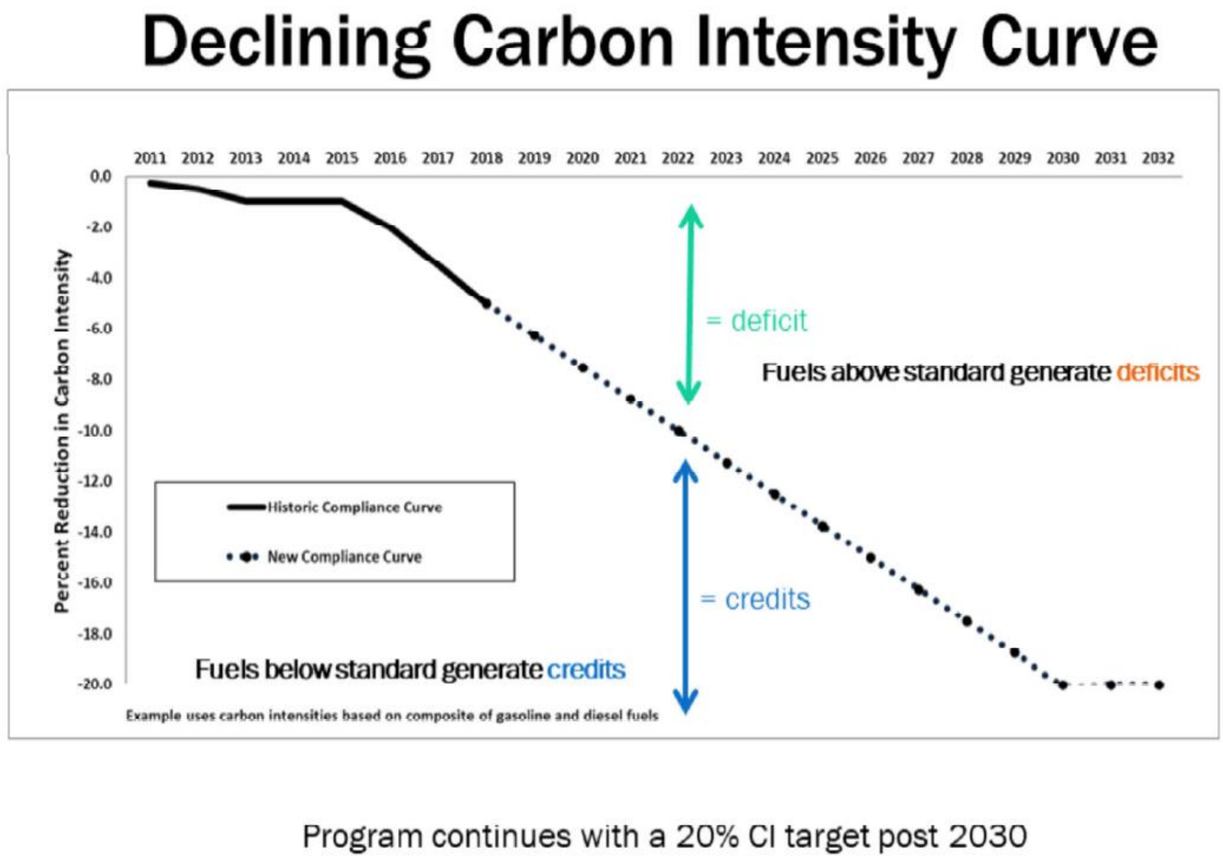
(A) A biogas control system, or digester, is used to capture biomethane from manure management on dairy cattle and swine farms that would otherwise be vented to the atmosphere as a result of livestock operations from those farms.

(B) The baseline quantity of avoided methane reflected in the CI calculation is additional to any legal requirement for the capture and destruction of biomethane, and any other greenhouse gas emission reduction that otherwise would occur.

(C) The fuel pathway derived from biomethane from dairy cattle or swine manure digestion pursuant to section 95488.3(e) does not (1) contribute any amount of nitrogen oxides, volatile organic compounds, sulfur oxides, ammonia, or particulate matter with an aerodynamic diameter of ten microns or less into the ambient air; (2) cause or contribute to groundwater or surface water pollution or degradation; (3) intensify water demand in areas medium and high priority water basins; or (4) intensify or exacerbate any negative local impacts including but not limited to odor and insects.

C. APPENDIX C: TABLES AND FIGURES

Figure 1: Declining Annual Benchmark for the LCFS program.[219]



[219] CAL. AIR RES. BD., *LCFS Basics* (2019), *available at* https://ww2.arb.ca.gov/sites/default/files/2020-09/basics-notes.pdf (last visited Oct. 12, 2021).

Table 1. Credit Value Calculator from LCFS Data Dashboard.[220]

Credit Value Calculator: Estimated LCFS Premium at Sample LCFS Credit Prices

Alternative Fuel Premiums at Sample LCFS Credit Prices (\$/gal gasoline-equivalent for fuels used as gasoline substitutes)

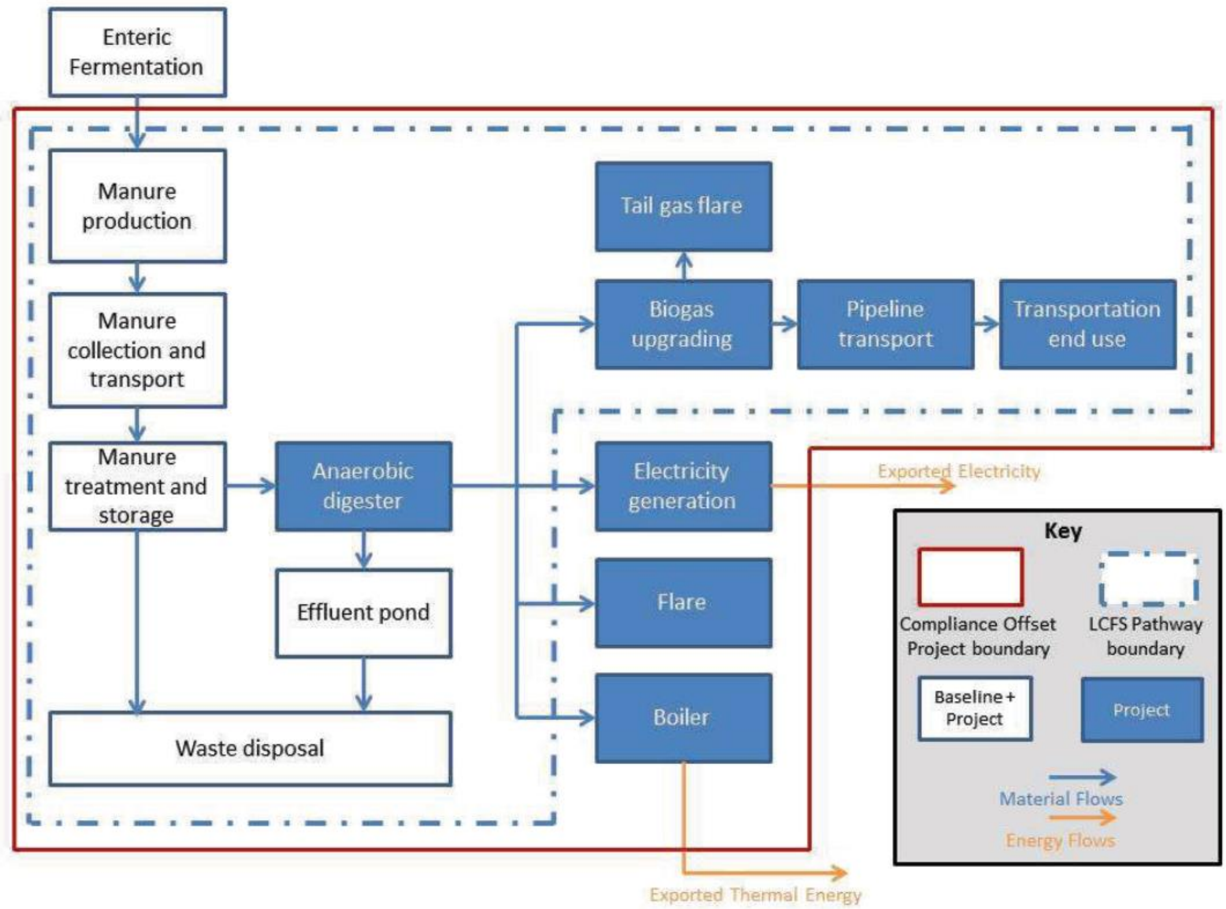
	CI Score (gCO2e/MJ)	Credit Price					
		\$196	\$80	\$100	\$120	\$160	\$200
	-273	\$8.31	\$3.39	\$4.24	\$5.09	\$6.79	\$8.48
	10	\$1.89	\$0.77	\$0.96	\$1.16	\$1.54	\$1.93
	20	\$1.66	\$0.68	\$0.85	\$1.02	\$1.36	\$1.70
	30	\$1.44	\$0.59	\$0.73	\$0.88	\$1.17	\$1.46
	40	\$1.21	\$0.49	\$0.62	\$0.74	\$0.99	\$1.23
	50	\$0.98	\$0.40	\$0.50	\$0.60	\$0.80	\$1.00
	60	\$0.75	\$0.31	\$0.38	\$0.46	\$0.62	\$0.77
	70	\$0.53	\$0.22	\$0.27	\$0.32	\$0.43	\$0.54
	80	\$0.30	\$0.12	\$0.15	\$0.18	\$0.25	\$0.31
	90	\$0.07	\$0.03	\$0.04	\$0.04	\$0.06	\$0.07
	100	-\$0.15	-\$0.06	-\$0.08	-\$0.09	-\$0.13	-\$0.16
	110	-\$0.38	-\$0.16	-\$0.19	-\$0.23	-\$0.31	-\$0.39
	120	-\$0.61	-\$0.25	-\$0.31	-\$0.37	-\$0.50	-\$0.62
	130	-\$0.83	-\$0.34	-\$0.43	-\$0.51	-\$0.68	-\$0.85
	140	-\$1.06	-\$0.43	-\$0.54	-\$0.65	-\$0.87	-\$1.08
	150	-\$1.29	-\$0.53	-\$0.66	-\$0.79	-\$1.05	-\$1.32
CaRFG* (\$/gallon)	100.82	-\$0.139	-\$0.057	-\$0.071	-\$0.085	-\$0.113	-\$0.142

* Maximum pass-through cost for gasoline. Assumes a blend of CARBOB with 10 volume percent ethanol at a CI of 79.9 g/MJ. Ethanol at 79.9 g/MJ is assumed to receive no LCFS premium.

Last Modified 05/31/2019

[220] Data Dashboard, CAL. AIR RES. BD. Figure 7, *https://ww3.arb.ca.gov/fuels/lcfs/dashboard/dashboard.htm* (last visited Oct. 20, 2021).

