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August 14, 2023

Kelli Book
Iowa Department of Natural Resources
Wallace State Office Building
502 East 9th Street
Des Moines, Iowa 50319
Email: Kelli.Book@dnr.iowa.gov

RE: Supreme Beef, LLC Nutrient Management Plan

Dear Ms. Book:

The Iowa Environmental Council (IEC) offers the following comments on the Nutrient Management Plan (NMP) submitted by Supreme Beef, LLC (Supreme Beef) on July 5, 2023. These comments represent the views of the Iowa Environmental Council, an alliance of 100 organizations, at-large board members from business, farming, the sciences and education, and over 500 individual members. IEC's members hike, fish, paddle, swim, and recreate in and around lakes, rivers, and streams throughout the state.

The submitted NMP makes unfounded assumptions regarding manure nutrient content, proposes over-application of manure, miscalculates conservation practices, and will pose a threat to water quality in the region. Each of these deficiencies independently provides a basis for DNR to disapprove the application because it does not comply with the requirements of the Iowa Administrative Code.

This is Supreme Beef's fourth attempt at a nutrient management plan, with the previous NMPs having been disapproved. The most recent NMP (February 2021) had glaring issues with the manure calculations, as Supreme Beef submitted manure samples from Upper Iowa Beef (UIB), which is a cattle-slaughtering operation rather than a feedlot like Supreme Beef. Furthermore, the February 2021 NMP lacked proper information about the ephemeral gully calculations and did not address the proper amounts of effluent storage. In October 2021, Sierra Club filed a petition for judicial review of the aforementioned NMP. The District Court criticized the NMP for utilizing the samples from the UIB, failing to consider ephemeral gully erosion, and omitting a description of how the manure storage basin would hold all the manure produced. The District Court reversed the DNR approval of the NMP because of the "illogical" interpretations of the law.¹ The NMP submitted on July 5, 2023, still has many of these problems. DNR must reject this NMP because it does not comply with Iowa Administrative Code requirements.

¹ *Sierra Club v. Iowa Dep't of Nat. Res.*, Iowa Polk Cnty. Dist. Ct., Case No. CVCV062713, 1, 28 (2023).

We are aware of the detailed comments submitted by Steve Veysey on August 13, 2023, which provide more detailed calculations on several issues raised below, and we support those comments.

I. Nutrient Content Assumptions Lack Justification and Must Be Revised.

The foundation of a nutrient management plan is the nutrient output in the manure of a facility. By law, NMPs must provide “nutrient concentration of the manure” and “An estimate of the manure, process wastewater and open feedlot effluent volume or weight produced by the open feedlot operation.”² The applicant must quantify the nutrients produced and must explain how those nutrients will be applied to prevent water pollution.³ Here, several potential inaccuracies could result in problems for water quality in the area.

Supreme Beef assumes continuous removal of settled solids,⁴ which reduces the nutrient concentration in the basin because the solids have higher nutrient density than liquids. However, according to nearby landowners, the screw press Supreme Beef historically used to remove solids has not been in continuous operation. If the solids are not being removed, then the concentration in the basin is likely to be far higher than Supreme Beef has reported.

Supreme Beef relied on a sample from the basin taken in September 2022, which we believe was after solids were removed, to determine nutrient concentrations for the NMP.⁵ The moisture content for the September sample was 99.1% water, reflecting the removal of solids; cow manure is typically less than 92% water.⁶ Because the sample does not align with Supreme Beef’s actual practice, it does not accurately represent the concentrations in the basin today.

The Iowa Administrative Code includes tables listing the concentrations to use in the absence of measured concentrations.⁷ For finishing beef cattle, these show 95 pounds of nitrogen per head annually and 59 pounds of phosphorus.⁸ This works out to a concentration of 40.0 lbs nitrogen per 1000 gallons and 24.9 lbs of phosphorus per 1000 gallons.⁹ Supreme Beef’s NMP listed the nitrogen concentration as 13.5 lbs/1000 gallons and the phosphorus concentrations as 5.9 lbs/1000 gallons.¹⁰ The NMP still relies on an assumption of 6.5 gallons per cow per day in manure production, the reference table value, rather than the measured volume or weight of the

² IOWA ADMIN. CODE r. 567-65.112(8)(b)(1), 112(8)(d).

