Farm Services Agency Environmental Assessment of Fanter Farms
Public Comments Submitted to: **John W. Gehrke,** Farm Loan Chief, Illinois FSA
Public Comment Deadline: Thursday July 1, 2021

The following written public comments were prepared for the community that lives and works around the proposed location of the Fanter Farms hog facility in Mason County, Illinois.

1. Proximity to Peterville. The Fanter Farms hog facility is proposed to be located within a half-mile of the town of Peterville (platted in 1868) as can be seen in this Acre Value snapshot:[1]

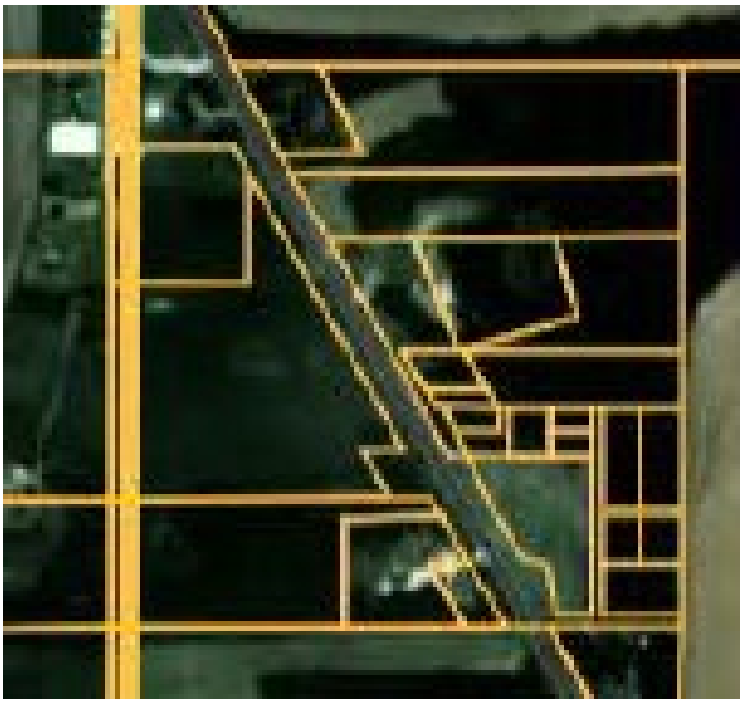

Figure 1 – Closeup of the parcel divisions of the town of Peterville, Illinois.

The families that live in this town and within a short distance of the proposed site of Fanter Farms hog facility filled out a questionnaire that asked their name, number of people in their family, presence of children and indications of people at risk due to health conditions. The results of that survey will be submitted as a separate comment but are summarized here:

> 15 residences in contiguous Peterville, 41 residents, 3 elderly adults on oxygen, 3 other adults with respiratory problems, 8 children that are 8 years old or younger; 1 child on the way (pregnancy).

[1] See: https://www.acrevalue.com/

Figure 2 – Larger view of Petersburg and the proposed location of Fanter Farms.

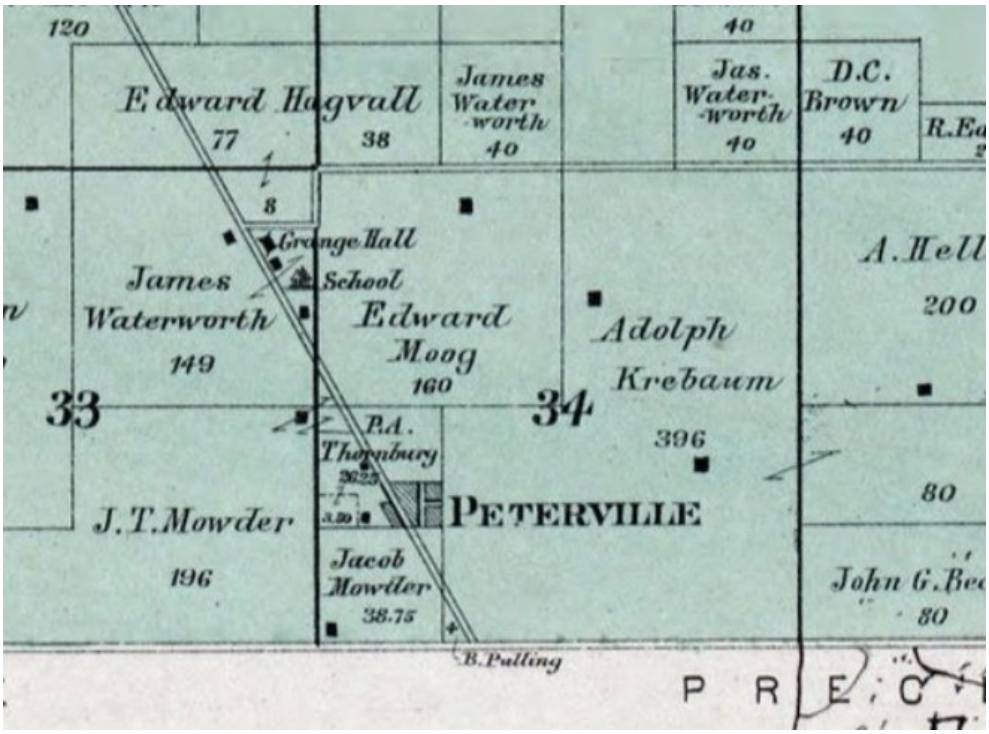

Figure 3 – Peterville located in Section 34 – Mason County map (1891)[2]

[2] See: http://www.historicmapworks.com/Map/US/1599111/Havana+Township++Peterville++Bath++Poplar+City++Illinois+River/Mason+County+1891/Illinois/

On page 18 of the draft EA, this statement is made regarding setbacks to residences:

> "The setback requirements of the Livestock Management Facilities Act, administered by the Illinois Department of Agriculture, are legal requirements put in place to protect those inhabitants, commercial businesses, and places of congregation within a certain distance of livestock facilities."

The FSA needs to understand that the Illinois Department of Agriculture has not enforced the statutory setbacks when dealing with the proposed Fanter Farms facility.

The Livestock Management Facilities Act (LMFA) provides for setbacks when the proposed facility is greater than 50 animal units and less than 1000 animal units as follows (Title 510 Section 35):[3]

> **Section 35. Setbacks for livestock management and livestock handling facilities.**
>
> (c) New livestock management or livestock waste handling facilities. Any new facility shall comply with the following setbacks:
>
> (1) For purposes of determining setback distances, minimum distances shall be measured from the nearest corner of the residence or place of common assembly to the nearest corner of the earthen waste lagoon or livestock management facility, whichever is closer.
>
> (3) For a livestock management facility or waste handling facility serving 50 or greater but less than 1,000 animal units, the minimum setback distance shall be ¼ mile from the nearest occupied residence and ½ mile from the nearest populated area.

The LMFA includes this definition of "populated area" as follows:

> **Section 10.60. Populated area.** "Populated Area" means any area where at least 10 inhabited non-farm residences are located or where at least 50 persons frequent a common place of assembly or a non-farm business at least once per week.

Clearly, the Peterville community of residences (15) qualifies as a populated area and the Illinois Department of Agriculture should have recognized this important fact – yet they have consistently not done so. Peterville residents have written to Brad Beaver at IDOA to alert him to these facts with no joy. It is important the FSA understand that the

---

[3] See: http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1720&ChapAct=510%A0ILCS%A077/&ChapterID=41&ChapterName=ANIMALS&ActName=Livestock+Management+Facilities+Act.

statute applies whether the state agency has acted accordingly. Proper siting in the case of Fanter Farms should be evaluated with respect to whether the proposed location is half-mile or greater from the nearest residence in the populated area as measured from the corner of the livestock management facility.

Nearby resident Gino Santana made this public comment (submitted separately) regarding where his family lives and others within the half-mile setback:

> "We, along with 4 other families live within 1/4 of a mile of this site and nearly 20 residences are within 1/2 mile of this CAFO site. Our community will be directly and adversely impacted by the waste, toxic emissions, particulates from this CAFO. We are especially concerned about contamination our shallow wells which serve as our only drinking water source for the families that currently reside here."

Question: Will the FSA recognize that Peterville is a populated area and that the proposed Fanter Farms hog facility cannot be legally constructed in its current location due to the state mandated setbacks to populated areas?

