

30 December 2020

Mr. Lee H. Hamann
McGrath North Mullin & Kratz, PC LLO
First National Tower, Suite 3700
1601 Dodge Street
Omaha, NE 68102

Ref: *Application filed by Len Danielski and Danielski Harvesting & Farming, LLC ("Applicant") for Conditional Use Permit 001-20 ("CUP")*

Subject: *Applicants Assessment of Odor Impacts Related to the Proposed Land Use*

Dear Mr. Hamann:

SCS Engineers (SCS) was hired by your client, Mr. Edwin Brown, to review and comment on odor issues and concerns relative to the referenced Conditional Use Permit (CUP) application. SCS conducted a review of related documents, Planning Commission notes, and materials in support of our evaluation of how potential odor impacts are addressed in the CUP approval process. SCS is a national environmental consulting firm with over 70 offices. This project included inputs from SCS's national expert on odor studies and is a signatory of this letter report. More information on SCS Engineers and the contributors to this report can be found at our website www.scsengineers.com.

The Applicant has addressed odor issues in its efforts to obtain an exemption to the limit of swine animal production located on parcels in Cherry County NE. Toward this end, the Applicant provided a brief outline of Best Management Practices (BMPs) in its application¹ and provided testimony in a recent Cherry County Planning Commission meetings (November 12, 2020 and December 1, 2020)^{2,3} that explained and later clarified an offset analysis that the Applicant performed using the University of Nebraska Odor Footprint Tool (NOFT). The NOFT is a novel analysis tool that helps users to determine offset distances from certain farming operations that can cause odors. These offsets are intended to protect neighbors and the public from unreasonable exposure to odors. **Resolving the odor impacts are central to obtaining an exemption to animal unit limits set by the Cherry County Zoning Resolution, and we believe the Planning Commission needs to evaluate the setback requirements in this case in a way that is consistent with the potential severity of odor impacts.** We fundamentally disagree with Mr. Settje's statement in the November 12th Planning Commission meeting that "the solution to pollution is dilution..." which is indicative of not being very knowledgeable about air pollution control. Below is a summary of our comments and concerns:

¹ Settje Agri-Services and Engineering, Inc., Raymond, NE, "Application for a Construction and Operating Permit, Valentine Feeders, Lenard Danielski, Cherry County, NE", Application for Conditional Use Permit 001-20, Cherry County, NE April 17, 2020.

² Cherry County Planning Commission, "Public Hearing on CUP 001/20 Danielski Harvesting & Farming LLC/Valentine Feeders Swine Facility to be used for Breeding, Gestation, and Farrowing", Cherry County Fairgrounds 4-H Building, 120 South Green St., Valentine, NE 69201, November 12, 2020.

³ Cherry County Planning Commission Transcript, "Cherry County Planning and Zoning Meeting, December 1, 2020", Valentine, NE



- **Best Management Practices (BMPs) for limiting odors that are outlined in the CUP application are very brief and nondescript.**⁴ The BMPs are limited to two categories: 1. Building Maintenance and 2. Manure Storage. More detail and specific actions should be described in the application. For example, how often will floors be cleaned and dried, to what capacity of manure build-up be allowed? Are disinfectants going to be used? If so what kinds and how often? What ventilation rates will be used in buildings to prevent dust, gas, heat, and moisture buildup? How often will exhaust fans be cleaned? Are there other control measures in consideration such as bio-scrubbers, ventilation filters, misting agents at perimeters, and other deodorizing applications that are readily available today? Are dietary measures considered for animal feed and if so what kinds and how effective are they?
- **The absence of a detailed Odor Management Plan (OMP) prevents the public from making a meaningful determination of the true odor impacts from the proposed action.** Since odor issues are central to this application and the proposed land uses are going to exceed existing animal unit cap by multiple factors, an OMP should be required as a condition of the CUP. The OMP should: 1. Detail the facility related sources of odor that make up the proposed operations, 2. List specific odor control measures that will be employed to minimize odor emissions from each identified source of the operation, 3. Provide a monitoring plan to ensure that control measures are effective and offsite odor concentration targets are being achieved, 4. Offer a means by which findings will be conveyed to the public and 5. Explain how complaints will be resolved.
- **BMP would require OMP to include mandatory odor monitoring by the Applicant throughout the life of the operation** and include detailed odor testing methodology and maximum odor thresholds that are not to be exceeded. This would entail conducting odor measurements using some established method such as a scentometer, portable olfactometer or Nasal Ranger.⁵ Consistent with industry and other state guidelines, odor concentrations outside of the setback zones need to be less than 5 to 7 dilution to threshold (D/T) levels or odor units (OU)⁶ after considering background odor levels. If odors exceed these levels, then the CUP should be conditioned to require immediate curtailment of operations until odor emissions can be reduced.
- **The Applicant's testimony and submitted information does not provide any specific input data that was used in the NOFT. Having such input data is vital to enable others in the public to evaluate the findings from the NOFT analysis performed by the Applicant.** The NOFT was designed to address a risk based determination of an offset distance from proposed swine operations that corresponds to areas where odors are expected not to be objectionable to most people for a specified period of time. **NOFT does not provide a setback that defines a "no-odor" zone.**⁷ NOFT takes information about a proposed farming

⁴ Settje Agri-Services and Engineering, Inc., Raymond, NE, "Application for a Construction and Operating Permit, Valentine Feeders, Lenard Danielski, Cherry County, NE", Application for Conditional Use Permit 001-20, Cherry County, NE April 17, 2020. Page 14

⁵ Yael Laor*, David Parker and Thierry Pagé, "Measurement, prediction, and monitoring of odors in the environment: a critical review", Reviews in Chemical Engineering · April 2014.