Figure 2. CARB schematic of the system boundaries for upgraded biogas (biomethane) from Anaerobic digestion of Dairy Manure.[221]



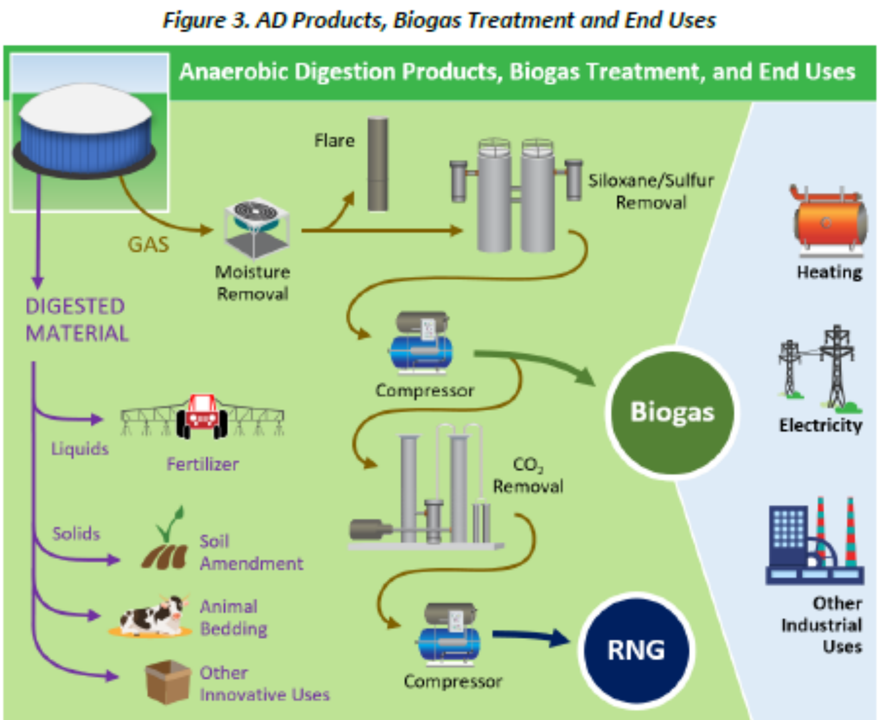
[221] CAL. AIR RES. BD., *supra* note 96 at 13.

Figure 3. Waste Management Hierarchy chart for manure management.[222]

Waste Management Hierarchy	Attribute	Applicability in animal manure management
Avoidance	Most preferred option. Preventive. Use of less hazardous materials in the design and manufacture of products. Develop strategies for cleaner and environmentally friendly production	While the production of wastes cannot be completely eliminated in animal production, the production can be made cleaner and environmentally friendly
Reduction of wastes	Second most preferred option. Preventive. Actions to make changes in the type of materials being used for specific products. This approach contributes to effective savings of natural resources	Applicable
Reuse	Predominantly ameliorative and partly preventive. The waste is collected during the production phase and fed back into the production process. Reduce the amount of wastes generated and the cost of production. Desirable.	Applicable
Recycle	Predominantly ameliorative and partly preventive. The waste materials are collected and processed, and used in the production of new products. The process prevents pollution. Desirable.	Applicable
Energy recovery	Predominantly assimilative and partly ameliorative. This is also called waste to energy conversion. Wastes are converted to usable energy forms such as heat, light, electricity, etc. Desirable.	Applicable
Treatment	Predominantly assimilative and partly ameliorative. Desirable.	Applicable
Sustainable disposal	Disposal is the least preferred option in the waste management hierarchy and should be avoided.	Possible but not preferred

[222] Gabriel Adebayo Malomo et al., *Sustainable Animal Manure Management Strategies and Practices*, 9 (Aug. 29, 2018) https://www.intechopen.com/books/agricultural-waste-and-residues/sustainable-animal-manure-management-strategies-and-practices.

Figure 4. Diagram of downstream uses of digested materials.[223]



[223] ENV'T. PROT. AGENCY, *An Overview of Renewable Natural Gas from Biogas* 4 (July 2020) https://www.epa.gov/sites/production/files/2020-07/documents/lmop_rng_document.pdf.

Figure 5. Rise in Average Monthly Credit Price since 2013.[224]

Table 2. The California dairy industry experienced negative average residuals in 2015 and 2016, indicating a lack of profit in these years.[225]

Table 1.6: California Dairy Farm Annual Unit Costs of Production by Category 2014-2017

Dairy Input	2014 $/cwt	2015 $/cwt	2016 $/cwt	2017 $/cwt
Feed	$11.05	$10.46	$9.22	$8.77
Hired Labor	$1.56	$1.70	$1.74	$1.87
Herd Replacement	$1.37	$2.12	$2.10	$1.88
Operating Costs	$2.88	$2.93	$2.92	$3.06
Milk Marketing	$0.56	$0.56	$0.55	$0.55
Total Costs	**$17.42**	**$17.77**	**$16.53**	**$16.13**
Average Mailbox Price	**$22.37**	**$15.94**	**$15.56**	**$16.99**
Price – Costs (Residual)	**$4.95**	**-$1.83**	**-$0.97**	**$0.86**

Source: CDFA California Dairy Cost of Production Annuals
https://www.cdfa.ca.gov/dairy/dairycop_annual.html

224 AcMoody, *supra* note 128 at 4.
225 Matthews, *supra* note 130 at 20.

Figure 6. Groundwater contamination sites in Kern County.[226]

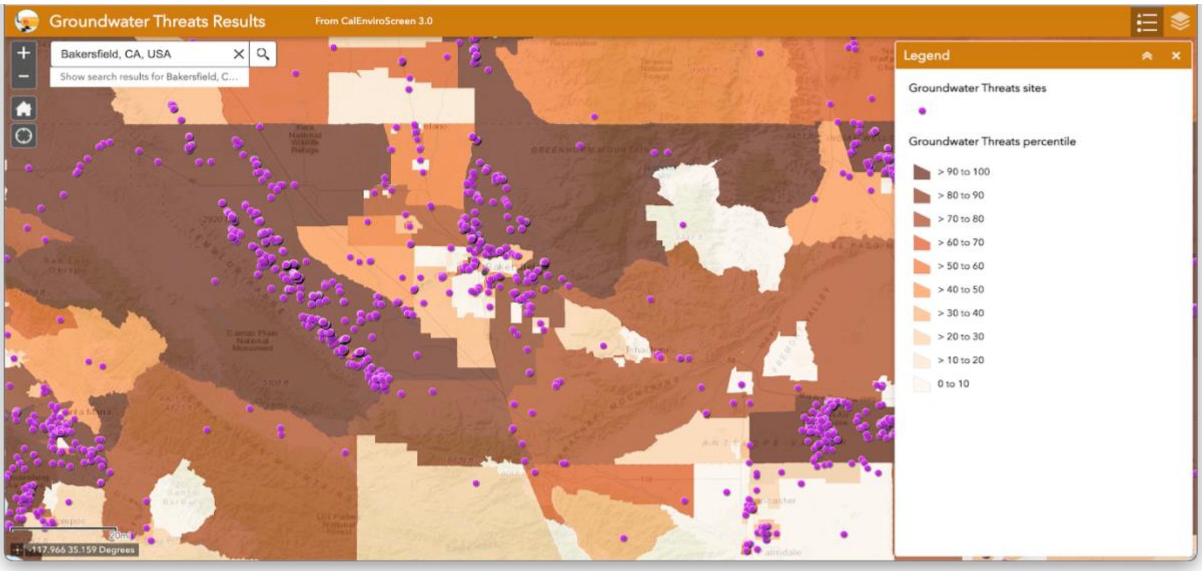
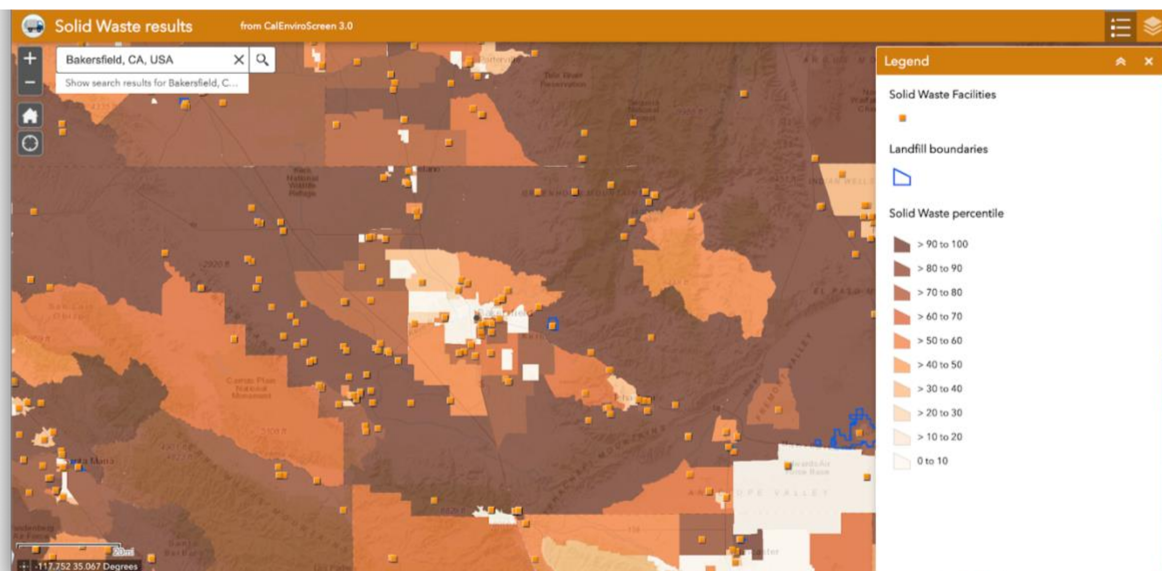
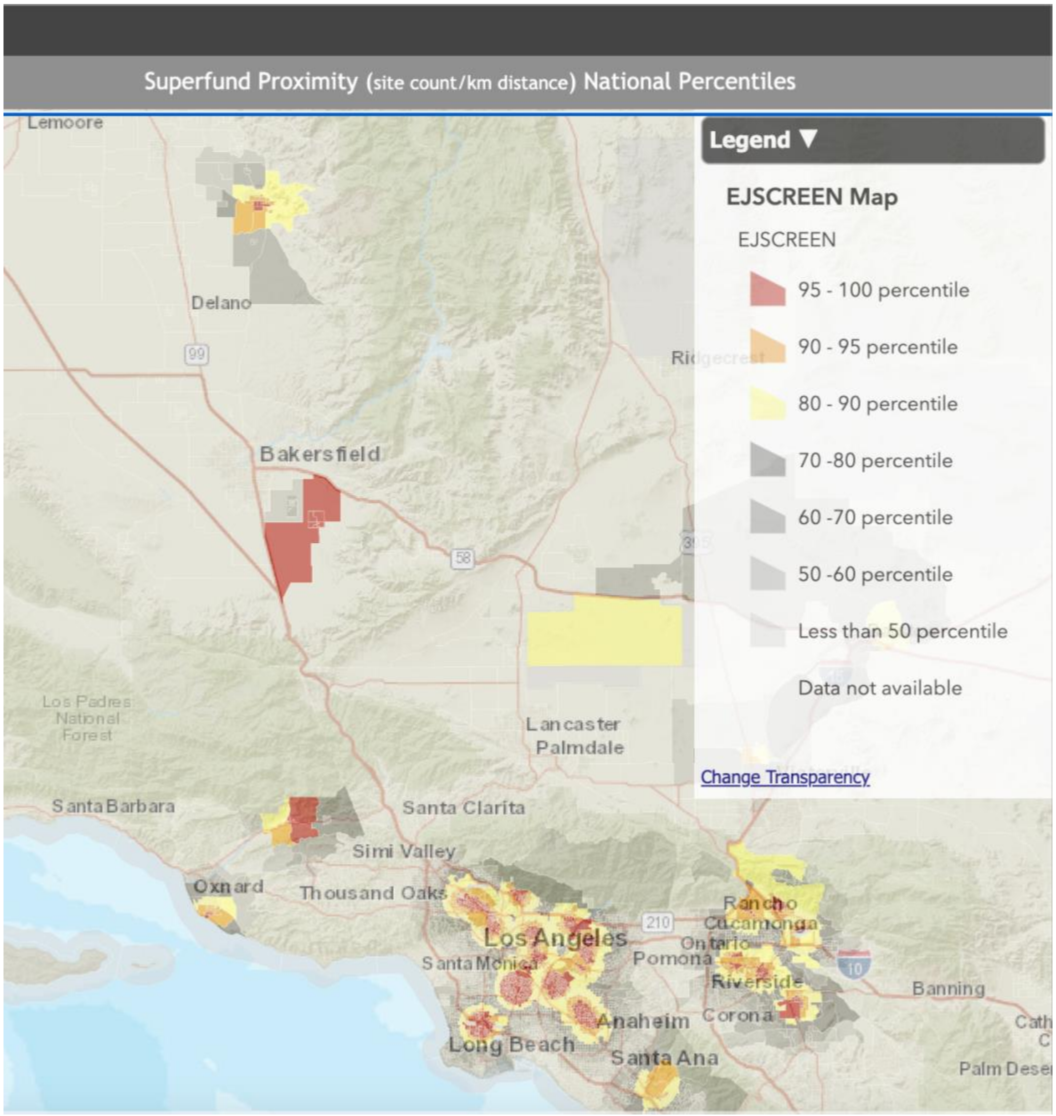


Figure 7. Solid waste contamination in Kern County.[227]



[226] CAL. OFFICE OF ENV'T HEALTH HAZARD ASSESSMENT, *supra* note 29.
[227] *Id.*

Figure 8. Superfund site near Bakersfield, CA.[228]



[228]*EJScreen*, ENV'T. PROT. AGENCY, https://www.epa.gov/ejscreen (last accessed Apr. 10, 2021).