2. Health Impacts of CAFOs. On page 15 of the FSA's EA, there is a statement that implies there are no adverse environmental or health effects:

> "The proposed action will not cause any adverse human health or environmental effects as defined in Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"."

The following discussion serves to educate the FSA so that they have a better understanding of the risks to human health from hog CAFOs. We contend that all humans have the right to clean air and clean water. There is an expectation that our government will not fund projects that cause harm to public health or the environment.

In a recent study published in the Proceedings of the National Academy of Science (PNAS), scientists determined the adverse impacts of the agricultural food system as follows:[4]

> "We also attribute total deaths from agricultural supply chain emissions to the production of specific commodities, which we combine into 16 groups (Fig. 1; "Commodity"). This analysis shows that 57% of deaths are from crops and 43% from livestock. However, a substantial portion of crops is used as animal feed and nonfood products (Fig. 1; "Product"). In attributing direct damages to final products, we find that 89% (15,900 deaths) of the total deaths caused by

[4] See: https://www.pnas.org/content/118/20/e2013637118

agriculture are linked to food production, with the remaining 11% (2,000 deaths) linked to biofuels and other nonfood products (e.g., plant and animal fibers)."

A health study performed in 2005 found that air pollutants at levels expected downwind from a hog facility adversely impact human subjects as follows:[5]

> "Aerial emissions from a swine house at North Carolina State University's field laboratory were diluted to a level that could occur at varying distances downwind from a confined animal feeding operation (CAFO) both within and beyond the property line, and these emissions were delivered to an environmental exposure chamber. The study design consisted of two 1-hr sessions, one in which 48 healthy human adult volunteers were exposed to diluted swine air and another in which they were exposed to clean air (control). Objective measures of blood pressure, temperature, heart rate, respiratory rate, lung function, nasal inflammation, secretory immunity, mood, attention, and memory were correlated with objective measures of air quality. Ratings of perceived (self-reported) health symptoms were also obtained.
>
> The mean levels of airborne constituents in the swine air condition were hydrogen sulfide (24 ppb), ammonia (817 ppb), total suspended particulates (0.0241 mg/[m. sup.3]), endotoxin (7.40 endotoxin units/[m.sup.3]), and odor (57 times above odor threshold). No statistical differences on objective measures of physical symptoms, mood, or attention resulted from the 1-hr exposure to swine emissions in the environmental chamber when compared with clean air for healthy human volunteers. However, subjects were 4.1 ($p = 0.001$) times more likely to report headaches, 6.1 ($p = 0.004$) times more likely to report eye irritation, and 7.8 ($p = 0.014$) times more likely to report nausea in the swine air (experimental) condition than in the control condition. These results indicate that short-term exposure in an environmental chamber to malodorous emissions from a swine house at levels expected downwind can induce clinically important symptoms in healthy human volunteers."

In a 2009, Drs. Rachel Horton and Steve Wing, among others, conducted a study of human health effects caused by industrial hog facilities in North Carolina. These are the results of that study as published in the Journal of Public Health:[6]

> "In a community-based, longitudinal study of neighbors of industrial hog operations, we observed associations among malodor, several airborne emissions, stress, and negative mood. Specifically, we observed increased reporting of stress and negative mood in response to increasing malodor. Additionally, increases in H2S and semi-volatile PM10, both odorous in nature, were associated with reported stress and 1 or more mood variables.

[5] See: https://pubmed.ncbi.nlm.nih.gov/15866765/
[6] See: https://pubmed.ncbi.nlm.nih.gov/19890165/

> Our findings complement a large literature on malodor as an environmental stressor. Malodor and concomitant airborne emissions do appear to trigger stress and negative mood in nearby residents unwillingly exposed at home.
> It is important to contextualize the effect of malodor on the lives of nearby residents. People who cannot afford air conditioning, clothes dryers, membership at a gym, and entertaining in restaurants depend on opening their windows for ventilation, drying their clothes outside, exercising in their yards, and entertaining family and friends in and around their homes.
>
> In ethnographic interviews, neighbors of industrial hog operations report that they refrain from gardening, walking, chores, and having cookouts with family and friends because of hog odor, and they report interruption of their sleep because of hog odor inside their homes. This is significant because physical activity, social support, and sleep are important for health."

3. Air Quality Review – Animal Numbers. On page 18 of 22, the FSA stated the following about potential air pollution from the proposed Fanter Farm hog facility:

> "The proposed farm would not be required to obtain an air permit in accordance with the EPA permitting authority, since air emissions for defined criteria pollutants at the facility do not exceed the permitting thresholds considered protective of air quality. Potential air quality effects considered here include odor and dust production, which may be associated with construction activities and the ongoing operations of the farm."

Question: Did the FSA calculate the air emissions for the proposed hog farm including particulates, ammonia, and volatile organic compounds? If so, what emission factors were used and what was the emission tonnage per year?

On page 4 of 54 of the Fanter Farms Livestock Waste Management Facility permit document, the engineer for the proposal provides this storage volume estimate:

> Construction of a single livestock waste handling facility that shall have the following dimensions:
>
> Maximum Length = 193 feet
> Maximum Width = 102 feet
> Maximum Depth = 10 feet
> Design Capacity -= 189,000 cubic feet [1,413,720 gallons]

The amount of feces and urine generated by 2400 head of finishing swine can be calculated using design factors from the Midwest Plan Services Manure Characteristics Table 6 as follows:[7]

[7] See: https://www-mwps.sws.iastate.edu/catalog/manure-management/manure-characteristics

2400 head x 0.89 gallons/head/day x 365 days/yr = 779,640 gallons/year

It is not clear why the engineer designed the deep pit to store nearly two years of liquid swine manure wastewater. Perhaps we need to evaluate the square footage of the proposed barn and assess the maximum capacity or stocking density to determine if the facility can only house 2400 hogs – perhaps it can house more than that.

Square footage of barn = 193 feet x 102 feet = 19,686 square feet

The Swine Extension website has an article that looks at stocking densities for various types of swine production facilities and has this assessment for stocking density related to swine finishing operations in the United States:

> "Recent survey results suggest the average stocking density for finishing facilities in the US is 7.2 ft2/pig, with a range of 6.8 to 8.0 ft2/pig [10]. Results from this survey do not suggest any regional (Southeast versus Midwest) differences in stocking density, nor do they suggest any difference in density for full versus partial slats."[8]

Using that range of stocking density, the Fanter Farms hog barn could house the following numbers of finishing hogs (both of which are greater than 2400 head):

19,688 ft2 divided by 6.8 ft2/pig = 2,895 head
19,688 ft2 divided by 8.0 ft2/pig = 2,460 head

2400 head x 8.0 ft2/pig = 19,200 ft2 space needed
2400 head x 6.5 ft2/pig = 16,320 ft2 space needed.

In the same Midwest Plan Services reference, the amount of nitrogen in the swine feces and urine can be calculated as follows:

2400 head x 0.09 lbs N/hd/day x 365 days/yr = 78,840 lbs nitrogen per year

The NRCS Animal Waste Management Field Handbook Chapter 11 Waste Utilization states that up to 30% of the nitrogen is lost to volatilization from a deep pit facility. The amount of nitrogen volatilized (as ammonia) can be calculated as follows:[9]

78,840 lbs N/year x 0.30 = 23,652 lbs N per year or 11.8 tons per year

Over a 20 year lifespan, this proposed facility will exhaust 473,040 pounds of nitrogen (ammonia) into the neighboring community along with the odors and pathogens.

[8] See: https://swine.extension.org/space-allocation-decisions-for-nursery-and-grow-finish-facilities/
[9] See: https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/?&cid=stelprdb1045935

The peculiar laws of Illinois allow the expansion of the facility once it is constructed without further public review. This is the pertinent part of the LMFA:

> **"Section 10.45. New facility.** "New facility" means a livestock management facility or a livestock waste handling facility the construction or expansion of which is commenced on or after the effective date of this Act. Expanding a facility where the fixed capital cost of the new components constructed within a 2-year period does not exceed 50% of the fixed capital cost of a comparable entirely new facility shall not be deemed a new facility as used in this Act."

That means the facility can continue to expand with no further consideration to the proximity to residences and populated areas. In Illinois, this is why communities become concerned about new facilities that have animal numbers just under the amount that triggers public hearings and the submittal of nutrient management plans (how the waste is land applied). This lack of transparency fostered by poorly conceived law must be considered when evaluating a proposed "medium AFO".

