

# *Manure Management Policy Overview*

ACRE Law 101

March 6, 2024

Hollidaysburg, PA

**Robb Meinen, PhD**

Director, Penn State Nutrient Management Education Program

Assistant Research Professor, Dept. of Plant Science

(814) 865-5986

[rjm134@psu.edu](mailto:rjm134@psu.edu)



Penn State **Extension**

***Robert Meinen is an educator.***

***Not an agency representative or regulatory authority.***

***Final authority on items discussed in this presentation lies with agency authorities.***

***This presentation is a brief overview and every item discussed contains much deeper legal details than we have time to discuss.***

***Feel free to ask questions.***



**Penn State Extension**

# *Different Manure Plans*

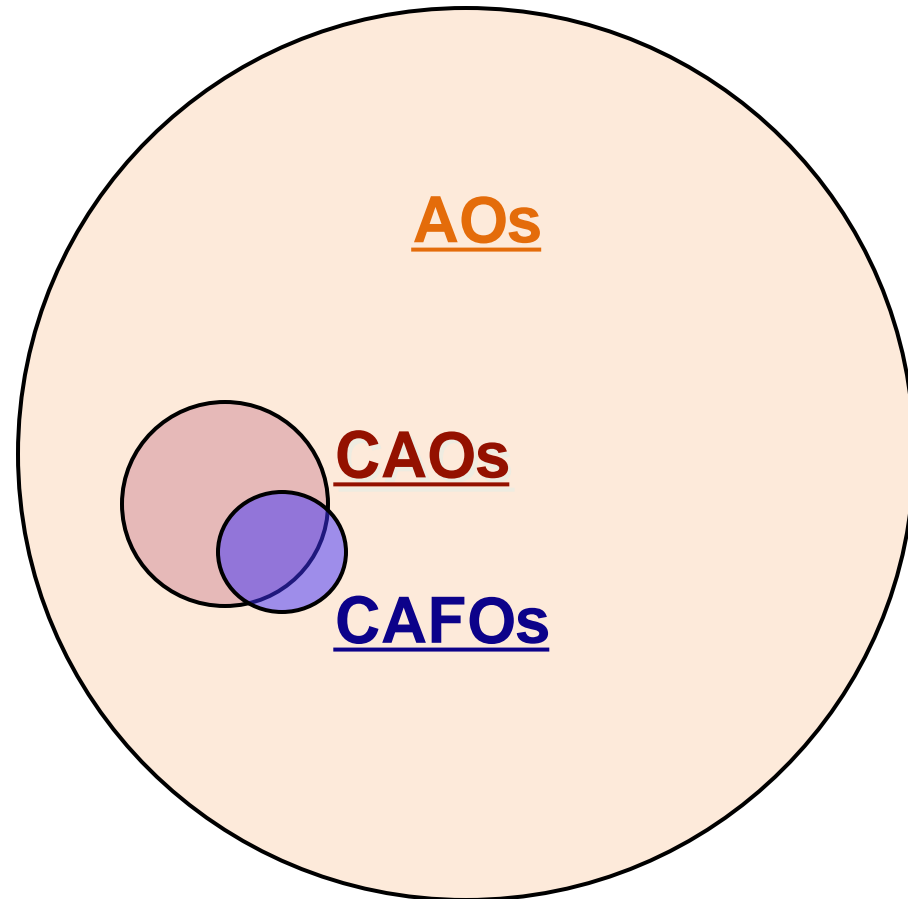
Every farm that generates or utilizes manure must have a plan.

**No matter which plan the farm has  
you must...**

- 1. Apply at or below the plan Application Rate.*
- 2. Observe appropriate setbacks / Follow maps.*

# Animal Operations in PA

- **All Animal Operations (AOs)**
  - All operations generating or utilizing manure
    - Regulated by PA DEP
- **Concentrated Animal Operations (CAOs)**
  - High animal density farms farms > 2,000 lbs/acre animal density
    - Regulated by PA SCC
- **Concentrated Animal Feeding Operations (CAFOs)**
  - Based on animal numbers and/or animal density
  - Farms > 1,000 AEUs, CAOs > 300 AEUs, EPA head #'s
    - Regulated by PA DEP (for US EPA)