³ IOWA ADMIN. CODE r. 567-65.112(8)(a)(2).

⁴ NMP at Page 7 (PDF page 9) (“Liquid manure from the basin has the solids separated out on an ongoing basis year-round.”).

⁵ Midwest Laboratories analysis dated Sept. 22, 2022 (NMP page 198).

⁶ See “Manure Management,” Midwest Plan Service (2004), at 13, available at https://www.canr.msu.edu/uploads/files/ManureCharacteristicsMWPS-18_1.pdf.

⁷ IOWA ADMIN. CODE r. 567-65, Table 3 and Table 3a. Although these tables apply to fully confined operations, the Supreme Beef, LLC operation operates very similarly to a confinement operation by housing the cattle in open-walled barns similar to a confinement.

⁸ *Id.*

⁹ $95 / (6.5 \times 365 / 1000) = 40.59 / (6.5 \times 365 / 1000) = 24.9$.

¹⁰ NMP at page 2, table 2.

manure produced. Thus, the liquids in the NMP do not account for the full mass of the nitrogen and phosphorus.

The solids do not fully account for the remaining manure. The NMP includes a sample of the solids taken in March 2022.¹¹ The total mass of phosphorus and nitrogen in the solids sample and the September 2022 liquids sample is significantly less than reference table values for beef cattle.¹² In other words, Supreme Beef is assuming total nutrients in its manure are far less than cows actually produce. The NMP gives no reason that Supreme Beef's cows excrete fewer nutrients. The NMP must be underestimating the concentration in either the solids or the liquids.

In combination, the assumptions about the concentration and volume of manure grossly underestimate the nutrients that will likely be produced by the facility. They also do not make mathematical sense.

II. The NMP proposes over-application of manure in violation of Iowa Administrative Code section 567-65.112.

A. Background and legal standard.

A fundamental purpose of manure management is to prevent water pollution. State law expressly imposes this obligation: “Manure from an animal feeding operation shall be disposed of in a manner which will not cause surface water or groundwater pollution.”¹³ Avoiding water pollution requires that nutrients applied to land be available for crop uptake.¹⁴ NMPs specifically require the calculation to determine the appropriate manure application based on crop needs:

Calculations necessary to determine the land area required for the application of manure, process wastewater and open feedlot effluent from an open feedlot operation based on nitrogen or phosphorus use levels (as determined by phosphorus index) in order to obtain optimum crop yields....¹⁵

Applying manure in excess of the amount needed by crops will lead to nutrient loss – either through volatilization or through pollution of ground and surface water.

Manure application rates are determined using nitrogen and phosphorus rates, either of which may be the limiting factor. Phosphorus rates are determined using a phosphorus index (P-Index) that accounts for existing phosphorus in the soil.¹⁶ The P-Index is calculated for each

¹¹ Dairyland Laboratories analysis dated March 16, 2022 (NMP PDF page 199).

¹² See Veysey comments at 7.

¹³ IOWA CODE § 459.311(3).

¹⁴ See, e.g., IOWA ADMIN. CODE r. 567-65.3(1), 65.17(1), 65.17(18), 65.112(8)(a)(2).

¹⁵ IOWA ADMIN. CODE r. 567-65.112(8)(a)(2).

¹⁶ IOWA ADMIN. CODE r.567-65.112(8)(a)(1).

field receiving manure.¹⁷ It must be calculated to account for “the most erosive soil map unit that is at least 10 percent of the total field area.”¹⁸ The P-Index must also consider “the dominant critical soil map unit consistent with NRCS conservation planning guidelines.”¹⁹ Soils with a P-Index greater than five cannot receive manure until additional conservation measures are implemented to reduce the P-Index.²⁰

B. The NMP proposes over-application of manure.

The annual manure production identified in the NMP is 27,584,256 gallons. This total is the same for each year the facility operates. Supreme Beef calculated the potential amount of manure that could be applied on the fields in the NMP. These are shown in Table 1 below.