4. Air Quality Review – Adverse Impacts. On page 19 of 22, the FSA stated the following about the purpose of barn ventilation and how that may impact air pollution downwind:

> "Odor would be controlled through the management of the barn's ventilation systems, as required by the integrators for livestock health. Exhaust fans are used to capture a portion of the particulate to reduce emissions and also dilution of odors caused through the mixing of ambient air and is a function of distance, topography, and meteorological conditions. Industry best practices are used to reduce effects to air quality, including the elimination of storage lagoons, and injecting waste directly into the soil to minimize exposure to the air."

It is true that the number one purpose for barn ventilation is to protect the housed livestock from toxic air pollutants inside the barn. The second important reason for barn ventilation is to control the temperature and moisture content to insure animal comfort.

The rest of this statement by the FSA is illogical and not an accurate portrayal of air pollution impacts from deep pit swine waste management systems.

Exhaust fans do not capture anything – they move air from inside the barn to the outside of the barn and while doing so transport air pollutants, such as dust, ammonia, pathogens, and volatile organic compounds. The Fanter Farms proposed hog barn will not have any air pollution control equipment, such as biofilters, that could capture and destroy these air pollutants. Instead, the barn ventilation exhausts the air pollutants which can then be transported throughout the surrounding community day in and day out every single day that there are animals and liquid swine manure in the facility.

The recently published research by PNAS mentioned earlier in these public comments also includes this statement about air quality impacts from livestock production:

> "Poor air quality is the largest environmental health risk in the United States and worldwide, and agriculture is a major source of air pollution. Nevertheless, air quality has been largely absent from discussions about the health and environmental impacts of food. We estimate the air quality–related health impacts of agriculture in the United States, finding that 80% of the 15,900 annual deaths that result from food-related fine particulate matter ($PM_{2.5}$) pollution are attributable to animal-based foods. By estimating these impacts and exploring how to reduce them, this work fills a critical knowledge gap. Our results are relevant to food producers, processors, and distributors, and to policymakers and members of the public interested in minimizing the negative consequences of food."

Deep pit hog facilities store feces and urine in a concrete pit located below the slatted floor. The liquid swine manure generates many gases while in storage, including but not limited to methane, ammonia, hydrogen sulfide, and volatile organic compounds.

The pit fans located along the perimeter of the hog barn are designed to remove these toxic gases from the pit to prevent the gases from rising through the slatted floor and into the living space of the hog facility. This is done to protect the hogs from the toxic gases. The pit fans exhaust this toxic air to the outside of the barn and into the ambient environment.

The following information about pit fan air pollution can be found at the Iowa State website entitled Air Management Practices Assessment Tool (AMPAT):[10]

> "Research shows that pit fans exhaust have proportionally higher emissions of several gases than do wall fans. Jacobson et al (2007, 2008) tested emissions from a deep pit swine building with and without pit ventilation. They found that the majority (75 to 80%) of NH3 and H2S emissions originated from the pit exhaust fans even though they only provided 20 to 30% of the barn's ventilation air. Concentrations of particulate matter less than 10 microns (PM10) were the same in air leaving the wall fans as that leaving the pit fans with the except of winter. During winter pit fans had lower PM10 concentrations than did wall fans, presumably because dust particles collect more on the condensation on pit walls during cold weather."

[10] See: https://www.extension.iastate.edu/ampat/pit-ventilation

Figure 4 – Image of a typical pit fan located on the outside of a hog barn (AMPAT).

In a 2006 journal article published by the Journal of Air and Waste Management, Stephen Hoff and others made this statement about air pollution during the removal of liquid swine manure from a deep pit finisher:[11]

> "It is a common practice in the midwestern United States to raise swine in buildings with under-floor slurry storage systems designed to store manure for up to one year. These so-called "deep-pit" systems are a concentrated source for the emissions of ammonia (NH3), hydrogen sulfide (H2S), and odors.
>
> As part of a larger six-state research effort (U.S. Department of Agriculture-Initiative for Future Agriculture and Food Systems Project, "Aerial Pollutant Emissions from Confined Animal Buildings"), real-time NH3 and H2S with incremental odor emission data were collected for two annual slurry removal events. For this study, two 1000-head deep-pit swine finishing facilities in central Iowa were monitored with one-year storage of slurry maintained in a 2.4 m-deep concrete pit (or holding tank) below the animal-occupied zone.
>
> Results show that the H2S emission, measured during four independent slurry removal events over two years, increased by an average of 61.9 times relative to the before-removal H2S emission levels. This increase persisted during the agitation process of the slurry that on average occurred over an 8-hr time period.
>
> NH3 emission during agitation increased by an average of 4.6 times the before-removal emission level and increased by an average of 1.5 times the before-removal emission level after slurry removal was completed. Odor emission increased by a factor of 3.4 times the before-removal odor emission level and decreased after the slurry-removal event by a factor of 5.6 times the before-removal emission level."

[11] See: https://pubmed.ncbi.nlm.nih.gov/16739794/

In a 2016 article published by the Journal of Occupational and Environmental Hygiene, researchers looked at bioaerosols, odors, and hydrogen sulfide downwind from hog confinements in Iowa as follows:[12]

> "We assessed airborne toxicants upwind, in-barns and downwind and evaluated determinants of exposure. Inhalable particulate matter, endotoxin, odor threshold, hydrogen sulfide, culturable mesophilic bacteria, culturable fungi, and total airborne microbes along with wind speed, temperature, and humidity were measured at separate midsized livestock facilities (1 hoop, 1 confinement) in Central Iowa on ten occasions over two years.
>
> Significant differences in contaminants were observed between hoops and confinement buildings and across seasons for endotoxin, odors, airborne microorganisms, and hydrogen sulfide. For hoops and confinements, respectively, geometric mean in-barn concentrations were 3250 and 3100 EU/m3 for endotoxin; 1400 and 1910 μg/m3 for particulates; 19.6 and 146 ppb for hydrogen sulfide; 137 and 428 dilutions for odor threshold; and 3.0×106 and 1.5×106 organisms/m3 for total microbes.
>
> Endotoxin, odor, and culturable microorganisms exceeded recommended exposure limits. Reduced analysis of variance models for these contaminants demonstrated differences by barn type, season, number of pigs, and, in some cases, temperature and humidity. Both types of swine operations produced high airborne concentrations of endotoxin, odor, hydrogen sulfide, bacteria and fungi. Endotoxin and odors were found downwind at concentrations previously associated with adverse health effects."

A 2012 article published by Chemosphere includes an intensive review of the literature with respect to the types of volatile organic compounds generated at hog facilities. The article contains a multitude of studies over the past twenty years as follows:[13]

> "5.2. Classification of VOCs
> Schiffman et al. (2001) concluded that the compounds were diverse in nature. The authors classified 324 VOCs and seven fixed gases identified in swine barn air and lagoon wastewater into acids, alcohols, aldehydes, amides, amines, aromatics, esters, ethers, fixed gases, halogenated hydrocarbons, hydrocarbons, ketones, nitriles, other nitrogen-containing compounds, phenols, sulfur-containing compounds, and steroids. An ''unclassified'' group included 16 compounds (Fig. 2, top).

[12] See: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4844821/
[13] See: https://pubmed.ncbi.nlm.nih.gov/22682363/

> Some of these groups can be further classified as subgroups. For example, Clanton and Schmidt (2000) grouped sulfur-containing compounds from manure into three categories: sulfides, mercaptans, and thiophene. Some of the compounds can be classified into more than one group. For example, sulfur dioxide and hydrogen sulfide are listed as fixed gases and also as sulfur-containing compounds by Schiffman et al. (2001).
>
> In addition to the groups of VOCs reported by Schiffman et al. (2001), Blunden et al. (2005) also found various paraffins and olefins at a total of five swine facilities in North Carolina. Furthermore, Ciganek et al. (2000) quantified 45 semi-volatile gaseous-phase and solid-phase organic compounds in indoor and outdoor air samples at pig and cattle farms. These VOCs were grouped in polycyclic aromatic hydrocarbons (PAHs), nitro-substituted PAHs (nitro-PAHs), oxygenated PAHs (oxy-PAHs), polychlorinated biphenyls (PCBs), and organic chlorinated pesticides (OCPs).
>
> Another classification that was based on more than 100 VOCs identified at animal facilities was made by Ciganek and Neca (2008). The authors divided all the VOCs into oxygenated compounds and aromatic hydrocarbons, each of which contained several subgroups (Fig. 2, bottom)."