<https://www.researchgate.net/publication/269391832>

⁶ San Diego State University and California Integrated Waste Management Board, "Contractor's Report to the Board – Comprehensive Compost Odor Response Project", March 2007,

<https://www2.calrecycle.ca.gov/Publications/Download/841>

⁷ Chris Henry, P.E., and Rick Stowell, Ph.D., P.E. "Understanding Odor Footprints and the Odor Footprint Tool", University of Nebraska – Lincoln Extension. https://water.unl.edu/documents/OFT_FAQ.pdf

operation and then determines a representative odor emissions profile. This odor emissions profile is then combined with regional historical meteorological data and performs a dispersion calculation to forecast odor intensity at downwind locations throughout all compass directions. Once odor intensity is mapped for downwind locations, a risk analysis is performed to determine a distance that odor intensity is at or below a certain level (Odor Intensity of 2 or less) for a set percentage of the time (90% to 99%). This is called the “Annoyance Free Frequency”.⁸ So the higher the percentage of time that odors will be below a set level, the setback distance from the source will need to be increased. Applicant appears to have misapplied the NOFT to back into the conclusion on setback distance it desires for its operation rather than do the calculations required by NOFT with facility specific data inputs in order to estimate actual potential odor impacts on neighboring properties. Applicant has failed to provide a copy of their data and calculations used in the NOFT to support their conclusion as to odor impacts at any given distance, whether inside the county's designated setback perimeter or outside of the perimeter, and should be required to provide that information so it can be objectively evaluated by the county and the public before proceeding further.

- **Agreement between the NOFT suggested setback and the existing Cherry County setback requirements is not a validation of the Applicant’s NOFT analysis.** The Applicant states in testimony several times that there is agreement between the existing setback and the NOFT determined setback and offers this as a validation of his analysis. This could not be further from the truth – the existing setback is defined by Cherry County Zoning Resolution based upon the number of animal units. One would expect that an increase in animal usage, especially in terms of multiple factors of the 2,000 animal units, would increase the existing setback level.
- It should be noted, as previously stated above, that modeling odors using the NOFT to predict a setback does not denote a “No-Odor” impact at distances greater than the suggested setback. The NOFT assumes that an Odor Intensity of less than 2 is acceptable on a 0-5 point Odor Intensity scale.⁹ Odor intensity is defined as an indication of the relative strength of the odor above the recognition threshold.¹⁰ The more intense the odor, the more likely an individual citizen will be annoyed. An odor intensity of 2 is described as “noticeable, faint, and a little annoying”¹¹, odor intensity 1 is “slight, very faint and not annoying”.¹² **Note that odor intensity level of 1 or 2 are not screened outside of the setback determined by the NOFT and people will experience those odors.**
- Based upon testimony at the planning commission meetings an “Annoyance Free Rate” of 96% was selected in the Applicant’s analysis using the NOFT to determine setbacks.¹³ While the user manual for the NOFT suggests an Annoyance Free Rate of 96% in areas

⁸ Chris Henry, P.E., and Rick Stowell, Ph.D., P.E. “Understanding Odor Footprints and the Odor Footprint Tool”, University of Nebraska – Lincoln Extension. https://water.unl.edu/documents/OFT_FAQ.pdf

⁹ Rick Stowell, Ph.D, P.E., et al, “Odor Footprint and the Odor Footprint Tool – An Overview”, University of Nebraska – Lincoln Extension. <https://water.unl.edu/documents/OverviewOdorFootprint%20Tool.pdf>

¹⁰ ASTM. 1999. E 544-99: Standard practices for referencing suprathreshold odor intensity. In Annual Book of ASTM Standards. Philadelphia, PA: American Society for Testing and Materials.

¹¹ Define Odor Intensity 2 - ASTM. 1999. E 544-99: Standard practices for referencing suprathreshold odor intensity. In Annual Book of ASTM Standards. Philadelphia, PA: American Society for Testing and Materials.

¹² Define Odor Intensity 1 - ASTM. 1999. E 544-99: Standard practices for referencing suprathreshold odor intensity. In Annual Book of ASTM Standards. Philadelphia, PA: American Society for Testing and Materials.