Table 3. A list of the top counties that sell cow's milk ($ billions), the majority of which are in California.[229]

Top Counties in Cow's Milk Sales ($ billions)	
Tulare, CA	1.8
Merced, CA	1.1
Gooding, ID	0.7
Stanislaus, CA	0.7
Kings, CA	0.6
Kern, CA	0.5
Yakima, WA	0.4
Lancaster, PA	0.4
Fresno, CA	0.4
San Joaquin, CA	0.4

Does not include counties withheld to avoid disclosing individual data.

[229] U.S. DEP'T OF AGRIC., *Dairy Cattle and Milk Production* at 2 (Oct. 2014) https://www.nass.usda.gov/Publications/Highlights/2014/Dairy_Cattle_and_Milk_Production_Highlights.pdf.

Table 4. Demographic data on Kern, Kings, Madera, and San Joaquin Counties.[230]

Fact	Kern County, California	Kings County, California	Madera County, California	San Joaquin County, California
Population estimates, July 1, 2019, (V2019)	900,202	152,940	157,327	762,148
Population estimates base, April 1, 2010, (V2019)	839,621	152,974	150,834	685,306
Population, percent change - April 1, 2010 (estimates base) to	7.20%	0.00%	4.30%	11.20%
Population, Census, April 1, 2010	839,631	152,982	150,865	685,306
Persons under 5 years, percent	7.60%	7.60%	7.30%	6.90%
Persons under 18 years, percent	28.80%	27.00%	27.40%	26.80%
Persons 65 years and over,	11.20%	10.50%	14.30%	13.10%
Female persons, percent	48.80%	44.90%	51.80%	50.10%
White alone, percent	82.30%	80.80%	85.90%	66.10%
Black or African American alone,	6.30%	7.50%	4.20%	8.30%
American Indian and Alaska Native alone, percent	2.60%	3.20%	4.40%	2.00%
Asian alone, percent	5.40%	4.40%	2.60%	17.40%
Native Hawaiian and Other Pacific Islander alone, percent	0.30%	0.40%	0.30%	0.80%
Two or More Races, percent	3.20%	3.70%	2.60%	5.50%
Hispanic or Latino, percent	54.60%	55.30%	58.80%	42.00%
White alone, not Hispanic or Latino, percent	32.80%	31.30%	33.20%	30.50%
Veterans, 2015-2019	35,594	9,684	6,317	29,013
Foreign born persons, percent,	19.90%	18.90%	20.20%	23.30%
Housing units, July 1, 2019,	302,898	46,965	51,438	248,636
Owner-occupied housing unit rate, 2015-2019	58.30%	52.30%	64.10%	56.60%
Median value of owner-occupied housing units, 2015-2019	213,900	215,900	251,200	342,100
Median selected monthly owner costs -with a mortgage, 2015-2019	$1,527	$1,459	$1,551	$1,907
Median selected monthly owner costs -without a mortgage, 2015-	$452	$446	$478	$523
Median gross rent, 2015-2019	$978	$990	$1,014	$1,208
Building permits, 2019	2,261	409	644	3,499
Households, 2015-2019	270,282	43,452	44,881	228,567
Persons per household, 2015-	3.17	3.13	3.28	3.17
Living in same house 1 year ago, percent of persons age 1 year+,	86.10%	81.90%	87.90%	86.80%
Language other than English spoken at home, percent of persons age 5 years+, 2015-2019	44.20%	41.50%	45.30%	40.90%
High school graduate or higher, percent of persons age 25 years+,	74.10%	73.40%	71.90%	79.30%
Bachelor's degree or higher, percent of persons age 25 years+,	16.40%	14.70%	14.60%	18.80%
With a disability, under age 65 years, percent, 2015-2019	7.80%	8.60%	8.70%	8.70%
Persons without health insurance, under age 65 years,	9.00%	8.50%	10.70%	7.80%
In civilian labor force, total, percent of population age 16	58.00%	51.80%	54.30%	60.30%
In civilian labor force, female, percent of population age 16	52.40%	51.50%	47.90%	53.60%
Total accommodation and food services sales, 2012 ($1,000)	1,092,151	378,595	150,065	808,606
Total health care and social assistance receipts/revenue,	3,675,000	587,818	760,956	3,447,722
Median household income (in 2019 dollars), 2015-2019	$53,350.00	$57,848.00	$57,585.00	$64,432.00
Per capita income in past 12 months (in 2019 dollars), 2015-	$23,326.00	$22,373.00	$22,853.00	$27,521.00
Persons in poverty, percent	19.00%	16.00%	17.60%	13.60%

[230] *Quick Facts*, U.S. CENSUS, https://www.census.gov/quickfacts/fact/table/US/PST045219 (last visited Apr. 10, 2021).

Table 5. Demographic data on Merced, Tulare, Fresno, and Stanislaus Counties.[231]

Fact	Merced County, California	Tulare County, California	Fresno County, California	Stanislaus County, California
Population estimates, July 1, 2019, (V2019)	277,680	466,195	999,101	550,660
Population estimates base, April 1, 2010, (V2019)	255,796	442,182	930,507	514,450
Population, percent change - April 1, 2010 (estimates base) to July 1, 2019, (V2019)	8.60%	5.40%	7.40%	7.00%
Population, Census, April 1, 2010	255,793	442,179	930,450	514,453
Persons under 5 years, percent	7.70%	7.80%	7.60%	7.10%
Persons under 18 years, percent	29.30%	30.50%	28.20%	27.00%
Persons 65 years and over, percent	11.40%	11.60%	12.60%	13.40%
Female persons, percent	49.50%	50.00%	50.10%	50.40%
White alone, percent	82.20%	88.20%	76.60%	83.30%
Black or African American alone, percent	3.90%	2.20%	5.80%	3.50%
American Indian and Alaska Native alone, percent	2.50%	2.80%	3.00%	2.00%
Asian alone, percent	7.80%	4.00%	11.10%	6.10%
Native Hawaiian and Other Pacific Islander alone, percent	0.40%	0.20%	0.30%	0.90%
Two or More Races, percent	3.20%	2.70%	3.20%	4.20%
Hispanic or Latino, percent	61.00%	65.60%	53.80%	47.60%
White alone, not Hispanic or Latino, percent	26.50%	27.70%	28.60%	40.40%
Veterans, 2015-2019	9,225	14,633	36,125	21,051
Foreign born persons, percent, 2015-2019	26.30%	21.80%	21.20%	20.30%
Housing units, July 1, 2019, (V2019)	86388	151603	336473	182978
Owner-occupied housing unit rate, 2015-2019	52.20%	57.10%	53.30%	57.80%
Median value of owner-occupied housing units, 2015-2019	252,700	205,000	255,000	291,600
Median selected monthly owner costs -with a mortgage, 2015-2019	1,493	1,420	1,631	1,702
Median selected monthly owner costs -without a mortgage, 2015-2019	$460.00	$421.00	$484.00	$503.00
Median gross rent, 2015-2019	$1,021.00	$942.00	$998.00	$1,155.00
Building permits, 2019	948	1,872	3,393	699
Households, 2015-2019	80,008	138,238	307,906	173,898
Persons per household, 2015-2019	3.32	3.3	3.14	3.09
Living in same house 1 year ago, percent of persons age 1 year+, 2015-2019	86.60%	88.60%	85.80%	87.90%
Language other than English spoken at home, percent of persons age 5 years+, 2015-2019	53.30%	51.30%	44.60%	42.90%
High school graduate or higher, percent of persons age 25 years+, 2015-2019	69.10%	70.80%	76.00%	78.90%
Bachelor's degree or higher, percent of persons age 25 years+, 2015-2019	13.80%	14.60%	21.20%	17.10%
With a disability, under age 65 years, percent, 2015-2019	9.10%	8.20%	9.20%	9.00%
Persons without health insurance, under age 65 years, percent	9.00%	9.00%	8.80%	7.10%
In civilian labor force, total, percent of population age 16 years+, 2015-2019	59.60%	59.00%	60.90%	60.90%
In civilian labor force, female, percent of population age 16 years+, 2015-2019	51.00%	51.10%	55.20%	53.40%
Total accommodation and food services sales, 2012 ($1,000)	232,910	451,880	1,226,169	705,698
Total health care and social assistance receipts/revenue, 2012 ($1,000)	788114	1610236	5325615	3634960
Median household income (in 2019 dollars), 2015-2019	$53,672.00	$49,687.00	$53,969.00	$60,704.00
Per capita income in past 12 months (in 2019 dollars), 2015-2019	$23,011.00	$21,380.00	$24,422.00	$26,258.00
Persons in poverty, percent	17.00%	18.90%	20.50%	13.00%

[231] *Id.*

Table 6. Quick facts on potential pathogens found in digestate and links for further information.[232]

Pathogen	**Effects**	**For more information**
Cryptosporidium parvum	"[M]icroscopic parasite that causes the diarrheal disease cryptosporidiosis."	https://www.cdc.gov/parasites/crypto/index.html
Salmonella spp	"Most people with Salmonella infection have diarrhea, fever, and stomach cramps."	https://www.cdc.gov/salmonella/general/index.html
norovirus	"Norovirus is a very contagious virus that causes vomiting and diarrhea."	https://www.cdc.gov/norovirus/index.html
Streptococcus pyogenes	"[C]an cause both noninvasive and invasive disease, as well as nonsuppurative sequelae. "	https://www.cdc.gov/groupastrep/diseases-hcp/index.html
E. coli enteropathogenic (EPEC)	"[A]re gram-negative bacteria that inhabit the gastrointestinal tract. Most strains do not cause illness. Pathogenic E. coli are categorized into pathotypes on the basis of their virulence genes. Six pathotypes are associated with diarrhea	https://wwwnc.cdc.gov/travel/yellowbook/2020/travel-related-infectious-diseases/escherichia-coli-diarrheagenic

[232] *Parasites – Cryptosporidium (also known as "Crypto")*, CDC, https://www.cdc.gov/parasites/crypto/index.html (last updated July 1, 2019); *Salmonella*, CDC, https://www.cdc.gov/salmonella/general/index.html (last updated Dec 5, 2019); *Norovirus*, CDC, https://www.cdc.gov/norovirus/index.html (last updated Mar. 5, 2021); *Group A Streptococcal (GAS) Disease*, CDC, https://www.cdc.gov/groupastrep/diseases-hcp/index.html (last updated May 7, 2020); Alison Winstead et al., *Escherichia coli, Diarrheagenic*, CDC, https://wwwnc.cdc.gov/travel/yellowbook/2020/travel-related-infectious-diseases/escherichia-coli-diarrheagenic (last updated July 1, 2021); J. L. Cloud et al., *Identification of Mycobacterium spp. by Using a Commercial 16S Ribosomal DNA Sequencing Kit and Additional Sequencing Libraries*, 40(2) J. Clinical Microbiology 400, 400 (Feb. 2002); *Typhoid Fever and Paratyphoid Fever*, CDC, https://www.cdc.gov/typhoid-fever/index.html (last updated Aug. 22, 2018); *Fact Sheet: Clostridium spp*, WickhamLaboratories, https://wickhamlabs.co.uk/technical-resource-centre/fact-sheet-clostridium-spp/ (last visited May 5, 2021); Listeria (Listeriosis), CDC, https://www.cdc.gov/listeria/symptoms.html (Dec. 12, 2016).