Table 1. Available Manure Application Quantities By Year

Year	Liquid	Solids, in tons ²¹
2024	27,590,950	29,646
2025	27,587,028	29,646
2026	27,587,985	29,646
2027	27,586,843	29,646

The fields listed in the NMP for solids duplicate those identified for liquids. In other words, the fields for solids application do not add field capacity for manure. The NMP leaves almost no margin for error between the total gallons that could be applied and the annual manure production for liquids, even though the NMP assumes solids will also be applied.

The calculations after accounting for the updated solids application rates show that the NMP would over-apply nitrogen or phosphorus to all fields proposed for solids application.²² Because Supreme Beef underestimated the total nutrients in the manure, as described in Section II above, the actual exceedances would be even larger.

C. Improper and unjustified erosion calculations may lead to over-application.

Iowa Administrative Code requires an NMP to show “appropriate site-specific conservation practices to be implemented.”²³ Failure to till on-the-contour or install and maintain appropriate conservation measures on the slopes will lead to preventable soil loss. Much of the soil is considered “highly erodible land,” with a high likelihood of erosion or runoff that could reach surface waters. Site-specific conservation practices are needed to protect water quality. We urge

¹⁷ IOWA ADMIN. CODE r.567-65.17(17)(a).

¹⁸ IOWA ADMIN. CODE r. 567-65.17(17)(b).

¹⁹ *Id.* Although the rule states this is required for manure management plans, the nutrient management plan requirements fully incorporate the calculations of 65.17(17).

²⁰ IOWA ADMIN. CODE r. 567-65.17(17)(f).

²¹ DNR received amended information for solids applications from Supreme Beef on approximately August 9, 2023.

²² See Veysey comments at 13-14.

²³ IOWA ADMIN. CODE r. 567-65.112(8)(e)(7).

the operators to implement these conservation measures.

If conservation measures are in fact being implemented, then the calculations in the NMP are inaccurate and must be redone to account for the conservation practices. If they are not being taken, the risk of water pollution is high.

In overturning DNR's approval of a prior NMP for the facility, the Polk County District Court criticized the illogical interpretations of the law by IDNR for relying on photographs for calculating the ephemeral gully erosion. There is no statute or regulation that permits DNR to use photographs to calculate ephemeral gully erosion.²⁴ Instead, gully erosion, as part of the phosphorus index, must be calculated according to the Natural Resources Conservation Service Technical Note 25.²⁵ NRCS calculations require a calculation based on the length, width, depth, and soil density.²⁶ The depth, and therefore the gross erosion, cannot be determined from photographs. This is why the NRCS advises that "The dimensions of ephemeral gullies should be measured in the field when possible."²⁷

IEC submitted a records request to DNR for documents related to the Gross Erosion Factor in the P-Index; DNR responded that it does not have the supporting documentation for ephemeral gully calculations. Although Supreme Beef amended the calculations from its prior NMP, DNR has no supporting documentation to verify the calculations. As such, Supreme Beef did not adequately address the concerns outlined by the district court. These are also reason for significant concern about the potential harm to water quality.

In calculating the phosphorus index, Supreme Beef also claimed terraces to reduce erosion on 18 fields. The NMP calculations for the phosphorus index assume a terrace at the lower end of the application area that constitutes the "dominant critical soil map unit."²⁸ But the NMP did not show these exist, as demonstrated in Figure 1 below. Satellite images show terraces as green lines of perennial vegetation in fields *other* than where Supreme Beef proposes to apply manure, and they do not appear at the lower edge of the critical soil areas. At the Airport-Monona site, there are few if any terraces in the field. Appendix A, attached to these comments, contrasts the submitted aerial maps of the proposed fields to the satellite imagery of the fields. Appendix A also contains the soil map for each field.

²⁴ *Sierra Club v. Iowa Dep't of Nat. Res.*, Iowa Polk Cnty. Dist. Ct., Case No. CVCV062713, 1, 25 (2023).