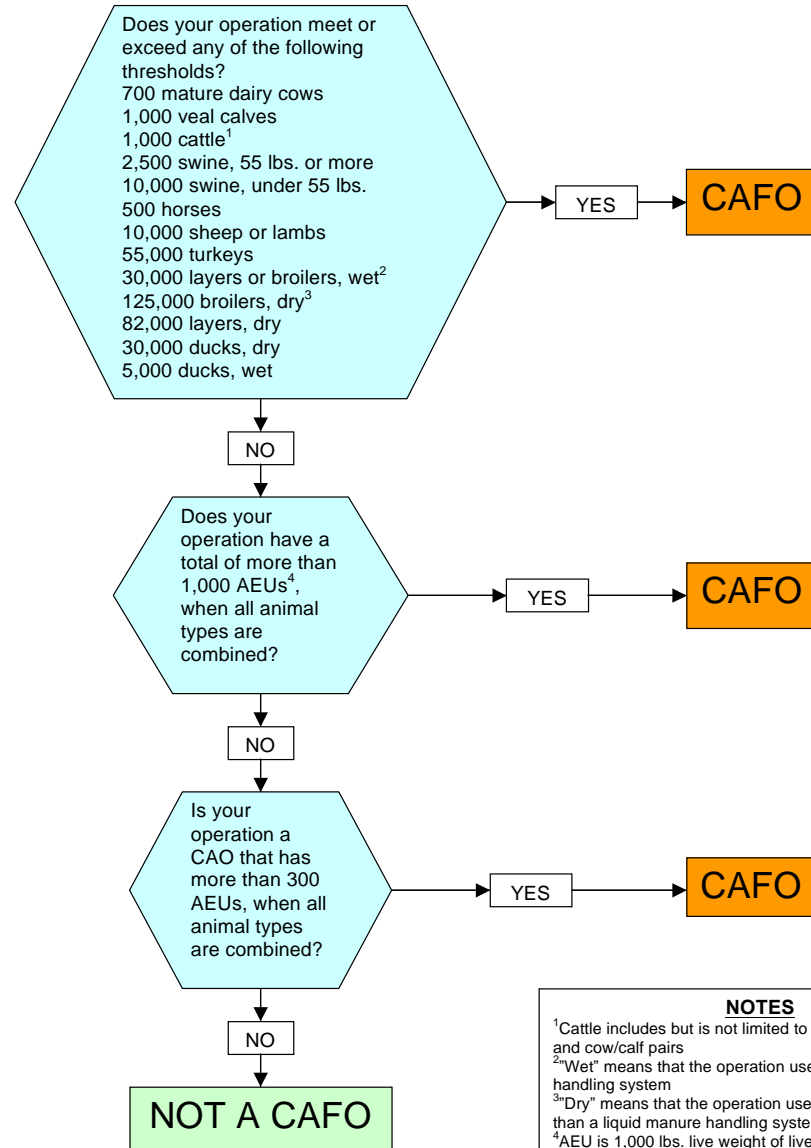


# *How do you determine which plan is needed?*

- *Is it a CAFO (Concentrated Animal Feeding Operation)?*
  - Federal defined by the US EPA
  - Farm needs Act 38 NMP (Nutrient Management Plan)
  - Farm needs CAFO permit
- *Is it a CAO?*
  - State defined by SCC (State Conservation Commission)
  - Farm needs Act 38 NMP (Nutrient Management Plan)
- *If not then Animal Operation (AO)*
  - State regulated by PA DEP (Department of Environmental Protection)
  - Majority of Farms in the state are this type of operation