5. Endangered and Threatened Species. In Illinois, state and federal endangered and threatened species are tracked by the Illinois Department of Natural Resources (DNR).[14] A list of endangered and threatened species by county is available and includes the following items for Mason County:[15] In that DNR publication, the list includes 42 species of plants, amphibians, birds, and aquatic life.

In 2012, there were several state and federally funded initiatives to study and preserve habitats of the Illinois chorus from within Mason County and others in Illinois:[16]

> "Illinois Chorus Frogs (*Pseudacris illinoensis*) occur in west-central and southwestern Illinois, southeastern Missouri, and northeastern Arkansas. They are listed as a Species of Special Concern in all three states and threatened in one (IL). The Illinois Chorus Frog is a habitat specialist, requiring fine, sandy soils for aestivation and ephemeral (seasonally flooded) wetlands or fishless ponds for reproduction. Suitable conditions are limited geologically to those areas represented by the species' range and distributed patchily within it."

[14] See: https://www2.illinois.gov/dnr/ESPB/Pages/default.aspx
[15] See: https://www.dnr.illinois.gov/ESPB/Documents/ET_by_County.pdf
[16] See: https://www.dnr.illinois.gov/conservation/IWAP/Documents/SWGReportSegments/T-62%20D-1%20GS%20-%20Hab.%20Con.%20Init.IL%20Chorus%20Frog.pdf

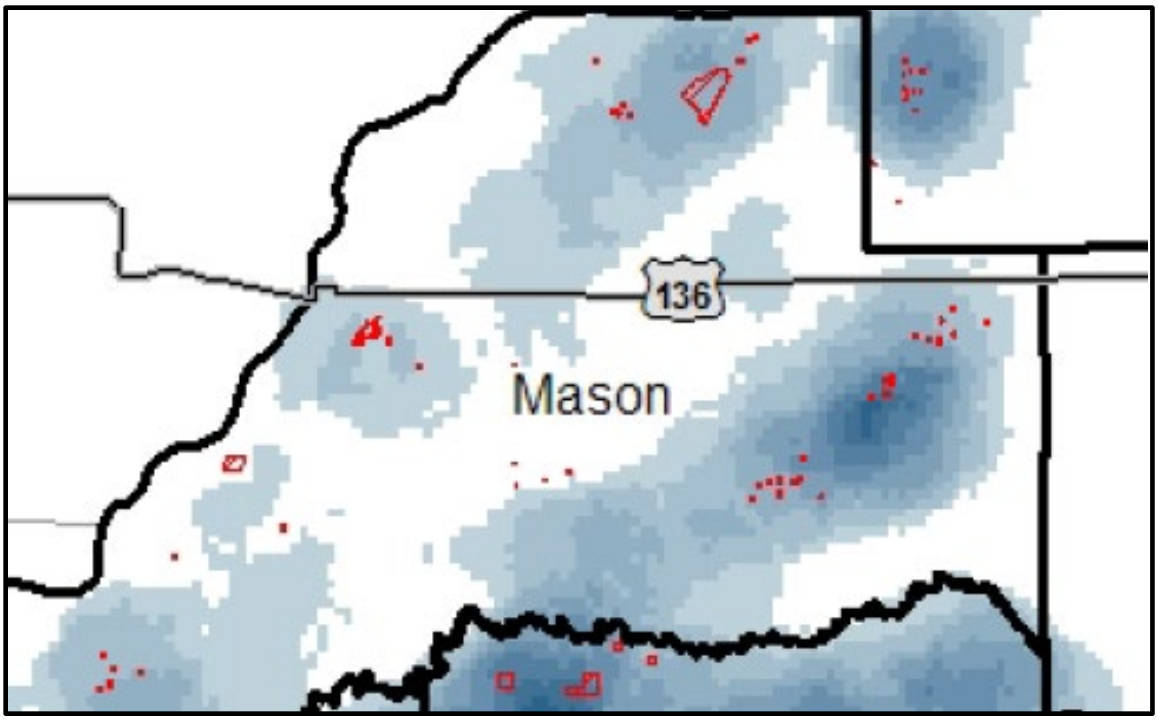

Figure 5 – View of Chorus Frog habitats in Mason County from DNR map (2012).

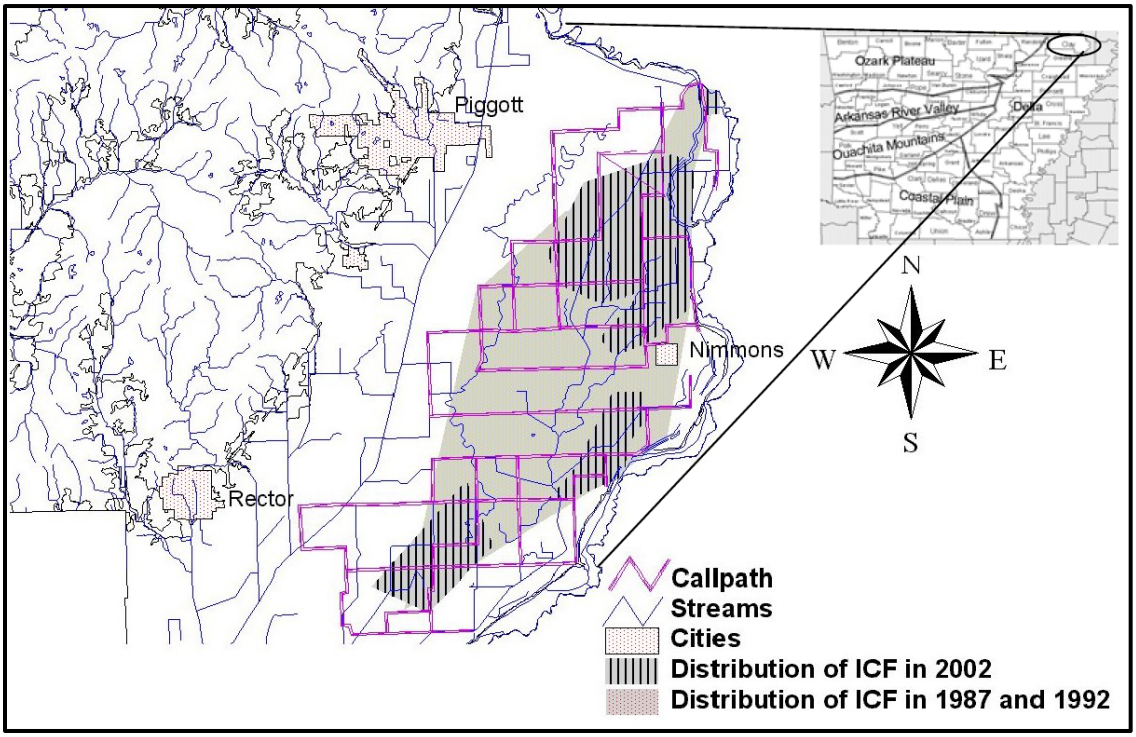

Figure 6 – Extent of chorus frog habitat in Clay County, Arkansas (2018).

The Illinois DNR webpage for the Illinois Wildlife Action Plan includes information about various state strategies to identify and protect vulnerable species:[17]

> "The Illinois Wildlife Action Plan (IWAP) guides the conservation of wildlife and their habitats for the people of Illinois. The plan focuses primarily on non-game species, especially vulnerable species, known as the Species in Greatest Conservation Need (SGCN). The IWAP is organized by habitat into seven Campaigns, each with its own strategic plan for increasing the quality and quantity of wildlife habitat in Illinois."

There are 17 pages of Species in Greatest Conservation Need in Illinois. This list includes the Illinois Chorus Frog among others.[18]

In 2018, Arkansas State University published their report of efforts in Arkansas to identify and preserve habitat and monitor for the presence of Illinois chorus frog:[19]

> "The Illinois chorus frog is endemic to disjunct sand prairies extending from Clay County in northeastern Arkansas, across the boot heel of southeastern Missouri, and northward along the Mississippi and Illinois rivers into Illinois (Conant and Collins, 1998; Trauth et al. 2004)."