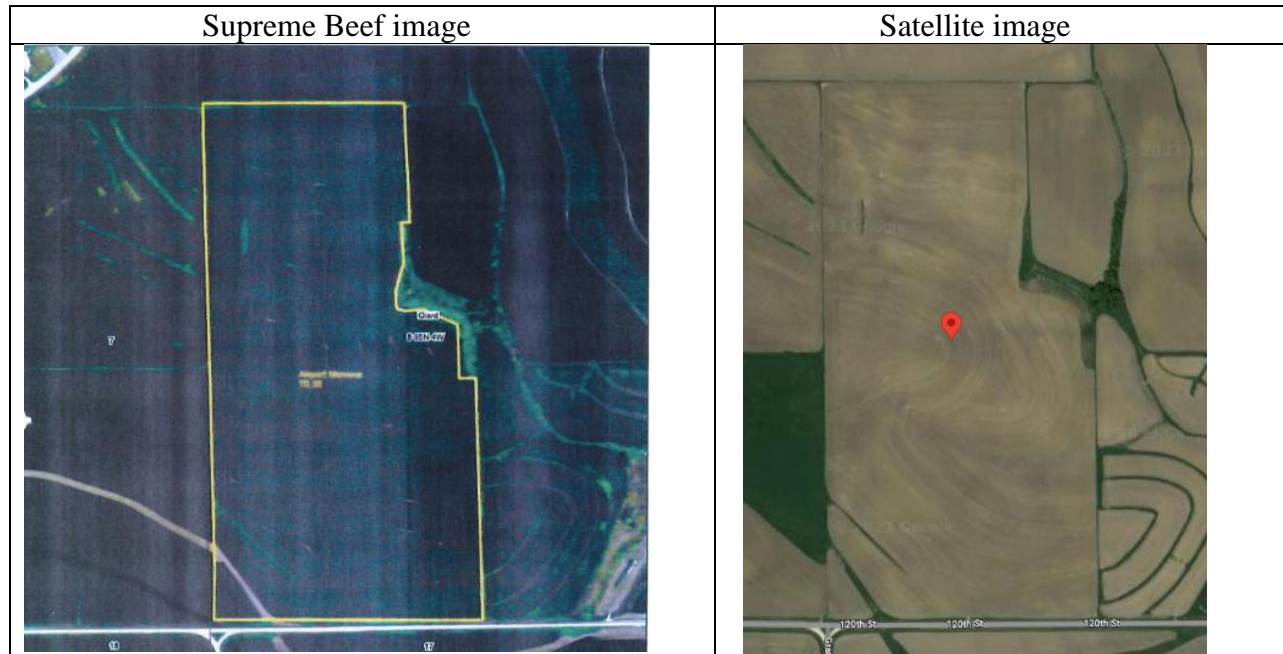
²⁵ See IOWA ADMIN. CODE r. 567-65.17(17).

²⁶ "Erosion and Sediment Delivery," NRCS, available at [https://www.nrcs.usda.gov/sites/default/files/2022-09/Erosion %26 sediment delivery IA-NRCS Procedures.pdf](https://www.nrcs.usda.gov/sites/default/files/2022-09/Erosion%20sediment%20delivery_IA-NRCS_Procedures.pdf).

²⁷ *Id.* at 1.

²⁸ See IOWA ADMIN. CODE r. 567-65.208(5) (incorporating rule 65.17(17)(b), which cites NRCS Technical Note no. 29). The dominant critical soil map unit must be determined on a field-by-field basis, identifying the most erosive soil that is at least 10% of the field area. See Iowa Technical Note no. 29, U.S. Department of Agriculture Natural Resources Conservation Service (Jan. 2017), available at [https://efotg.sc.egov.usda.gov/references/public/IA/Dominant Critical Area 29 AGR TN 2017 01.pdf](https://efotg.sc.egov.usda.gov/references/public/IA/Dominant_Critical_Area_29_AGR_TN_2017_01.pdf).

Figure 1. Terrace Imagery of Airport-Monona.