	(diarrheagenic) […] enteropathogenic E. coli (EPEC)”	
Mycobacterium spp.	"Mycobacterium species are a group of acid-fast, aerobic, slow-growing bacteria. The genus comprises more than 70 different species, of which about 30 have been associated with human disease (23)."	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC153382/#:~:text=Mycobacterium%20species%20are%20a%20group,the%20causative%20agent%20of%20tuberculosis
Salmonella typhi (followed by S. paratyphi)	"Typhoid fever and paratyphoid fever are life-threatening illnesses caused by Salmonella serotype Typhi and Salmonella serotype Paratyphi, respectively."	https://www.cdc.gov/typhoid-fever/index.html
Clostridium spp.	“Clostridia are one of the most commonly studied anaerobes that cause disease in humans”. Some of the species of Clostridium can cause: botulism, overgrow in the intestine compromising the inherent gut flora (potentially leading to colitis), tetanus, gas gangrene (myonecrosis), and toxic shock syndrome.	https://wickhamlabs.co.uk/technical-resource-centre/fact-sheet-clostridium-spp/
Listeria monocytogenes	"[C]an cause fever and diarrhea similar to other foodborne germs, but this type of Listeria infection is rarely diagnosed. Symptoms in people with invasive listeriosis, meaning the bacteria has spread beyond the gut, depend on whether the person is pregnant."	https://www.cdc.gov/listeria/symptoms.html

Attachment B: List of Kinnard Farms Spill Violations Since 2014

Kinnard Farms Spills

BRRTS No. & Activity Name *(Click to open Activity Details)* Address, Municipality, County, Region	Type	Status	Juris	Start Date	End Date
04-15-562742 KINNARD FARMS INC SPILL ADJ TO CTH Y & COUNTY LINE RD, UNION DOOR NE	SPILL	CLOSED	DNR	2014-10-04	2014-10-21
04-15-581105 KINNARD FARMS SPILL CTH J & OLD SUBSTATION RD, FORESTVILLE TN DOOR NE	SPILL	CLOSED	DNR	2018-01-29	2018-03-14
04-15-583937 KINNARD FARMS INC SPILL CTH J & WEST AVE, FORESTVILLE DOOR NE	SPILL	CLOSED	DNR	2019-06-18	2019-07-10
04-31-554575 LEE KINNARD FARMS INC SPILL OAK RD, LINCOLN KEWAUNEE NE	SPILL	CLOSED	DNR	2009-11-14	2009-11-30
04-31-558110 KINNARD FARMS INC SPILL E2669 CTH S, LINCOLN KEWAUNEE NE	SPILL	CLOSED	DNR	2011-12-28	2012-01-05
04-31-561111 KINNARD FARMS SPILL CTH S @ RIO CREEK BRIDGE, LINCOLN KEWAUNEE NE	SPILL	CLOSED	DNR	2013-10-03	2013-10-16
04-31-561404 LEE KINNARD SPILL E2669 CTH S, LINCOLN KEWAUNEE NE	SPILL	CLOSED	DNR	2013-11-14	2014-01-02
04-31-576381 KINNARD FARMS SPILL E2675 CTH S, LINCOLN KEWAUNEE NE	SPILL	CLOSED	DNR	2015-10-21	2015-11-12
04-31-578210 KINNARD FARMS INC SPILL CTH S & BOUCHER RD, RED RIVER KEWAUNEE NE	SPILL	CLOSED	DNR	2016-10-04	2016-10-25
04-31-578586 KINNARD FARMS SPILL FARM FIELD SW OF CTH C AND CT, LINCOLN KEWAUNEE NE	SPILL	CLOSED	DNR	2016-10-18	2016-12-13
04-31-584760 KINNARD FARMS SPILL CHESTNUT DR & LINCOLN RD, AHNAPEE KEWAUNEE NE	SPILL	CLOSED	DNR	2019-08-07	2019-11-19
04-31-584932 KINNARD FARMS SPILL HWY 54 & RIVER RD, CASCO KEWAUNEE NE	SPILL	CLOSED	DNR	2019-11-27	2019-12-19
04-31-585681 WISCONSIN PUBLIC SERVICE CORP SPILL FARM FIELD SW OF CTH C AND CT, LINCOLN KEWAUNEE NE	SPILL	CLOSED	DNR	2020-04-02	2020-04-30

BRRTS No. & Activity Name *(Click to open Activity Details)* Address, Municipality, County, Region	Type	Status	Juris	Start Date	End Date
04-31-586608 KINNARD FARMS SPILL CTH S & TAMARACK RD, LINCOLN KEWAUNEE NE	SPILL	CLOSED	DNR	2020-10-08	2020-10-13

Attachment C: Nov. 10, 2021 Letter Re: Manure Hauling Audit of Kinnard Farms

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
Green Bay Service Center
2984 Shawano Ave
Green Bay, WI 54313

Tony Evers, Governor
Preston D. Cole, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

November 10, 2021

Lee Kinnard
Kinnard Farms Inc
E2675 County Highway S
Casco, WI 54205

WPDES Permit No. WI-0059536-04-1
Kewaunee County

Subject: September 28, 2021 Manure Hauling Audit Summary Letter

Dear Mr. Kinnard:

On September 28, 2021, the Wisconsin Department of Natural Resources (Department) met with you and conducted a manure hauling audit on a field identified as "1-021" in Kinnard Farms' approved nutrient management plan. The report and photo log from the hauling audits are enclosed for your review. During the field inspection, the department observed the following compliance violations:

- On field "1-021", the department observed manure applied on less than 24 inches of soil depth to bedrock

The department is continuing to review available information to decide whether enforcement actions are necessary. If you have any questions regarding this letter, the report, or your permit requirement, please give me a call at (920) 367-3007 or email me at James.Salscheider@Wisconsin.gov.

Sincerely,

James B Salscheider
Agricultural Runoff Management Specialist

Electronic CC: Joseph Baeten - WDNR
Davina Bonness, Travis Engels - Kewaunee County LWCD
Nathen Nysse - Tilth Agronomy

Attachment D: Jan. 12, 2022 Letter and Report Re: Permit Reissuance Inspection

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
2984 Shawano Avenue
Green Bay WI 54313-6727

Tony Evers, Governor
Preston D. Cole, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

January 12, 2022

Lee Kinnard
Kinnard Farms Inc
E2675 County Hwy S
Casco, WI 54205

Dear Mr. Kinnard:

On November 3, 2021, the department met with you to inspect your dairy farm for reissuance of your WPDES Permit. Observations made by the department during the inspection are included in the enclosed report.

Kinnard Farms' current WPDES permit (WI-0059536-04-1) will expire January 31, 2023. A permit reissuance application is due to the department by August 1, 2022. A list of materials needed for the permit reissuance application can be found on page 65 of the report.

Please find on pages 64 and 65 of the enclosed report, a detailed list of action items and areas of concern observed during the inspection. Please review this section carefully. The department will determine how to proceed with permit reissuance after review of this inspection report and the final permit reissuance application.

If you have any questions regarding this letter or your WPDES permit requirements, please contact me at 920-367-3007 or James.Salscheider@wisconsin.gov.

Sincerely,

James Salscheider
Agricultural Runoff Management Specialist

Enclosure: Haberli Farms Inc. Permit Reissuance Inspection Report 12/22/2021

Electronic CC:
Joseph Baeten, Tyler Dix, Anthony Salituro, Ian Anderson – DNR
Nathen Nysse – Tilth Agronomy
Davina Bonness – Kewaunee County LWCD
Bob Nauta – RJN Environmental Services LLC

CAFO Compliance Report (1/12/2022)

Inspection Date: November 3, 2021

Inspection Type: Permit Reissuance

Operation Name: Kinnard Farms Inc.

WPDES Permit No. 0059536-04-1

Operation Address: E2675 County Rd S, Casco, WI 54205

On-Site Representative(s): Lee Kinnard, Owner

DNR Staff / Report Writer: James Salscheider, Agricultural Runoff Specialist

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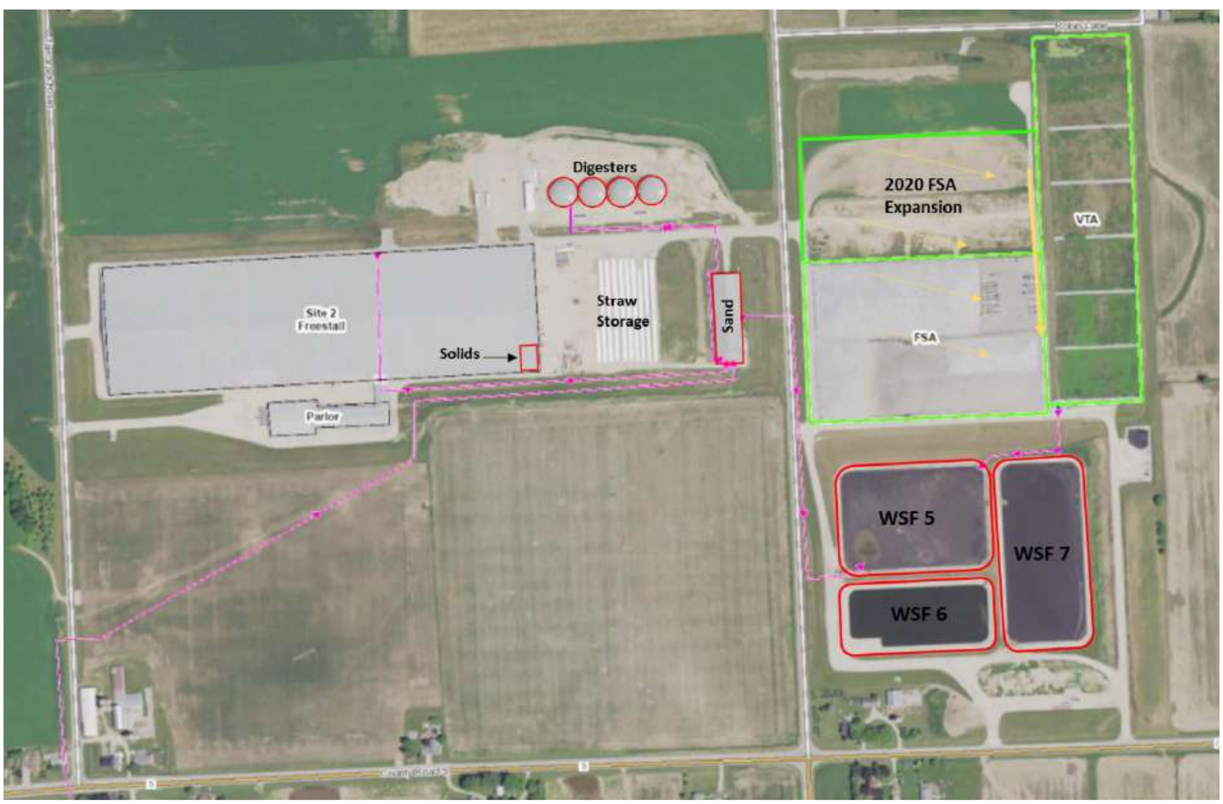
On November 3, 2021, James Salscheider (Salscheider), Agricultural Runoff Management Specialist, and Ian Anderson, Hydrogeologist, with the Wisconsin Department of Natural Resources met with Lee Kinnard (Kinnard), owner of Kinnard Farms Inc. (KF), to conduct a complete site inspection as part of the WPDES Permit reissuance process. Kinnard was joined by Nathen Nysse, Tilth Agronomy, and Bob Nauta, RJN Environmental Services, LLC. KF is currently operating under WPDES Permit No. 0059536-04-1. KF is comprised of two production sites. Site 1 is located at E2675 County Rd S, Casco, WI 54205. Legal description is E ½ of the NW ¼ of S20 T25N R24E, Township of Lincoln, Kewaunee County. Site 2 is located at N8200 Tamarack Rd, Casco, WI 54205. Legal description is N ½ of the SE ¼ of S19 T25N R24E and the W ½ of SW ¼ of S20 T25N R24E, Township of Lincoln, Kewaunee County. KF current permit is set to expire on January 31, 2023. The weather during the inspection was dry and approximately 40° F.