Similarly, in Missouri there is an effort to protect species habitat for the Illinois Chorus Frog (emphasis added):[20]

> "Historically, the Illinois chorus frog occurred throughout sandy grasslands in southeastern Missouri. Its present range includes isolated populations associated with specific soil types in Mississippi, Scott, Dunklin, and New Madrid counties.
>
> Listed as imperiled by the Missouri Department of Conservation and **is currently a candidate for federal listing by the U.S. Fish and Wildlife Service.** It occurs only in parts of Illinois, the Missouri Bootheel, and one county in extreme northeastern Arkansas. Formerly considered a subspecies of the Strecker's chorus frog, in 2004 the Illinois chorus frog was given full species status."

The point trying to be made here is that there is a multi-state effort to identify and protect the habitat of the Illinois Chorus Frog. In Illinois, the Mason County habitat has been identified in the general vicinity of the proposed Fanter Farms hog facility (See Figure 5 map of known habitats in dark blue shading and red areas).

---

[17] See: https://www2.illinois.gov/dnr/conservation/IWAP/Pages/default.aspx
[18] See: https://www2.illinois.gov/dnr/conservation/IWAP/Documents/SGCN2015%20Appendix%201.pdf
[19] See: https://www.biorxiv.org/content/10.1101/338699v1.full
[20] See: https://mdc.mo.gov/discover-nature/field-guide/illinois-chorus-frog

Figure 7 – Habitat location of Illinois Chorus Frog in southeastern Missouri.

6. Preserving Prime Farmland. On page 15 of 22, the FSA states the rationale for excluding the impact on land resources as follows:

> "Effects to land resources were eliminated from detailed analysis.
>
> The soils in the project area are all considered prime farmland and/or farmland of statewide importance. Since the proposed project involves construction of a swine facility which qualifies as an on-farm structure necessary for the farm operation, it is exempt from the farmland provisions of the Farmland Protection Policy Act, NRCS's Implementation Rule, and Departmental Regulations/Land Use Policy. Considering the exemption, FSA has determined that there will be no effect to important land resources."

In the FSA document titled "Regulatory Streamlining of FSA Direct Farm Loan Programs", there is a section that explains the evaluation method for determining if a federally funded project will have adverse impacts to prime farmland:[21]

> **Significant Issue #1—Land Use:** Over the past several decades, population growth and urban sprawl have decreased the farming land-base. A trend toward fewer farms and larger farm size has also been observed. Implementation of the proposed action may have effects, both beneficial and adverse, to land-use dynamics. All Federal agencies are required to analyze the effects of their actions on soils classified as prime or unique by the Natural Resource Conservation Service (NRCS), as required by the CEQ in a memorandum of August 1980. The Farmland

[21] See: https://www.federalregister.gov/documents/2004/02/09/04-1891/regulatory-streamlining-of-the-farm-service-agencys-direct-farm-loan-programs

Protection Policy Act of 1981, as amended, also requires Federal agencies to consider adverse effects to prime and unique farmlands that would result in conversion of prime and unique farmland to non-agricultural uses.

Prime farmland is defined as soil that particularly produces general crops as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables and nuts. The proposed rule will be analyzed to determine the anticipated effects of its implementation on land uses nationwide. The indicators for impacts will be:

Acres of farmland converted to non-farm uses as a result of the proposed action

Anticipated change to number of farms and average farm size as a result of implementing the proposed action

While it may be true that a hog barn used to raise finishing hogs can be classified as agriculture, one cannot conclude that prime farmland is 'protected" because someone built a hog farm and hog farms are agriculture. The very action of construction destroys the farmland by removing the topsoil and then excavating a massive hole 10 feet deep, over 100 feet wide, and 200 feet long. The area where the hog facility would be built will never be prime farmland again.

7. Mahomet Aquifer – Sole Source Aquifer. On page 17 of 22, the FSA states the following with respect to their efforts to evaluate impacts to the Sole Source Aquifer:

"Considering the sensitive nature of the Mahomet Aquifer, FSA consulted directly with EPA Region 5 staff responsible for the Sole Source Aquifer Program. FSA identified the proposed barn and manure application site to support EPA analysis. Furthermore, FSA provided details regarding the design of the proposed barn and swine operation. The following conditions and best management practice

Insert results of consultation with EPA, for any SSA BMPs or requirements – still consulting…"

Question: Why did the FSA go out for public notice on a draft Environmental Assessment that is incomplete in one of the most important sections of the evaluation?

The designation of the Mahomet Aquifer as a Sole Source Aquifer is a recent event. As such, the processes to develop long-term methods to protect this resource are in their beginning stages. The USEPA website for the aquifer provides this background:[22]

"On March 11, 2015 EPA designated a portion of the Mahomet Aquifer system in east-central Illinois as a sole source aquifer. More than half of the population in

[22] See: https://www.epa.gov/il/mahomet-sole-source-aquifer

east-central Illinois relies on the Mahomet Aquifer system as a source of drinking water. See Sole Source Aquifers for Drinking Water

The Safe Drinking Water Act gives EPA authority to designate all or part of an aquifer as a "sole source" if contamination of the aquifer would create a significant hazard to public health and there are no physically available or economically feasible alternative sources of drinking water to serve the population that relies on the aquifer.

The designation authorizes EPA review of projects that receive Federal financial assistance to assess potential for contamination of the aquifer system that would create a significant hazard to public health."

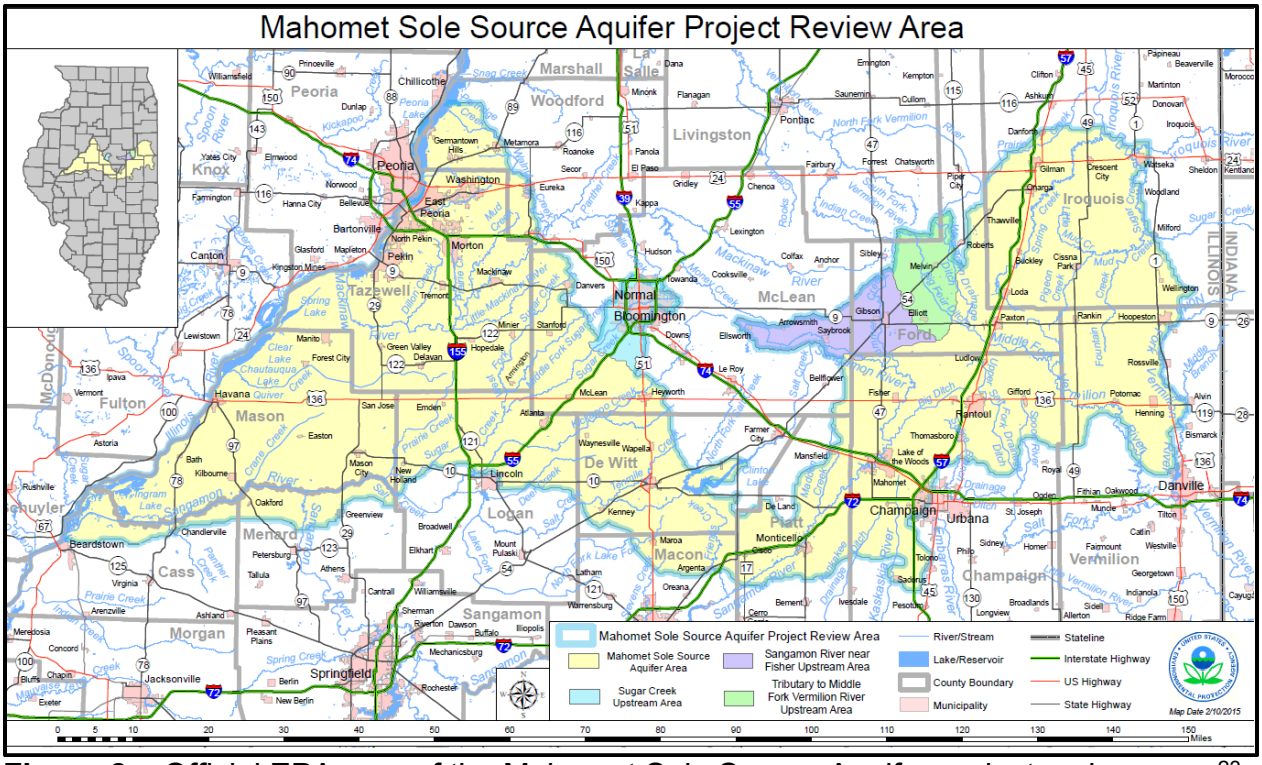

Figure 8 – Official EPA map of the Mahomet Sole Source Aquifer project review map.[23]

The Mahomet Aquifer has been studied for some time, including efforts by the Mahomet Aquifer Consortium established in 1998.[24] The Mahomet Aquifer Protection Task Force was created by Illinois legislature in 2017 via Public Act 100-0403.[25] The Task Force webpage hosted by the Illinois EPA is a centralized location for information on meetings and reports.[26]

[23] See: https://www.epa.gov/sites/production/files/2016-02/documents/mahomet-ssa-project-review-area-map-20150210.pdf

[24] See: http://www.mahometaquiferconsortium.org/info-current.html

[25] See: https://www.ilga.gov/legislation/publicacts/fulltext.asp?Name=100-0403

[26] See: https://www2.illinois.gov/epa/topics/community-relations/sites/mahomet-aquifer-task-force/Pages/default.aspx

Figure 9 – Closeup view of the portion of Mahomet Aquifer in Mason County.