As shown by the included images, Supreme Beef’s claims of terraces do not appear to be valid. Satellite and LiDAR elevation imagery confirm that these fields do not have the slopes necessary to protect against erosion at the bottom of the field. Supreme Beef is claiming terraces because the sediment trap factor (STF) reduces the erosion factor in the P-Index; this effectively allows Supreme Beef to apply manure to fields at higher rates. DNR must verify that the terraces included in P-index calculations actually exist because the distinction between the STF and SDR factors is significant.

D. P-Index assumptions are inconsistent.

The NMP is also internally inconsistent in its P-Index calculations, which can change whether manure application is limited by nitrogen or phosphorus. The NMP both uses incorrect calculations and uses different final P-Index numbers.

First, the P-Index summary page in the NMP (page 202 of the NMP PDF) has arithmetic errors for the majority of the fields. These errors are concerning not only because they understate the P-Index for many fields, but also because the table comes from an NRCS spreadsheet that does not, when downloaded, contain these types of mathematical mistakes. The creator of the NMP must have changed the formulas or used a different spreadsheet to create the table.

In supplemental NMP application pages submitted to DNR on approximately August 9, 2023, Supreme Beef provided a different P-index value for several fields. For example, the P-Index of “Leroys” was 1.87 instead of the July NMP value of 2.48. This change would switch the manure application rate from being limited by phosphorus to being limited by nitrogen. To IEC’s knowledge, Supreme Beef did not submit new P-Index calculations in the supplemental

submission on August 9, 2023, or at any other time, to justify changes to the P-Index for any fields.

III. The NMP is incomplete.

Iowa DNR can approve NMPs that meet all requirements of Iowa Code chapter 459A and the Iowa Administrative Code.²⁹ The Supreme Beef NMP lacks two components required by rule. Therefore, DNR cannot approve the NMP.

A. The NMP lacks five years of manure application plans.

Iowa DNR's NMP form requires applicants to submit data for five growing seasons.³⁰ This provides data for the full period between NMP re-submissions.³¹

The NMP is incomplete because Supreme Beef provided manure management summaries for four growing seasons, not five. The submitted NMP appears to use an outdated application form for manure management plans (MMPs) for several pages. This would not be a problem if the form provided all the information in the NMP.

B. The NMP lacks manure application agreement information.

Iowa rules require NMP applicants to provide agreements with landowners for any land not owned by the applicant.³² Those agreements must include the years and acres for each agreement.³³

The NMP submitted on July 5, 2023, does not include landowner agreements for all fields assumed to receive manure. For example, the Witter field does not have an agreement. Supreme Beef also claims to rent several fields, and claims that they are in row crops; to our knowledge Supreme Beef is not engaged in row crop agriculture.

IV. DNR should disapprove the NMP due to potential adverse impacts.

The facility and proposed manure application fields include natural resources that are extremely sensitive to pollution. The Iowa Administrative Code authorizes DNR to use environmental risk as a basis to disapprove an application and DNR should deny this NMP on that basis.³⁴ We reaffirm our comments submitted in March of 2021, which focused on the legal standards, environmental sensitivity, transportation for land application, and the growing concentration of feeding operations in Northeast Iowa. The DNR director has the authority to deny this application because this facility poses an exceptional risk to water quality. The area

²⁹ IOWA CODE § 459A.208; IOWA ADMIN. CODE r. 567-65.112(3).

³⁰ See "Introduction and Instructions for the Nutrient Management Plan Form," Iowa DNR, <https://www.iowadnr.gov/portals/idnr/uploads/forms/5422021.pdf>.

³¹ IOWA ADMIN. CODE r. 567-65.112(8)(g).

³² IOWA ADMIN. CODE r. 567-65.112(8)(c).

³³ *Id.*

³⁴ IOWA ADMIN. CODE r. 567-65.5.

around the Supreme Beef facility is environmentally sensitive because it is located in the watershed of Bloody Creek Run, an Outstanding Iowa Water; furthermore, the area is located in karst topography, which is especially susceptible to excess nutrients reaching the surface and the groundwater. Karst topography is soluble and porous. Many of the fields for proposed application are in highly vulnerable watersheds. Finally, there is a significant concentration of feeding operations (19) with manure management plans or NMPs located in eight miles of Supreme Beef. Supreme Beef, as one of the largest facilities in the state, would cause significant harm to water quality.