Aerial Map 1. The aerial map above illustrates the production site at Site 2 at Kinnard Farms Inc. Site 2 consists of a large freestall barn, one milking parlor, a sand separation building, four anaerobic digesters three liquid waste storage facilities, one feed storage area, one vegetated treatment area, and five monitoring wells. The pink arrows represent manure transfer lines. The yellow arrows represent the flow path of process wastewater from the feed storage area.

Aerial Map 2. The aerial map above illustrates the production site at Site 1 at Kinnard Farms Inc. Site 1 consists of five freestall barns, one calf barn, one sand separation building, two liquid waste storage facilities, two feed storage areas, and one commodity feed storage building. The pink lines represent manure transfer lines.

Aerial Map 3. The aerial map above illustrates the depth to bedrock and direct conduits to groundwater in relation to the production sites at Kinnard Farms Inc. The aerial image was obtained from SnapMaps.

SITE OBSERVATIONS

<u>Feedlot Runoff</u>

KF does not utilize outdoor feedlots. All animals are housed under roof.

<u>Calf Hutch Areas</u>

KF does not utilize calf hutch areas. All calves are housed under roof until they are transported off-site to be raised. Once a calf is born, it is transferred to a room in the large freestall barn at Site 2 where the calf is dried by warm air. Then the calf is transferred to the calf barn at Site 1, where the calf is housed until it is transported off-site.

Photo 1. The room that calves are placed to dry after birth. Warm air is blown into the room to air-dry the calves.

Photo 2. The maternity pens located on the east end of the freestall barn at Site 2.

Photo 3. The calf barn at Site 1. Calves are housed here until they are transported off-site to be raised.

Photo 4. A calf being housed in the calf barn at Site 1. Calves are housed here until they are transferred off-site where they will be raised.

Waste Storage Facilities

Solid and liquid waste storage facilities are managed to not have current or past indicators of discharges (includes headland stacking sites).

Solid and liquid waste storage structures are well-maintained, in good repair, and in compliance with permit requirements.

Liquid waste storage facilities have permanent markers installed.

All manure produced in the freestall barns at both Site 1 and Site 2 run through a sand separation process to remove sand bedding from the liquid manure. There is a sand separation building at both Site 1 and Site 2. The sand separation building at Site 1 is located south of the freestall barns and north of the southern feed storage area. The sand separation building at Site 2 is located east of the freestall barn and straw storage area. Sand is removed from the manure, washed, and reused as bedding. The clean sand is stored in the sand separation buildings until it is used as bedding. The sand separation buildings are identified as WSF 1 in KF's WPDES Permit (Sample Point 001). After sand separation, the liquid manure is transferred from the sand separation buildings to the four anaerobic digesters located on the north side of Site 2. All manure generated in the freestall barns and process wastewater generated in the milking parlors at both Site 1 and Site 2 are digested. Each digester has a capacity of 1,381,849 gallons. After digestion, the digestate is returned to the sand separation building and then transferred to either WSF 5 or 6 at Site 2, where manure is stored until it can be land applied.

At Site 1, KF utilizes two liquid waste storage facilities (WSF). WSF 2 is a concrete bottom, clay lined liquid WSF that was constructed in 1999. WSF 2 has a capacity of 1 million gallons. Excess bed pack and liquid manure gets stored in WSF 2. WSF 2 operates as the first stage of a two-stage system and is located south of the sand separation building and north of WSF 3. WSF 3 is the second stage of the two-stage system at Site 1 and located south of WSF 2. WSF 3 is a clay lined liquid storage that has a usable capacity of 20 million gallons. WSF 3 was constructed in 1999 and had the permanent markers present during the inspection. Several areas of animal burrowing were present around WSF 2. Better management will prevent degradation to the clay lined WSF. Both WSF 2 and 3 were designed by Kewaunee County.

At Site 2, KF utilizes three liquid WSFs, located on the southeast corner of Site 2. WSF 5, 6, and 7 are all connected by transfer pipes that allow manure and process wastewater to be moved between the WSFs. WSF 5 is located north of WSF 6 and west of WSF 7. WSF 5 is a concrete liquid WSF with a usable capacity of 30 million gallons. WSF 5 was constructed in 2013 and accepts manure and process wastewater from the sand separation building and the feed storage area. WSF 6 is located south of WSF 5 and west of WSF 7. WSF 6 is a concrete liquid WSF with a useable capacity of 18 million gallons. WSF 6 accepts manure and process wastewater from WSF 5. WSF 6 was constructed in 2015. WSF 7 is a concrete liquid WSF located east of WSF 5 and 6. WSF 7 was constructed in 2015 and has a usable capacity of 30 million gallons. WSF 7 accepts manure and process wastewater form WSF 5 and 6. Animal burrowing was present along WSF 7, but the liner is concrete and had no signs of degradation. Permanent markers were present within each WSF. Maximum operating level (MOL) was approximately 4.3 inches below the margin of safety. Salscheider questioned whether the MOL elevation was taking into count the 25-year, 24-hour rain event that falls on the feed storage area, which is completely captured and stored within WSF 5, 6, and 7. Kinnard stated that he would consult with his engineer to ensure that the MOL is at the accurate elevation.

Solid manure and bedding that is produced in the maternity pen, calf room, and calf barn are either stored in the southeast corner of the freestall barn at Site 2 or in WSF 2 at Site 1. The farm has enough solid manure storage to not need to land apply solid manure during winter months.

Photo 5. WSF 1, located at Site 1. WSF 1 is located north of WSF 2 on the south side of Site 1. This photo was taken facing west.

Photo 6. WSF 1, located at Site 1. WSF 1 is located north of WSF 2 on the south side of Site 1. This photo was taken facing west.

Photo 7. WSF 1, located at Site 1. WSF 1 is located north of WSF 2 on the south side of Site 1. This photo was taken facing southwest.

Photo 8. The concrete ramp leading into WSF 1. This photo was taken facing east.

Photo 9. The weir that allows waste from WSF 1 to move to WSF 2, which is located directly south of WSF 1. The red arrow represents the flow path of manure from WSF 1 to WSF 2. This photo was taken facing southeast.

Photo 10. The weir that allows waste from WSF 1 to move to WSF 2, which is located directly south of WSF 1. This photo was taken facing southeast.

Photo 11. WSF 2, located on the southside of Site 1. WSF 2 is located south of WSF 1. This photo was taken facing north.

Photo 12. WSF 2, located on the southside of Site 1. WSF 2 is located south of WSF 1. This photo was taken facing north.

Photo 13. WSF 2, located on the southside of Site 1. WSF 2 is located south of WSF 1. This photo was taken facing northwest.

Photo 14. WSF 2, located on the southside of Site 1. WSF 2 is located south of WSF 1. This photo was taken facing southwest.

Photo 15. WSF 2, located on the southside of Site 1. WSF 2 is located south of WSF 1. This photo was taken facing south.

Photo 16. The earthen berm between WSF 1 and WSF 2 at Site 1. The berm was in good condition. This photo was taken facing west.

Photo 17. Animal burrowing present in the berm around WSF 2.

Photo 18. Animal burrowing present in the berm around WSF 2.

Photo 19. Permanent markers present within WSF 2.

Photo 20. WSF 5, located at the southeast corner of Site 2. WSF 5 is located north of WSF 6 and west of WSF 7. This photo was taken facing east.

Photo 21. WSF 5, located at the southeast corner of Site 2. WSF 5 is located north of WSF 6 and west of WSF 7. This photo was taken facing north.

Photo 22. WSF 5, located at the southeast corner of Site 2. WSF 5 is located north of WSF 6 and west of WSF 7. This photo was taken facing east.

Photo 23. WSF 5, located at the southeast corner of Site 2. WSF 5 is located north of WSF 6 and west of WSF 7. This photo was taken facing northeast.

Photo 24. WSF 5, located at the southeast corner of Site 2. WSF 5 is located north of WSF 6 and west of WSF 7. This photo was taken facing north.

Photo 25. The outlets that discharges digested manure into WSF 5 for long-term storage. This photo was taken facing northwest.

Photo 26. One transfer pipe that allows waste to be transferred from WSF 6 to WSF 5. This photo was taken facing north.

Photo 27. The permanent markers present within WSF 5 at Site 2. The markers do not account for the 25-year, 24-hour runoff collected from the feed storage area.

Photo 28. WSF 6 located at the southeast corner of Site 2. WSF 6 is located south of WSF 5 and west of WSF 7. This photo was taken facing west.

Photo 29. WSF 6 located at the southeast corner of Site 2. WSF 6 is located south of WSF 5 and west of WSF 7. The measuring pole that is used to take weekly measurements can be seen in the middle of the storage. This photo was taken facing southwest.

Photo 30. The outlets that discharge runoff into WSF 6 for long term storage. These outlets are located in the northeast corner of WSF 6. This photo was taken facing south.

Photo 31. WSF 6 located at the southeast corner of Site 2. WSF 6 is located south of WSF 5 and west of WSF 7. This photo was taken facing southwest.

Photo 32. One transfer pipe that allows waste to be transferred from WSF 5 to WSF 6. This photo was taken facing southwest.

Photo 33. The permanent markers present within WSF 6 at Site 2. The markers do not account for the 25-year, 24-hour runoff collected from the feed storage area.

Photo 34. The berm between WSF 5 and WSF 6. This photo was taken facing west.

Photo 35. The concrete weir that connects WSF 5 and WSF 6. The weir is used as an emergency transfer system to allow manure to be transferred between the two WSFs. This photo was taken from WSF 5.

Photo 36. The concrete weir that connects WSF 5 and WSF 6. The weir is used as an emergency transfer system to allow manure to be transferred between the two WSFs. This photo was taken from WSF 6.

Photo 37. WSF 7 located at the southeast corner of Site 2. WSF 7 is located west of WSF 5 and WSF 6. This photo was taken facing southwest.

Photo 38. WSF 7 located at the southeast corner of Site 2. WSF 7 is located west of WSF 5 and WSF 6. This photo was taken facing west.

Photo 39. WSF 7 located at the southeast corner of Site 2. WSF 7 is located west of WSF 5 and WSF 6. This photo was taken facing west.

Photo 40. WSF 7 located at the southeast corner of Site 2. WSF 7 is located west of WSF 5 and WSF 6. This photo was taken facing north.

Photo 41. The measuring device located within WSF 7 that is used to take weekly measurements.

Photo 42. WSF 7 located at the southeast corner of Site 2. WSF 7 is located west of WSF 5 and WSF 6. This photo was taken facing north.

Photo 43. The permanent markers present within WSF 7 at Site 2.

Photo 44. The basin that accepts digested manure from Site 2 prior to transferring the manure to either WSF 5 or WSF 6. The basin is located between the two WSFs.

Photo 45. One of the locations where semi-tankers are loaded during manure hauling practices. This photo was taken west of WSF 5, facing north.