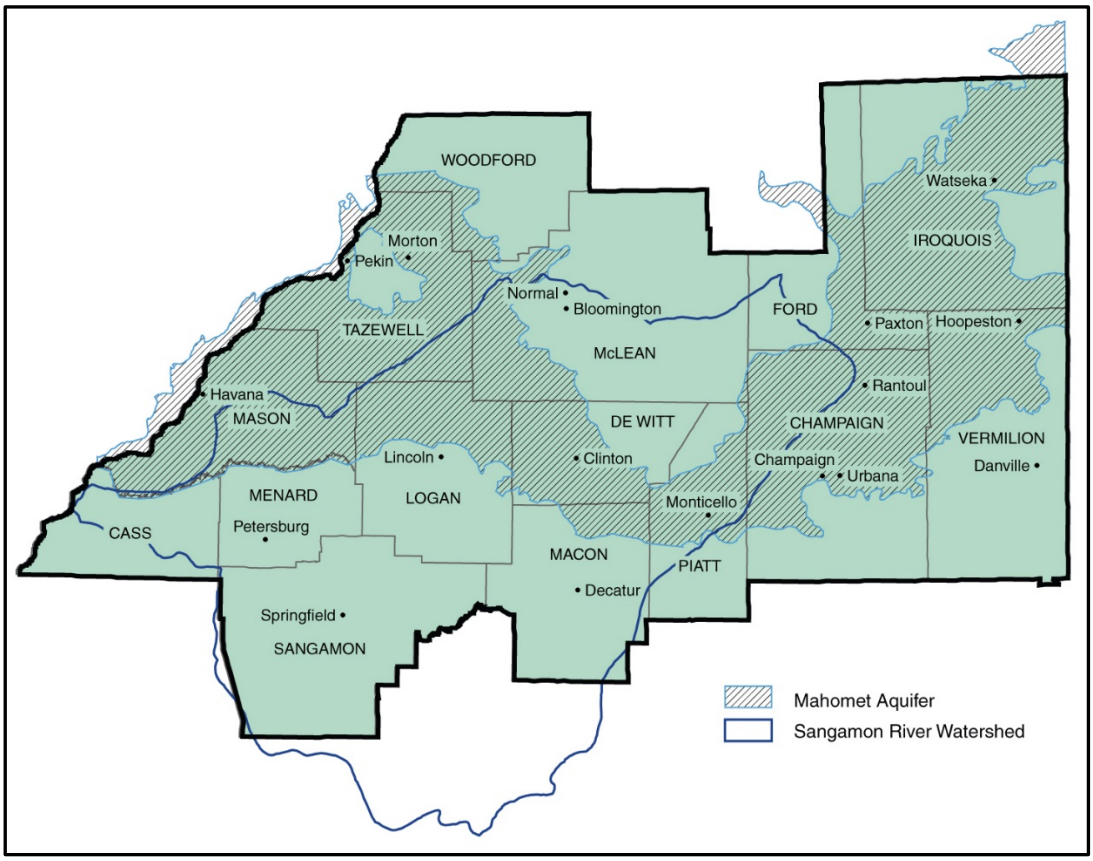

Figure 10 – Mahomet Aquifer and Sangamon River Watershed outline (Mahomet Aquifer Consortium).[27]

[27] See: http://www.mahometaquiferconsortium.org/aboutmac.html

In their 2018 report, the Mahomet Aquifer Protection Task Force made these recommendations related to nitrate issues within the aquifer watershed – several of which tie directly to agricultural practices and thus are germane to the FSA's environmental assessment (emphasis added to items that include agricultural best management practices and feedlots):[28]

> **Nitrate (threat of contamination)**
> Continue to raise awareness of the Nutrient Loss Reduction Strategy (NLRS) and implementation efforts in existence to improve water quality and reduce nutrient loss into Illinois waterways.
>
> Continue to fund scientific research of **agricultural best management practices** (BMPs) and wastewater treatment plant technologies that can continue to reduce nutrient loss into Illinois waterways and groundwater.
>
> Expand cost-share opportunities to farmers to encourage adoption of BMPs that add expense and risk to farming operations.
>
> Centralize the nitrate concentration data collected by the county public health departments.
>
> Review nitrate data to determine the location, depth, and construction of wells vulnerable to nitrate contamination.
>
> Develop recommendations to avoid high-nitrate zones when constructing new wells.
>
> Discourage the use of shallow sand points.
>
> Promote the public health guidelines to private well owners concerning setbacks for septic systems, **feedlots,** and other sources of nitrate.

Another section of the Task Force 2018 Report that should be considered relative to the proposed Fanter Farms hog facility relates to recommendations about Source Water (emphasis added to section on setbacks and well drilling/abandonment):

> **Source water susceptible to contamination (threat of contamination)**
> Develop source water protection plans pursuant to 35 Ill. Adm. Code 604 Subpart C, after the effective date of adoption, for the community water supplies (CWS) determined to be susceptible to groundwater contamination.

[28] See: https://www2.illinois.gov/epa/topics/community-relations/sites/mahomet-aquifer-task-force/Documents/MAHOMET%20AQUIFER%20PROTECTION%20TASK%20FORCE%20FINDINGS%20AND%20RECOMMENDATIONS%202018.12.21.pdf

Implement measures identified in the source water protection plans to protect groundwater using existing authorities (e.g., **maximum setback zones**, overlay zoning ordinances, pollution prevention, best management practices, regulated recharge areas, local government ordinances, etc.). More information on these authorities is available on the Task Force website.

Closely monitor **well drilling and well abandonment** (potential routes of groundwater contamination) in areas with adopted ordinances or environmental land-use covenants that prohibit new potable well drilling in areas were risk-based remediation has occurred.

This legislative session, Illinois SB 2515 serves to create a permanent Mahomet Aquifer Council composed of nine members with various terms and requirements. The Bill passed both houses with amendments and has been sent to the Governor.[29]

The federal Advisory Committee on Water Information (ACWI) prepared a report titled "Including the Mahomet Teays Aquifer System in a National Groundwater Monitoring Network" that includes a description of the groundwater monitoring network (2009).[30]

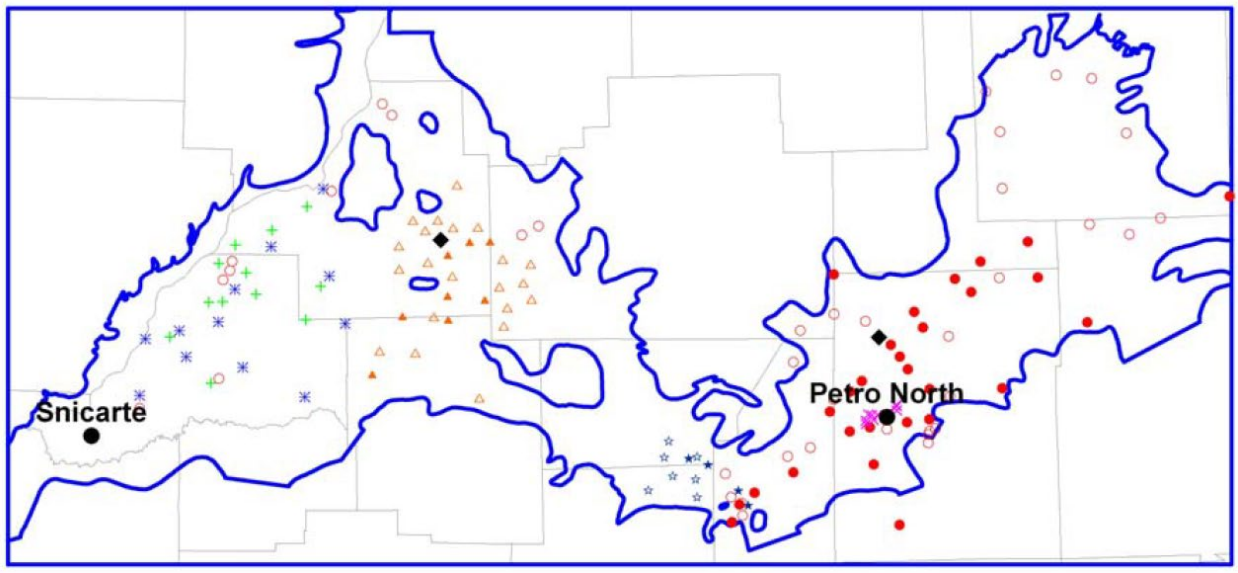

Figure 11 - Mahomet Aquifer observation wells in Illinois

The observation well effort is described in the ACWI Statement of Interest as follows:

"The ISWS operates an observation well "network" composed of over 180 wells at over 140 sites (figure 3), largely comprised of wells especially built for

[29] See: https://www.ilga.gov/legislation/BillStatus.asp?DocNum=2515&GAID=16&DocTypeID=SB&LegId=135169&SessionID=110&GA=102

[30] See: https://acwi.gov/sogw/pubs/tr/5-statements/Il-id_soi_mahomet_teays_aquifer.pdf

monitoring aquifer conditions (i.e., water levels and quality). Numerous sites contain “nested” observation wells to monitor the Mahomet Aquifer, overlying confined units, and the water table. Geologic records and construction details of these wells are available. Water level observations generally are collected on a monthly or quarterly basis with selected wells containing digital dataloggers polling water levels as often as hourly. Numerous local and state entities fund a cooperative ISWS/ISGS drilling and monitoring effort.

On the west, the Imperial Valley Water Authority has outfitted 11 wells (blue asterisks) with dataloggers for long-term water level monitoring. Also in this region are wells constructed for the Illinois Department of Agriculture (green crosses) for agrichemical sampling and ISWS wells (brown circles) for local resource development monitoring. Just east of this area are ob-well sites (orange triangles) maintained via funding from the Long Range Water Plan Steering Committee, a coalition of local water authorities, counties, and communities.”

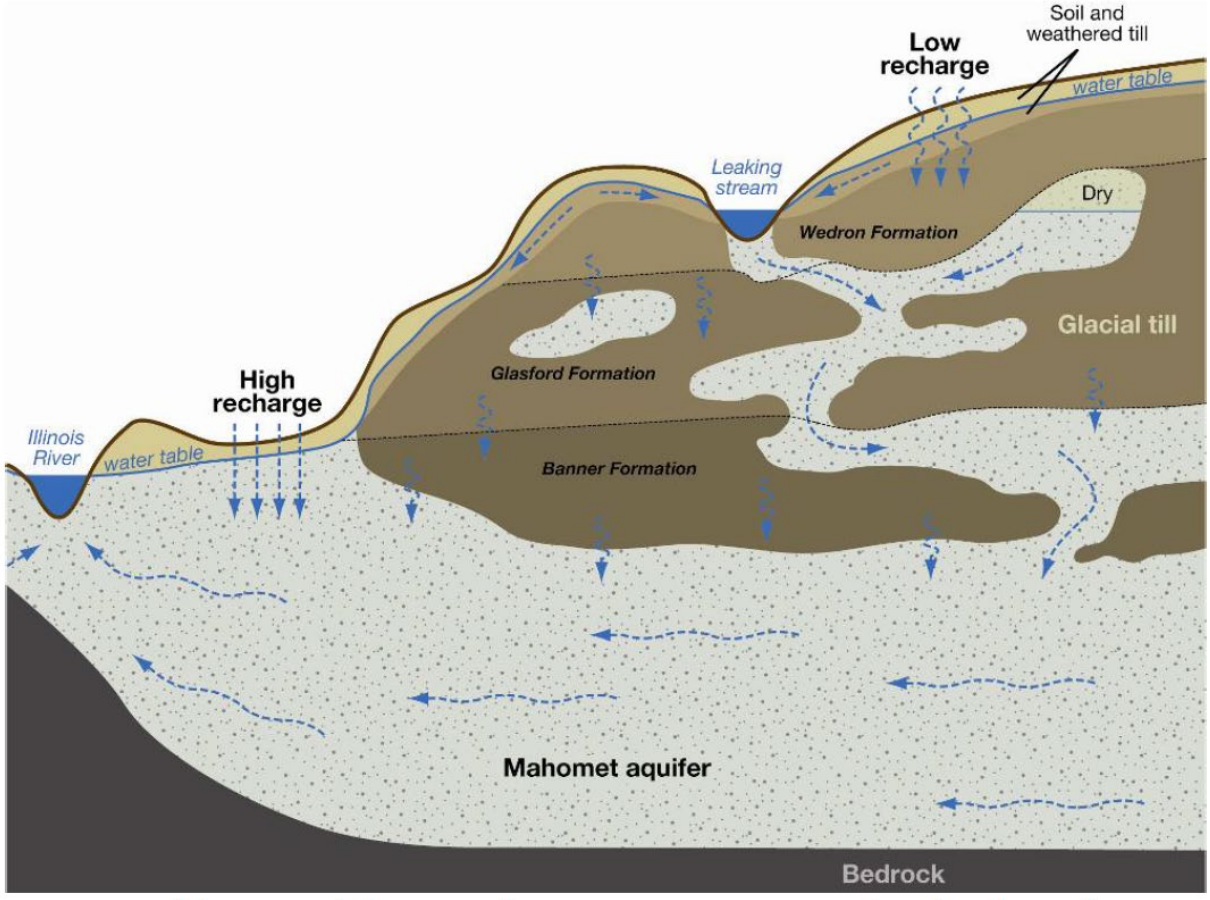

Figure 12 – ACWI groundwater flow model for Mahomet Aquifer showing high recharge area near the Illinois River on the west side of the system.[31]

[31] See: https://acwi.gov/sogw/pubs/tr/5-statements/Il-id_soi_mahomet_teays_aquifer.pdf

The USGS Map Viewer website was used to search for water wells in Mason County near the proposed Fanter Farms facility (See Figure 11).