V. Conclusion

The NMP makes unfounded assumptions regarding manure nutrient content, proposes over-application of manure, does not properly account for conservation practices, and will pose a threat to water quality in a vulnerable, ecologically unique region of Iowa. Each of these deficiencies independently provides a basis for DNR to disapprove the application because it does not comply with the requirements of the Iowa Administrative Code. IEC urges the DNR to disapprove the NMP.

Sincerely,

/s/ Michael R. Schmidt

Michael R. Schmidt
Staff Attorney
Iowa Environmental Council

/s/ Alicia Vasto

Alicia Vasto
Water Program Director
Iowa Environmental Council

/s/ Alec T. Goos

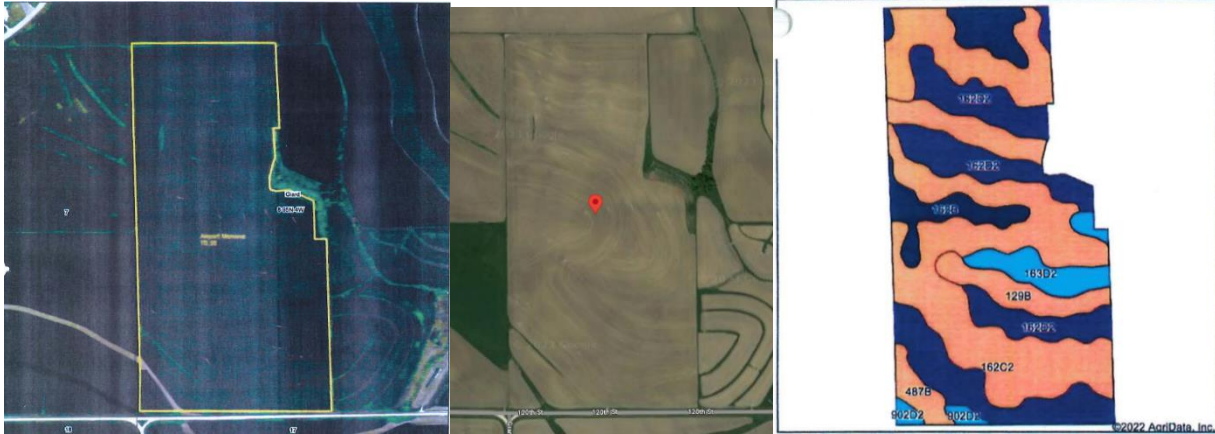
Alec T. Goos
Law Clerk
Iowa Environmental Council

/s/ Jonathan Humston

Jonathan Humston
Law Clerk
Iowa Environmental Council

Appendix A – Claims of Terraces

Airport-Monona. 8-95N-4W (1 Parallel Tile Outlet terrace 2.0% grade at bottom of RUSLE slope)



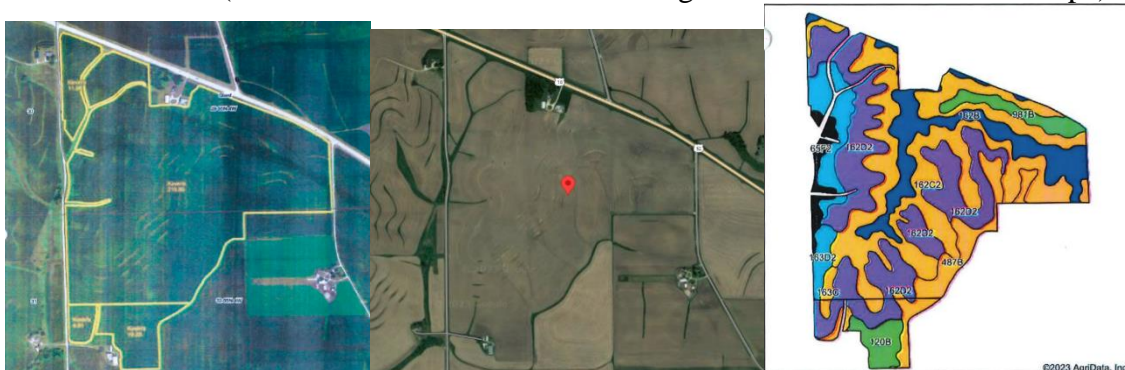
Back 50. 21-95N-4W (1 Parallel Tile Outlet terrace 2.0% grade at bottom of RUSLE slope)