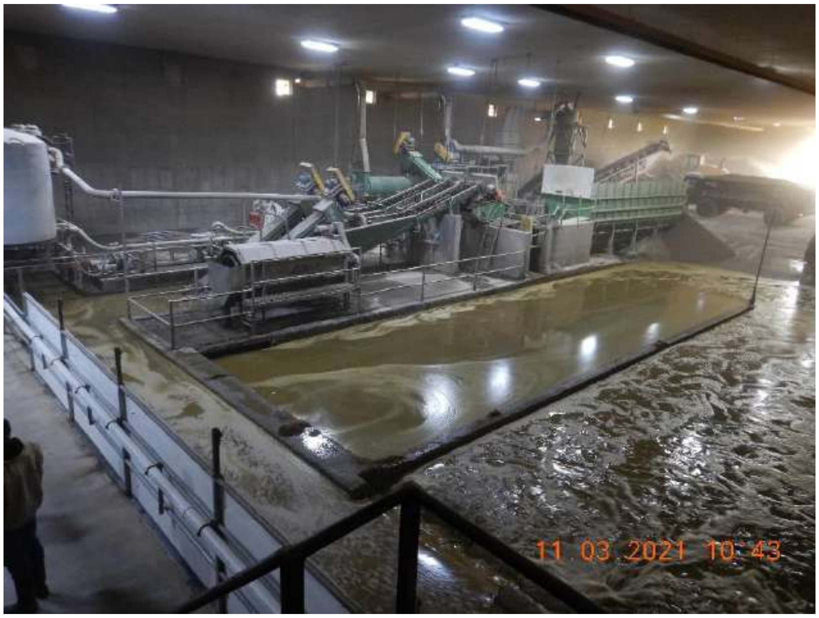


Photo 46. The sand separation building at Site 2. Sand bedding that enters the manure transfer system in the freestall barn at Site 2 is removed from the manure, cleaned, and stored in this location until it is reused for bedding.

Photo 47. The sand separation building at Site 2. Sand bedding that enters the manure transfer system in the freestall barn at Site 2 is removed from the manure, cleaned, and stored in this location until it is reused for bedding.

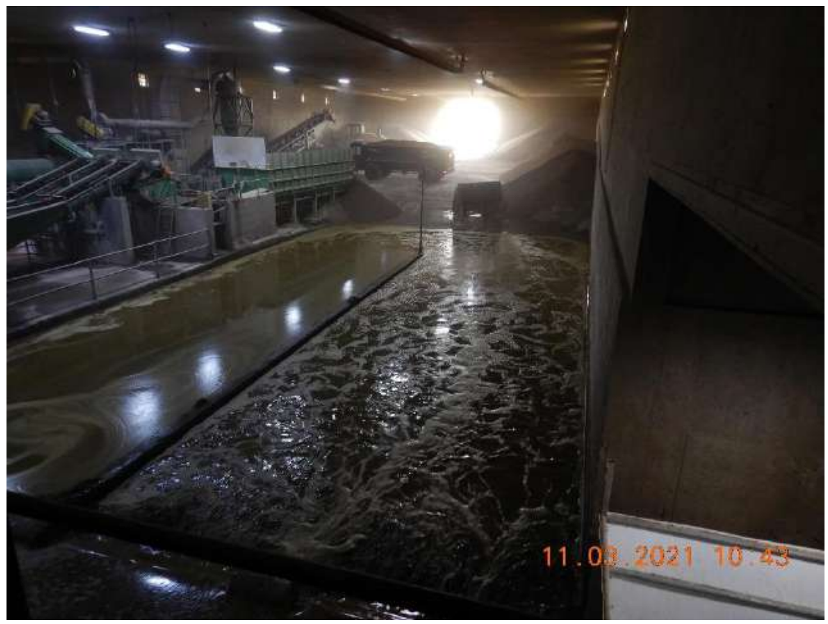


Photo 48. The sand separation building at Site 2. Sand bedding that enters the manure transfer system in the freestall barn at Site 2 is removed from the manure, cleaned, and stored in this location until it is reused for bedding.

Photo 49. An area where sand is partially removed from manure so that the liquid manure can be flushed back through the manure transfer system and flumes in the freestall barn at Site 2.

Photo 50. An area where sand is partially removed from manure so that the liquid manure can be flushed back through the manure transfer system and flumes in the freestall barn at Site 2.

Photo 51. Pumps that transfer liquid manure through the flume system in the freestall barn at Site 2 to flush the flumes while pens are being cleaned.

Photo 52. Conveyers that collect sand and convey the bedding material to the cleaning equipment.

Photo 53. The flow path of manure within the sand separation building, represented by the red arrow.

Photo 54. The flow path of manure within the sand separation building, represented by the red arrow.

Photo 55. The location where manure enters the sand separation building from the freestall barn at Site 2.

Photo 56. The infrastructure within the sand separation building at Site 2.

Photo 57. The infrastructure within the sand separation building at Site 2.

Photo 58. The end of the sand separation process where clean sand is placed after being separated from the liquid manure prior to digestion.

Photo 59. The sand separation building at Site 2. Sand bedding that enters the manure transfer system in the freestall barn at Site 2 is removed from the manure, cleaned, and stored in this location until it is reused for bedding.

Photo 60. The location where clean sand is stored until it is used for bedding in the freestall barn at Site 2.

Photo 61. The sand separation building at Site 1. Sand bedding that enters the manure transfer system in the freestall barns at Site 1 is removed, cleaned, and stored in this building, which is located south of the freestall barns.

Photo 62. The sand separation building at Site 1. Sand bedding that enters the manure transfer system in the freestall barns at Site 1 is removed, cleaned, and stored in this building, which is located south of the freestall barns.

Photo 63. Spilled manure within the sand separation building at Site 1. Any spilled manure gravity flows back into the manure system.

Photo 64. Pumps that transfer liquid manure through the flume system in the freestall barn at Site 1 to flush the flumes while pens are being cleaned.

Photo 65. The flow path of manure through the sand separation building at Site 1, represented by the red arrows.

Photo 66. The flow path of manure through the sand separation building at Site 1, represented by the red arrows.

Photo 67. The flow path of manure through the sand separation building at Site 1, represented by the red arrows.

Photo 68. The flow path of manure through the sand separation building at Site 1, represented by the red arrows.

Photo 69. The infrastructure within the sand separation building at Site 1.

Photo 70. The end of the sand separation process where clean sand is placed after being separated from the liquid manure prior to the liquid manure being transferred to Site 2.

Photo 71. The location where sand is stored at Site 1 until it is reused for bedding in the freestall barns at Site 1. Runoff from the sand piles gravity flows directly to the manure transfer system.

Photo 72. The flow path of runoff from the sand piles directly towards the manure transfer system. The flow path is represented by the red arrows.

Photo 73. The location where sand is stored at Site 1 until it is reused for bedding in the freestall barns at Site 1. Runoff from the sand piles gravity flows directly to the manure transfer system.

Photo 74. The four anaerobic digesters that are used to digest all manure generated at both sites at Kinnard Farms. The digesters are located on the north side of Site 2. This photo was taken facing north.

Photo 75. The four anaerobic digesters that are used to digest all manure generated at both sites at Kinnard Farms. The digesters are located on the north side of Site 2. This photo was taken facing west.

Photo 76. The four anaerobic digesters that are used to digest all manure generated at both sites at Kinnard Farms. The digesters are located on the north side of Site 2. This photo was taken facing west.

Photo 77. The four anaerobic digesters that are used to digest all manure generated at both sites at Kinnard Farms. The digesters are located on the north side of Site 2. This photo was taken facing south.

Photo 78. Infrastructure associated with the natural gas generation process, located west of the anaerobic digesters.

Photo 79. Semi-trailers being loaded with natural gas which will transport the gas off-site.

Photo 80. Semi-trailers being loaded with natural gas which will transport the gas off-site.

Photo 81. Infrastructure associated with the natural gas generation process, located west of the anaerobic digesters.

Process Wastewater (other than feed storage area leachate/runoff)
Process wastewater sources (milking center, wash water, etc.) are managed to not have current or past indicators of discharges.

All process wastewater produced in the two milking parlors are captured and comingled with the manure transfer system. All process wastewater produced from the machine-washing area is captured and comingled with the manure transfer system. All process wastewater produced in the sand washing areas gravity flows back to the manure transfer system and are managed to not have discharges.

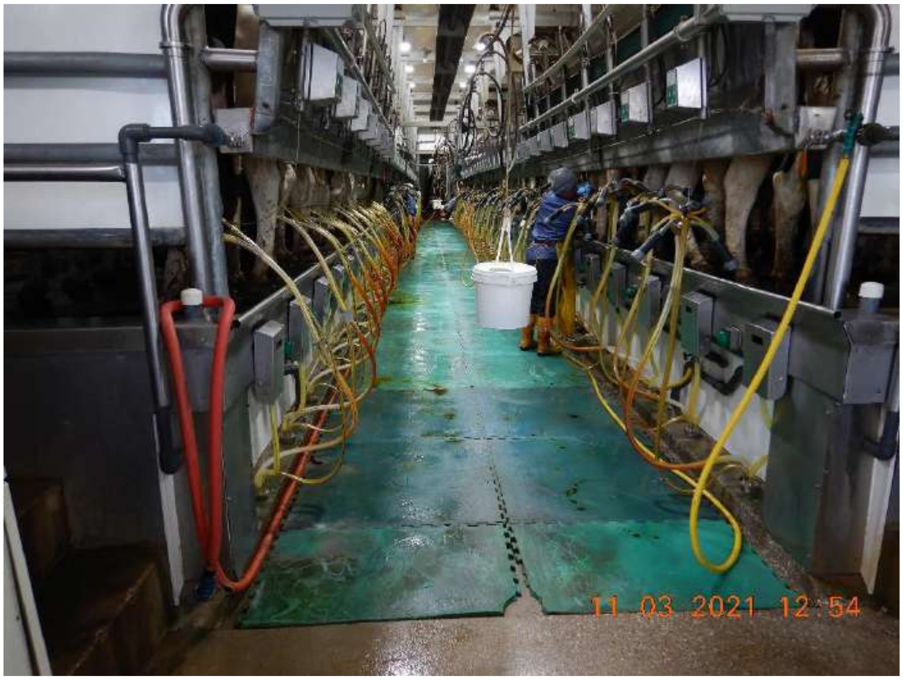


Photo 82. The milking parlor at Site 1. All process wastewater generated is captured and comingled in the manure transfer system.

Photo 83. The milking parlor at Site 2. All process wastewater generated is captured and comingled in the manure transfer system.

Photo 84. The milking parlor at Site 2. All process wastewater is captured by a flume system underneath the rotary milking parlor.

Photo 85. The machine-washing area within a shed at Site 1. All process wastewater generated is captured and comingled in the manure transfer system.

Photo 86. The flume system that captures process wastewater from the machine-washing area.

Photo 87. The pump that transfers process wastewater from the machine-washing area to the manure transfer system.

Feed Storage Area Runoff

Feed storage areas and associated process wastewater (leachate, runoff) are managed to not have current or past indicators of discharges.

Feed storage areas and runoff control systems are well-maintained, in good repair and in compliance with permit requirements.

Kinnard Farms utilizes three feed storage areas. At Site 1, there are two feed pads. One feed pad is located adjacent to the commodity shed and calf barn on the north side of the production site. There are two collection inlets associated with this FSA. Both inlets were covered to prevent stormwater collection. The second feed pad is located south of the freestall barns and west of WSF 2 and 3. There is one collection inlet associated with the southern feed storage area, located at the northeast corner of the FSA. Both of these feed pads are used to store dry feed commodity. At the time of the inspection, both feed pads had a pile of crushed corn covered in plastic. Both feed pads have a complete collection system. All process wastewater is collected and transferred to the manure transfer system. At Site 2, there is one large feed pad located at the northeast corner of the production site at Site 2. Corn silage and haylage are stored in large piles, covered in plastic. All “wet” feed is stored on the feed pad at Site 2. Runoff from the feed pad flows northwest to southeast, where the runoff enters a concrete swale on the east edge of the FSA that conveys runoff south towards a concrete spreader bar. The spreader bar does not allow runoff to enter the VTA unless the rain event is greater than the 25-year, 24-hour rain event. The 25-year, 24-hour rain event is captured and transferred to WSF 5, where the process wastewater is stored until it can be land applied.