¹³ Cherry County Planning Commission, “Public Hearing on CUP 001/20 Danielski Harvesting & Farming LLC/Valentine Feeders Swine Facility to be used for Breeding, Gestation, and Farrowing”, Cherry County Fairgrounds 4-H Building, 120 South Green St., Valentine, NE 69201, November 12, 2020. Pages 41 thru 44.

where people are used to smelling farming odors, we feel that this situation warrants extra consideration due to the large size of the proposed operations. **Guidance by the NOFT authors further suggests that to be a “good neighbor” the annoyance free rate should be set at 98%.**¹⁴ It is SCS’s opinion that 98% is the minimum value that should be used in this case based upon the large animal population that is proposed and noting the community concern that has been conveyed by numerous opponents at Planning Commission meetings regarding this application. A 96% “Annoyance Free Rate” means that 4% of time there will be objectionable odors (above Odor intensity 2) outside the setback. This averages to 1 hour per day of objectionable odor. If such impacts occur during the daylight hours, people will experience them potentially more than 10% of the time. This large of an impact is simply unacceptable.

- **No apparent consideration to terrain effects were applied in the use of the NOFT.** Inspection of topographic maps¹⁵ of the Cherry County region indicate that the Two Rivers Ranch and other nearby residences reside 200ft to 300ft below the mean elevation of the proposed swine operations. This possibly defines a grade of more than 2% which suggests that the **NOFT should consider terrain influences on the setback determination.**¹⁶
- **There are other more refined ways to determine odor impacts.** Methods exist to define odor in terms of Odor Concentration – NOFT guidance supports the need for this kind of analysis, but there is no evidence that the Applicant has done one. EPA approved dispersion models, such as AERMOD, which is commonly used by state agencies to permit facilities with air pollutant emissions, can be used to more accurately determine odor impacts from the proposed operations.¹⁷
- **The NOFT does not consider odors from manure spreading operations.**¹⁸ While it has been claimed that odors are minimal from these types of activities, there is literature that suggests that odors do occur from manure spreading, including application of liquid manure or effluent by injection. This activity would at least contribute to a background odor which would establish a new baseline that would add to the overall odor impacts. For example, the background odors as a result of manure spreading may be low, but when overlapping with swine facility operations odor impacts, the combined odor impact could result in the odor threshold being more easily exceeded. That is particularly important in this case because the Applicant’s designated application sites cover many sections of ground for miles around the proposed facility.
- **The NOFT does not account for existing odors or upwind odor sources and any background levels of odors.** As mentioned above, odors can be additive and at times, depending upon

¹⁴ Rick Stowell, Ph.D., P.E., and Crystal Powers, “Determining Separation Distances Using the Nebraska Odor Footprint Tool: User’s Manual for the Spreadsheet Tool”, University of Nebraska – Lincoln Extension. <https://water.unl.edu/documents/Users%20manual%20-%20Spreadsheet%20NOFT.pdf>

¹⁵ Google Earth Pro. Google 2020, U.S Dept. of State Geographer, Data SIO, U.S. Navy, NGA, GEBCO.

¹⁶ Rick Stowell, Ph.D., P.E., and Crystal Powers, “Determining Separation Distances Using the Nebraska Odor Footprint Tool: User’s Manual for the Spreadsheet Tool”, University of Nebraska – Lincoln Extension. <https://water.unl.edu/documents/Users%20manual%20-%20Spreadsheet%20NOFT.pdf> , Page 9

¹⁷ Valentina Businia , Laura Capelli*a , Selena Sironia , Giuseppe Nanao , Andrea N. Rossib , Simone Bonatib, “Comparison of CALPUFF and AERMOD Models for Odour Dispersion Simulation”, AIDIC, VOL. 30, 2012

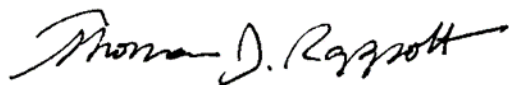
¹⁸ Chris Henry, P.E., and Rick Stowell, Ph.D., P.E. “Understanding Odor Footprints and the Odor Footprint Tool”, University of Nebraska – Lincoln Extension. https://water.unl.edu/documents/OFT_FAQ.pdf

a possible non-linear human response to odor detection, coincident multiple odor causing chemicals may cause a more heightened olfactory response by the public.¹⁹

In summary, SCS Engineers believes the NOFT can be a useful aid to farmers to estimate proper setbacks from confined animal feeding operations to limit public exposure to harmful and offensive odors when properly used, but it is by no means definitive, as pointed out in the paragraphs above. The Planning Commission should recognize that the NOFT is a calculation tool intended for planning purposes. Any decision based upon the output of the NOFT should rely upon reasonable evaluation of input data and assumptions used in the NOFT and that input data should be transparent to the public. Further, no exemption from the county's 2000 animal unit cap should be granted without specifically including a requirement for a detailed Odor Management Plan (OMP) with related monitoring that will serve to verify that the determined offsets are working with regard to certain odor thresholds and that the surrounding public is not subject to ongoing noxious and objectionable odors.

Should you have any questions or comments, please do not hesitate to contact the undersigned.

Sincerely,



Thomas Rappolt
Vice President
SCS Engineers



Michael J. Miller, CHMM
Vice President
SCS Engineers

¹⁹ [Susan S. Schiffman](https://doi.org/10.2527/1998.7651343x), "Livestock odors: implications for human health and well-being", *Journal of Animal Science*, Volume 76, Issue 5, May 1998, Pages 1343-1355, <https://doi.org/10.2527/1998.7651343x>