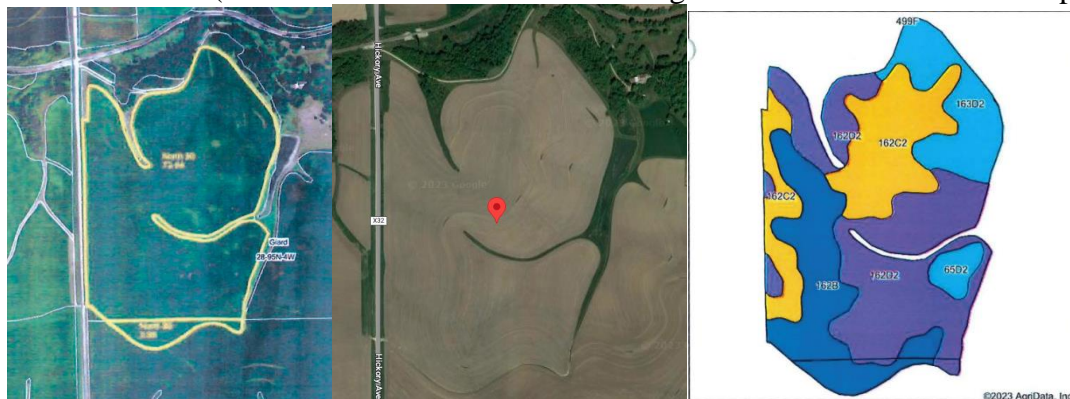
Connick. 33-95N-4W (1 Parallel Tile Outlet terrace 2.0% grade at bottom of RUSLE slope)



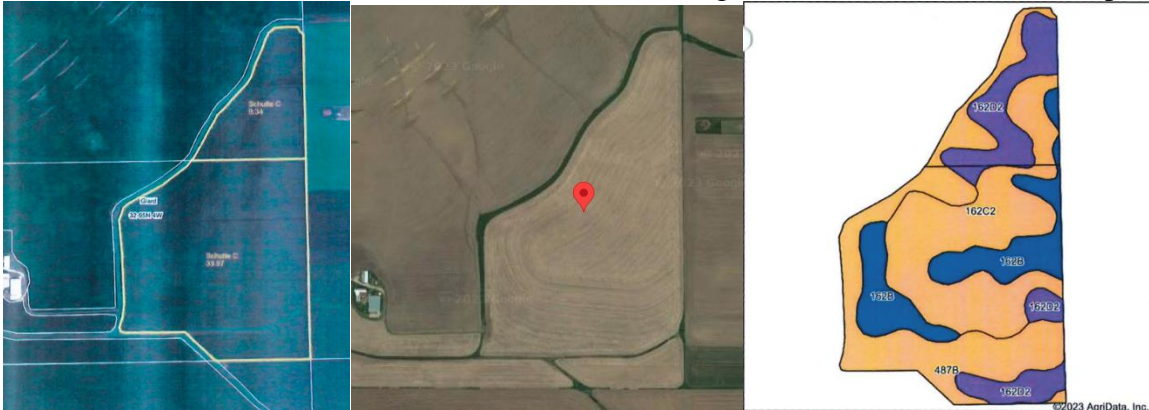
Kevin's. 29-95N-4W (1 Parallel Tile Outlet terrace 2.0% grade at bottom of RUSLE slope)



North 80. 28-95N-4W (1 Parallel Tile Outlet terrace 2.0% grade at bottom of RUSLE slope)



Schutte C. 32-95N-4W (1 Parallel Tile Outlet terrace 1.0% grade at bottom of RUSLE slope)



Wirkler Home East. 5-94N-4W (1 Parallel Tile Outlet terrace 1.0% grade at bottom of RUSLE slope)