Photo 88. The feed storage area at Site 2, which is located east of the sand separation building and north of the liquid waste storage facilities. This photo was taken facing west.

Photo 89. The feed storage area at Site 2, which is located east of the sand separation building and north of the liquid waste storage facilities. This photo was taken facing north.

Photo 90. The feed storage area at Site 2, which is located east of the sand separation building and north of the liquid waste storage facilities. This photo was taken facing southwest.

Photo 91. Concrete curbing that prevents runoff from leaving the south side of the feed storage area.

Photo 92. The west side of the feed storage area at Site 2. The concrete slab pitches northwest to southeast. This photo was taken facing north.

Photo 93. The feed storage area at Site 2, which is located east of the sand separation building and north of the liquid waste storage facilities. This photo was taken facing east.

Photo 94. The feed storage area at Site 2, which is located east of the sand separation building and north of the liquid waste storage facilities. This photo was taken facing north.

Photo 95. The feed storage area at Site 2, which is located east of the sand separation building and north of the liquid waste storage facilities. This photo was taken facing north.

Photo 96. The north side of the feed storage area at Site 2. The concrete pad is pitched from northwest to southeast. This photo was taken facing east.

Photo 97. The north side of the feed storage area at Site 2. The pitch in the concrete prevents runoff from leaving the north side of the feed storage area. This photo was taken facing east.

Photo 98. The north side of the feed storage area at Site 2. The pitch in the concrete prevents runoff from leaving the north side of the feed storage area. This photo was taken facing west.

Photo 99. The concrete channel that captures runoff from the feed storage area and conveys it to the runoff collection system. This photo was taken facing south.

Photo 100. The concrete channel that captures runoff from the feed storage area and conveys it to the runoff collection system. This photo was taken facing east.

Photo 101. The concrete channel that captures runoff from the feed storage area and conveys it to the runoff collection system. This photo was taken facing south.

Photo 102. The feed storage area at Site 2, which is located east of the sand separation building and north of the liquid waste storage facilities. The flow path of runoff is represented by the yellow arrows. This photo was taken facing west.

Photo 103. The feed storage area at Site 2, which is located east of the sand separation building and north of the liquid waste storage facilities. The flow path of runoff is represented by the yellow arrows. This photo was taken facing west.

Photo 104. The concrete channel that captures runoff from the feed storage area and conveys it to the runoff collection system. The flow path of runoff is represented by the yellow arrow. This photo was taken facing north.

Photo 105. The concrete channel that captures runoff from the feed storage area and conveys it to the runoff collection system. The flow path of runoff is represented by the yellow arrow. This photo was taken facing southeast.

Photo 106. The concrete channel that captures runoff from the feed storage area and conveys it to the runoff collection system. The flow path of runoff is represented by the yellow arrow. This photo was taken facing north.

Photo 107. The metal grate that captures solids and prevents the solids from entering the collection system. The flow path of runoff is represented by the yellow arrow.

Photo 108. The concrete spreader bar that evenly distributes runoff across the VTA. The VTA is currently not being used to treat runoff. This photo was taken facing east.

Photo 109. The vegetated treatment area located east of the feed storage area. The VTA is currently not being used to treat runoff. This photo was taken facing north.

Photo 110. Slots in the concrete spreader bar that are blocked to prevent runoff from entering the VTA.

Photo 111. The area where runoff enters the collection inlet. The flow path of runoff is represented by the yellow arrows.

Photo 112. The pumps that transfer runoff from the collection inlet to the liquid waste storage facilities at Site 2, where the runoff is stored until it can be land applied.

Photo 113. The reception basin where runoff from the feed storage area is collected and transferred to on-site WSFs. This photo was taken facing northwest.

Photo 114. The VTA located east of the feed storage area at Site 2. The VTA is not being used to treat runoff from the feed storage area. This photo was taken facing north.

Photo 115. The earthen berm located on the west side of the VTA, which prevents runoff from leaving the VTA.

Photo 116. The VTA located east of the feed storage area at Site 2. The VTA is not being used to treat runoff from the feed storage area. This photo was taken facing east.

Photo 117. The VTA located east of the feed storage area at Site 2. The VTA is not being used to treat runoff from the feed storage area. This photo was taken facing northeast.

Photo 118. The VTA located east of the feed storage area at Site 2. The VTA is not being used to treat runoff from the feed storage area. This photo was taken facing north.

Photo 119. The VTA located east of the feed storage area at Site 2. The VTA is not being used to treat runoff from the feed storage area. This photo was taken facing northwest.

Photo 120. An earthen berm located on the east side of the VTA. The berm prevents runoff from leaving the VTA. This photo was taken facing north.

Photo 121. The southern feed storage area at Site 1, located south of the separated solids building and west of WSF 2. This photo was taken facing south.

Photo 122. The southern feed storage area at Site 1, located south of the separated solids building and west of WSF 2. This photo was taken facing north.

Photo 123. Crushed corn being stored on the feed storage area at Site 1. Only bulk commodity feed is being stored on the feed storage areas at Site 1.

Photo 124. The southern feed storage area at Site 1, located south of the separated solids building and west of WSF 2. This photo was taken facing north.

Photo 125. The west side of the southern feed storage area at Site 1. This photo was taken facing south.

Photo 126. The south side of the southern feed storage area at Site 1. This photo was taken facing east.

Photo 127. The south side of the southern feed storage area at Site 1. This photo was taken facing east.

Photo 128. Crushed corn that has been blown off the southern feed pad at Site 1. This photo was taken facing west.

Photo 129. The east side of the southern feed storage area at Site 1. This photo was taken facing north.

Photo 130. The collection inlet for the southern feed storage area at Site 1. The inlet is located at the northeast corner of the FSA. This photo was taken facing west.

Photo 131. The collection inlet for the southern feed storage area at Site 1. The inlet is located at the northeast corner of the FSA.

Photo 132. One of two collection inlets for the northern feed storage area at Site 1. This inlet is located at the southeast corner of the storage area. This photo was taken facing west. The inlet was covered to prevent stormwater collection.

Photo 133. The east half of the northern feed storage area at Site 1. There is currently no feed being stored in this location. This photo was taken facing west.

Photo 134. The east half of the northern feed storage area at Site 1. There is currently no feed being stored in this location. This photo was taken facing north.

Photo 135. Bulk commodity feed being stored on the west half of the northern feed storage area at Site 1. This photo was taken facing northwest.

Photo 136. The second collection inlet for the northern feed storage area at Site 1. This photo was taken facing northwest. The inlet was covered to prevent stormwater collection.

Photo 137. The west half of the northern feed storage area at Site 1. This photo was taken facing east.

Photo 138. Bulk commodity feed being stored on the west half of the northern feed storage area at Site 1. This photo was taken facing north.

Photo 139. The second collection inlet for the northern feed storage area at Site 1. This photo was taken facing northwest. The inlet was covered to prevent stormwater collection.

<u>Animal Mortality Disposal</u>
Animal mortalities are managed to not have current or past indicators of discharges.

Kinnard Farms utilizes Sandy Bay Mink Ranch to handle animal mortalities. Animal mortalities are placed at the southeast corner of the freestall barn at Site 2 until they are picked up by Sandy Bay Mink Ranch.

Photo 140. The location where animal mortalities are kept until they are taken by Sandy Bay Mink Ranch, located on the east end of the freestall barn at Site 2.

<u>Ancillary Service Areas</u>
Preventative maintenance actions and visual inspections are occurring to minimize pollutant discharges from ancillary service and storage areas (i.e. storm water conveyance systems, driveways, etc.).

KF utilizes series of stormwater inlets and grassed swales to convey clean stormwater and prevent stormwater from coming into contact with contaminants. Site 2 has two areas where stormwater collects and slowly drains from the production site. One area is west of the sand separator building, where the grassed swales from the north side and south side of the large freestall barn drain to. The area then drains to the west road ditch along Spruce Rd. The second collection area is located north of the feed storage area at Site 2. At Site 1, the stormwater is handled by grassed swales and culverts that convey stormwater off-site.

The driveways at Kinnard Farms are managed to not cause discharges. There was manure present outside of the southernmost freestall barn at Site 1. Liquid manure was leaving the barn on the east end due to a broken board at the base of the east wall. Kinnard stated that the farm will fix the board as soon as possible.

Commodity feed storage is present within a building at Site 1. All feed is mixed on the northern feed storage area at Site 1. Kinnard stated that they plan to construct a commodity storage area at the feed storage area at Site 2. During the inspection, Salscheider observed bulk dry feed commodity being stored at both feed storage areas at Site 1. Kinnard stated that the dry feed is stored here until it is moved into the commodity storage shed all at once. The bulk feed was completely covered in plastic. One commodity feed pile on the south feed storage area at Site 1 had an open working face.

Photo 141. A grassed swale on the south side of the freestall barn at Site 2 that is used to convey stormwater through the production site.

Photo 142. A grassed swale on the south side of the freestall barn at Site 2 that is used to convey stormwater through the production site.

Photo 143. A stormwater detention basin located east of the sand separation building at Site 2. Stormwater drains to this location and slowly drains to the adjacent road ditch. This photo was taken facing north.

Photo 144. Stormwater culverts that discharge stormwater to the detention basin pictured in Photo 143.

Photo 145. A grassed swale on the north side of the freestall barn at Site 2 that is used to convey stormwater through the production site.

Photo 146. A grassed swale on the north side of the freestall barn at Site 2 that is used to convey stormwater through the production site.

Photo 147. A gravel area located north of the feed storage area at Site 2 that is used to store equipment. This photo was taken facing east.

Photo 148. A stormwater detention basin located north of the feed storage area at Site 2. This photo was taken facing east.

Photo 149. A gravel area located north of the feed storage area at Site 2 that is used to store equipment. This photo was taken facing south.

Photo 150. A stormwater detention basin located north of the feed storage area at Site 2. This photo was taken facing east.

Photo 151. A stormwater culvert that discharges clean water to the detention pond pictured in Photo 150. This photo was taken facing west.

Photo 152. A grassed swale located east of the VTA at Site 2 that conveys stormwater away from the production site. This photo was taken facing north.

Photo 153. Stormwater culverts that convey stormwater around the liquid waste storage facilities at Site 2. This photo was taken facing west.

Photo 154. A gravel area located east of the liquid waste storage facilities at Site 2 that is used to store equipment. This photo was taken facing southeast.

Photo 155. A location where vegetation is being reestablished after a semi-tractor was pulled down the hillside. This photo was taken near the manure loading location facing west.

Photo 156. A grassed swale located between the southern feed storage area and WSF 2 at Site 1. The swale conveys stormwater through the production site.

Photo 157. The feed commodity storage building located north of the northern feed storage area at Site 1.

Photo 158. A storage bay in the feed commodity storage building located north of the northern feed storage area at Site 1.

Photo 159. A storage bay in the feed commodity storage building located north of the northern feed storage area at Site 1.

Photo 160. A storage bay in the feed commodity storage building located north of the northern feed storage area at Site 1.

Photo 161. Commodity feed storage bins located in the middle of the northern feed storage area at Site 1. This photo was taken facing south.

Photo 162. Fuel storage at Site 1, located adjacent to the northern feed storage area.

Photo 163. Fuel storage at Site 2, located south of the liquid waste storage facilities.

On-Site Groundwater Monitoring

Kinnard Farms utilizes five wells around the production site to monitor groundwater quality per WPDES Permit requirements. Kinnard Farms collects quarterly water samples from each well and submits the sample results to the department. Well One (MW-1) is located southeast of WSF 7. Well Two (MW-2) is located southwest of WSF 6. Well Three (MW-3) is located northeast of WSF 7. Well Four (MW-4) is located northwest of the feed storage area. Well Five (MW-5) is located west of Site 2 and is no longer being monitored due to lack of water in the well. Kinnard Farms is currently working with Hanson to develop Phase II of the groundwater monitoring plan, which is required by their WPDES Permit.