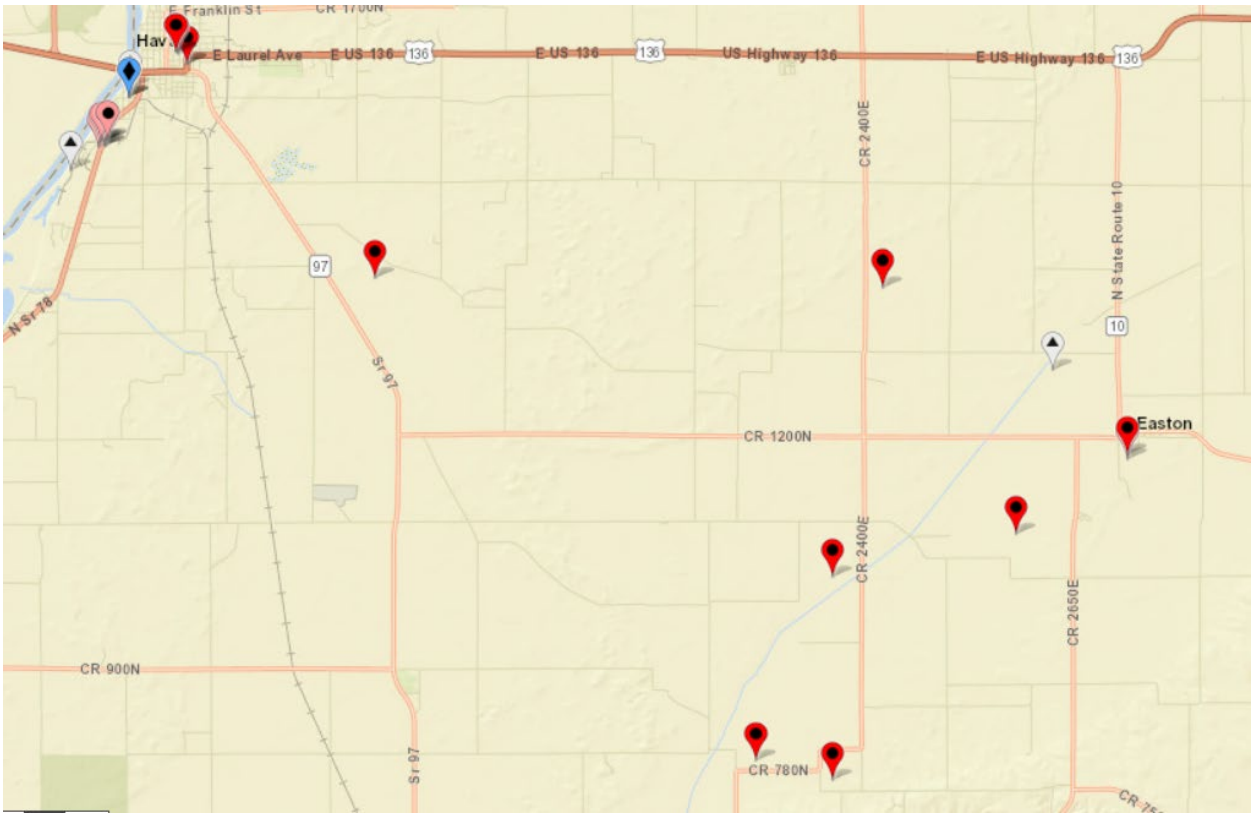

Figure 11 – Location of water wells south and east of Havana, Illinois courtesy of the USGS National Map Viewer website.[32]

Starting with the well located just north of Peterville and just east of State Road 97, the following information was retrieved:

> Latitude 40°15'42", Longitude 90°00'47" NAD27
> Mason County, Illinois, Hydrologic Unit 07130003
>
> Well depth: 20 feet
> Hole depth: 20 feet
> Land surface altitude: 490 feet above NGVD29.
> Well completed in "Sand and gravel aquifers (glaciated regions)" (N100GLCIAL) national aquifer.
> Well completed in "Quaternary System" (110QRNR) local aquifer

The well located directly east along County Road 2400 East is described as follows:

[32] See: https://www.usgs.gov/core-science-systems/national-geospatial-program/national-map

Latitude 40°15'37", Longitude 89°53'57" NAD27
Mason County, Illinois, Hydrologic Unit 07130008

Well depth: 115 feet
Hole depth: 115 feet
Land surface altitude: 499 feet above NGVD29.
Well completed in "Sand and gravel aquifers (glaciated regions)" (N100GLCIAL) national aquifer.
Well completed in "Quaternary System" (110QRNR) local aquifer

Anecdotal information about water wells among residents of Peterville include the following:

James Farwell "I have 2 wells on my property, a primary one for my home and one that is used for my garden / pool and general outdoor use, both are in excess of 20 years old, my primary well is 60 feet deep, with the well head located 6ft below grade it is a metal cased driven well (deep well jet pump-packer type), The secondary well is 46 ft with the well head at grade also driven metal cased. "

Kay Curtis "Most of the water sources are sand points put in years ago. At our house up on top of a sand hill they hit enough water to adequately supply the house and family needs at 30'. Down the hill is a really deep well for irrigation. It was drilled sixty years ago so records are long gone. I am sure it supplies more than 250 gallons per minute. It is the high water volume well in the field. The deep well at the shop Is only about sixty feet. None of the wells are cement lined. The pipe was steel for years, but we had it pulled a couple of years ago so now it is PVC. While building fence corner posts they used to hit water at 10' even when it's dry. Right now, the water from rain is on top of places where the aquifer is above the surface." (See Figures 12 and 13 at end of public comments)

The FSA Environmental Assessment should include a complete section on the Sole Source Aquifer including the evaluation by USEPA Region III before publishing public notice. It is impossible for the public to prepare a critical assessment of the conclusions made by the FSA without being able to read them.

9. Manure Management at Fanter Farms. The FSA makes several assumptions about how liquid swine manure wastewater will be handled at the proposed site, such as this statement on page 17 of 22:

"The site is located in the uplands and far removed, over one-mile, from any surface water resources. Manure would be reused as fertilizer for plant uptake and injected directly into cropland at approved agronomic rates properly managed by the owner and the commercial custom applicator."

The proposed hog facility, by virtue of its size and classification as a medium AFO, does not have to submit a nutrient management plan (NMP) to the Illinois Department of Agriculture. Therefore, there is not a publicly available NMP that could be reviewed by the FSA or any interested parties.

Question: Why does the FSA believe that Fanter Farms will be injected wastewater and using a commercial custom applicator? Did Fanter Farms provide a nutrient management plan, and if so, why wasn't that document included in the EA attachments in the FOIA response? Did the FSA look at land application maps to determine where the manure wastewater will be disposed? According to aerial images, the facility is surrounded by center pivot irrigation and those fields would not be conducive to injection land application methods.

On page 18 of 22, the FSA contends that over a million gallons of concentrated swine manure wastewater held in a massive concrete pit would not pose a hazard to ground water:

> "The Concrete storage structure would hold no less than the amount of waste generated by the facility during a full year's operation at full capacity based on a planned 10' storage pit. Manure would be properly managed to not result in infiltration to groundwater resources. Furthermore, the conditions and best management practices required by the EPA to ensure protection of the Mahomet Aquifer would be implemented to ensure avoidance of any groundwater impacts."

Question: Which EPA best management practices (BMPs) is FSA referring to in the above quote and how would the Illinois Department of Agriculture and/or the Illinois EPA enforce these BMPs?

The original design for the deep pit was a depth of 8 feet. The depth was changed to 10 feet without explanation by the design engineer. The resulting storage capacity (as calculated earlier in these public comments) is considerably more volume than is needed to store one year's worth of hog feces and urine.

State law requires that a soil boring be advanced a minimum of 5 feet below the depth of the waste storage facility to determine if aquifer materials are present. The soil boring log which FSA uses as an attachment to their EA clearly shows that the entire depth to which the concrete manure storage structure will be built is in aquifer material. It is inappropriate for the FSA to automatically assume there will be no threat to groundwater quality in this instance because the waste structure will be sitting in the aquifer rather than not located in aquifer material.

10. Alternative Locations. On page 10 of 22, the FSA contends that an alternative location is not feasible and would offer no additional environmental protections as follows:

> "Selecting an alternative location would consist of moving the proposed project to a different site within the property boundaries or to another parcel of land. Relocating the project would not offer environmental benefits and likely have a greater impact on the affected environment. Construction of the barn at the proposed location would be compliant with all applicable laws and regulations. The applicant has secured access to the land selected for the proposed barn. It may not be possible for the applicant to secure access to another location that meets the criteria for the proposed project. If the applicant were to select an alternative site, they could incur additional costs and delay. A change to the site location may also result in additional environmental impacts since the proposed site is vacant land with limited sensitive environmental resources present. This location also provides ready access to family owned or controlled farm real estate, allowing for manure use as fertilizer and requiring less transportation. This alternative offers no benefit and is not feasible."

A quick google search of "land available for sale in Illinois" produced several commercial websites that showcase farmland for sale in Illinois. For example, this website has over 400 locations available for farmland without a residence either by sale or by auction.

> https://www.landsofamerica.com/Illinois/farms/no-house/is-active/
> Land for sale including Farms in Illinois - 1 - 25 of 435 listings

This commercial website includes 29 pages of farmland opportunities that can be further refined to sites for sale and/or auction and by the minimum and maximum acreage:

https://www.landandfarm.com/search/Illinois/Farm-for-sale/?src=google&medium=cpc&gclid=CjwKCAjwz_WGBhA1EiwAUAxIcZfphsXTj3Yk2ICHIORy-JFyR0wHwDZKiQt0Q0QCjh-DNqfzw1qAHBoCS24QAvD_BwE&gclsrc=aw.ds

This commercial website boasts:

> "LandWatch data lists $5 billion of land parcels and ranches for sale in Illinois. With tens of thousands of properties and rural land for sale in the state, LandWatch features a combined 120,864 acres of land for sale in the state. The average price of land parcels and ranches for sale in Illinois is $350,740."
>
> https://www.landwatch.com/illinois-land-for-sale

Clearly, there are many opportunities for the applicant to buy farmland in Illinois that is not near a populated area or on top of a sole source aquifer.

Figure 12 – Photos taken by Randy Burnett last week of June 2021 showing flooded fields 24 hours after last rain event – aquifer water at the surface.

Figure 13 – Photos taken near the proposed Fanter Farms hog facility location.