Photo 164. Monitoring Well 4 (MW-4), located northwest of the feed storage area at Site 2.

Photo 165. Monitoring Well 3 (MW-3), located south of the vegetated treatment area at Site 2.

Photo 166. Monitoring Well 1 (MW-1) located on the southeast corner of the production site at Site 2. This photo was taken facing southeast.

RECORDS REVIEW

The permittee has current WPDES Permit and Nutrient Management Plan onsite.
The permittee provided complete production site inspection records that are required to be retained.
The permittee provided adequate documentation that the facility has a minimum of 180 days of liquid manure storage capacity.
The permittee provided land application records to demonstrate compliance with nutrient management plan requirements.
The permittee has copies of their emergency response and monitoring and inspection plans onsite.
The permittee is not up to date on required reporting and actions as specified in the Schedules section of permit.

- Kinnard Farms failed to submit a complete engineering evaluation for the feed storage areas at Site 1, which were required by the WPDES Permit, Permit Section 3.7.

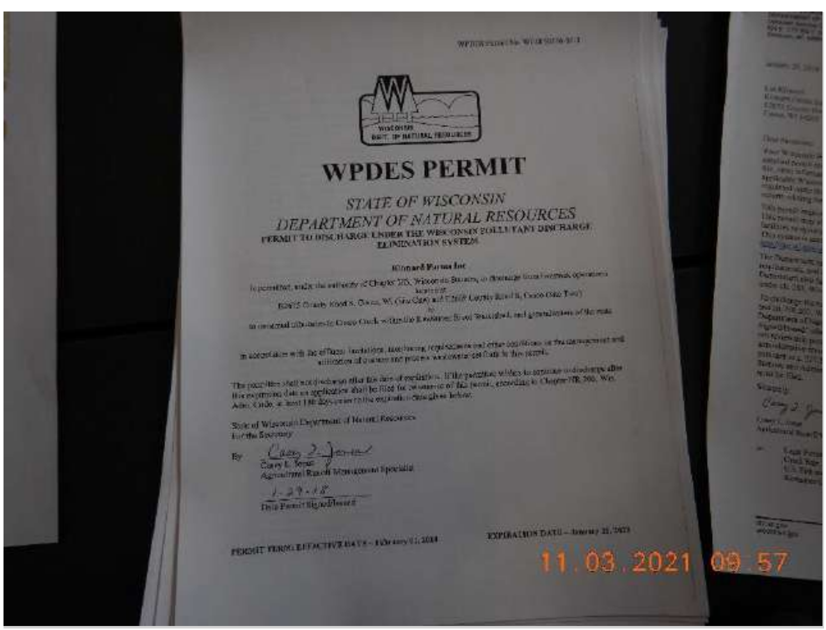


Photo 167. Kinnard Farms previous WPDES Permit, which was readily available during the inspection. Kinnard Farms' current permit is a modification of the permit in the photo.

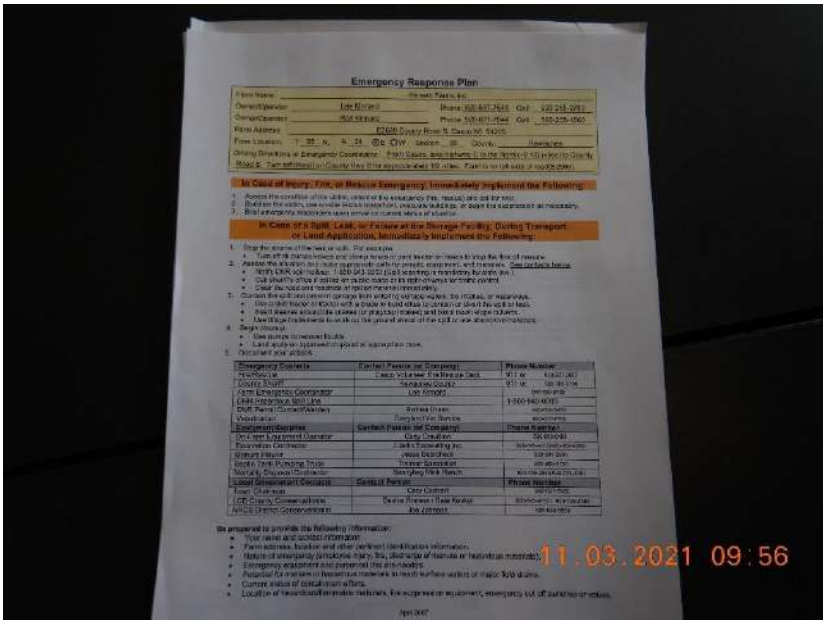
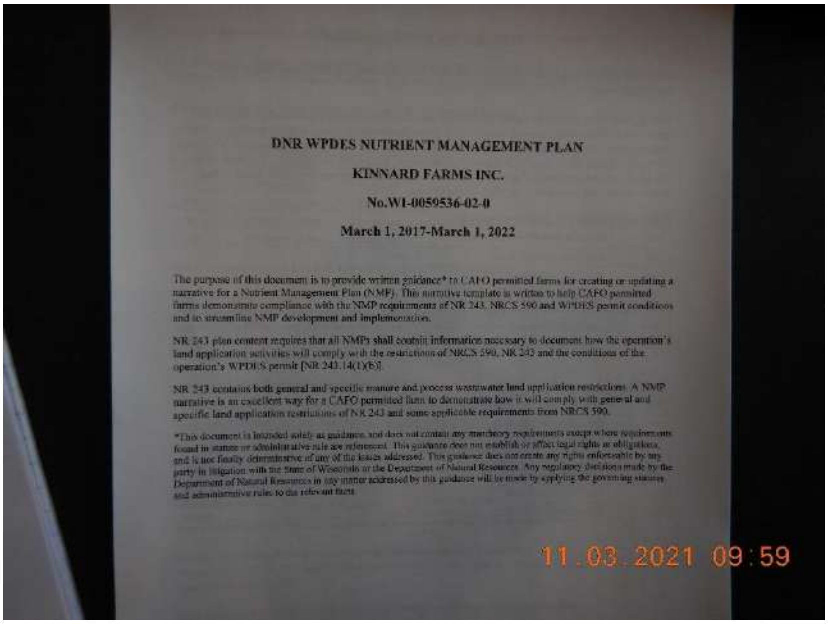


Photo 168. Kinnard Farms' emergency response plan. The plan needs to be updated to include the correct DNR CAFO contact.

Photo 169. Kinnard Farms' current nutrient management plan.



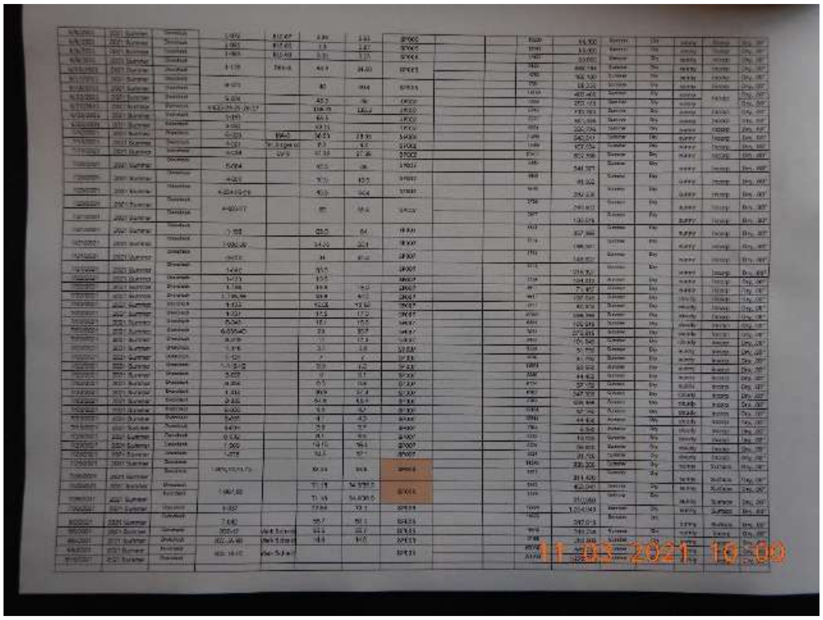


Photo 170. Kinnard Farms' manure hauling log.

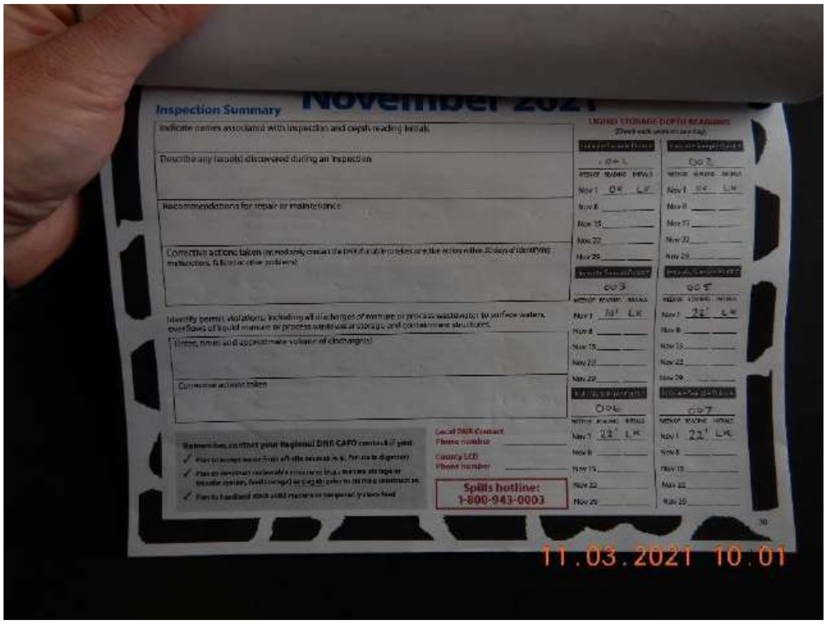


Photo 171. Kinnard Farms' CAFO Calendar, which is used to record daily, weekly, and quarterly inspections, including the weekly WSF measurements.

Photo 172. Kinnard Farms' CAFO Calendar, which is used to record daily, weekly, and quarterly inspections, including the weekly WSF measurements. The 180-days of storage marker was reached on November 21, 2021.

SUMMARY

Substantial Compliance
The permittee is not in substantial compliance with the permit.

Areas of Concern
Liquid manure leaving the east side of the southernmost freestall barn at Site 1
Maximum Operating Levels at Site 2 do not take into account the runoff collected from the feed storage area at Site 2
Animal burrowing adjacent to WSF 7
Animal burrowing in the berm along WSF 2

Permit Violations
No permit violations were observed during the site inspection

Action Items
Repair the animal burrows present around the WSFs
Repair the board in the southernmost freestall barn at Site 1 to prevent liquid manure from leaving the barn

Determine the appropriate elevation for the maximum operating level in WSF 5 to account for the 25-year, 24-hour rain event

Items for Next Permit Term
There are currently no forecasted items for the next permit.

Materials Required as part of the Permit Application
Required materials must be submitted together as a complete permit application through the ePermitting System: http://dnr.wi.gov/permits/water/. The system will not allow you to electronically sign and submit your application until all of the following are included:

- 3400-025 form (Livestock/Poultry Operation WPDES Permit Application)
- 3400-025A form (Animal Units Calculation Worksheet)
- 3400-025G form (Evaluated Facilities of Systems Checklist)
- 3400-025C form (Reviewable Facilities of Systems Checklist)
- A soil survey map of the dairy’s production area
- A labeled aerial map showing the existing and proposed features and structures of the dairy’s production area
- Calculations documenting days liquid manure and process wastewater storage
- Supporting documentation for days storage calculations
- A complete 5-year Nutrient Management Plan (NMP). If necessary, include a description of permanent spray irrigation systems and any other land spreading or treatment systems (proposed or active)
- Plans and specifications for any proposed facilities