# Is Windy Butte a CAFO?

## IS MY OPERATION A CAFO ?



### NOTES

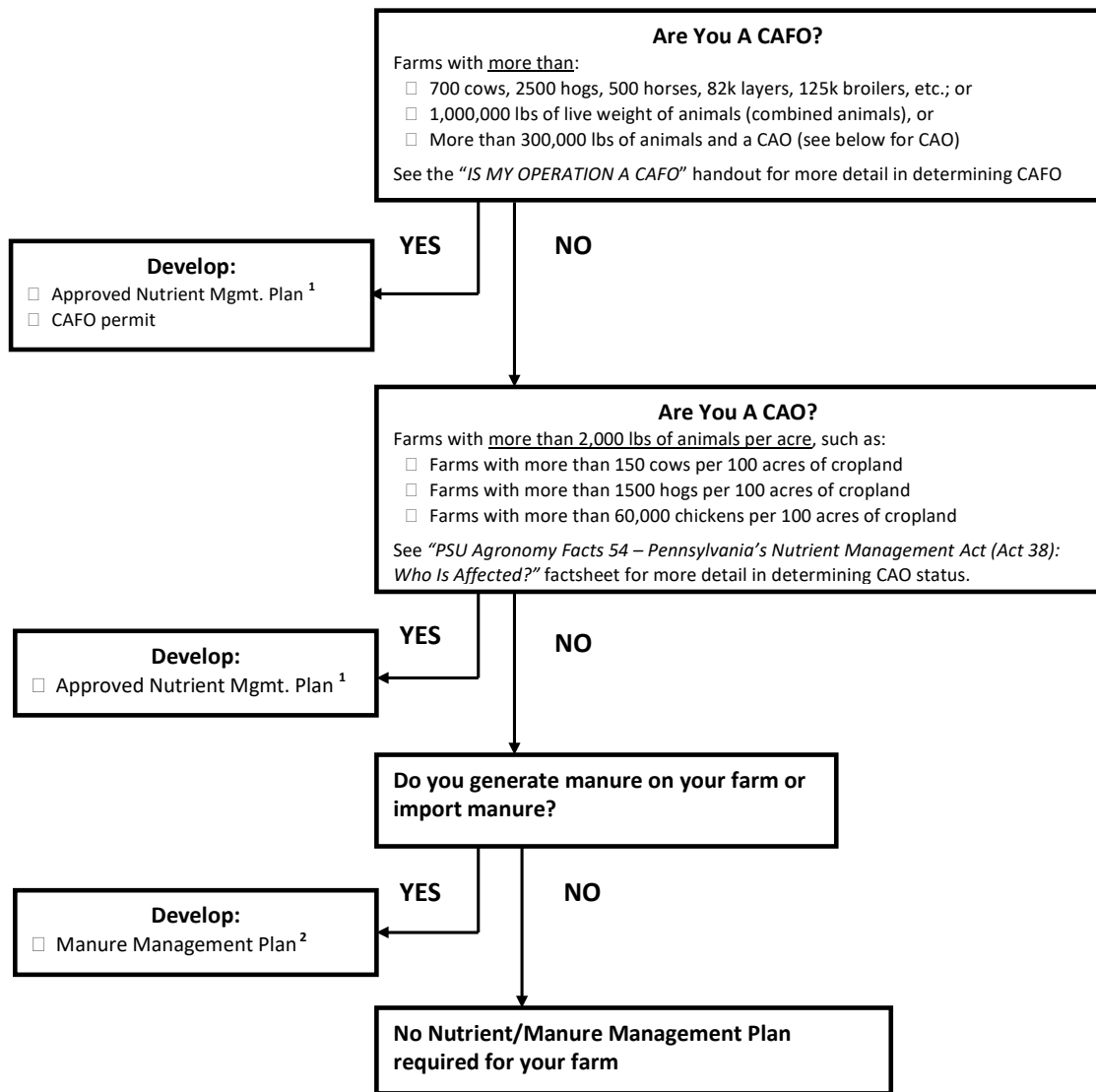
<sup>1</sup>Cattle includes but is not limited to heifers, steers, bulls, and cow/calf pairs

<sup>2</sup>Wet means that the operation uses a liquid manure handling system

<sup>3</sup>Dry means that the operation uses something other than a liquid manure handling system

<sup>4</sup>AEU is 1,000 lbs. live weight of livestock or poultry animals

# What Type of Plan Do You Need For Your Farm?



*Is the farm a CAO?*

*What type of manure plan is required for the farm?*

*Different plans fall under different oversight jurisdictions.*

*The 'cut off' for plan determination is 2.0 Animal Equivalent Units (AEUs) per 'farmable' acre.*

<sup>1</sup>Nutrient Management Plan: written by a certified nutrient management specialist to meet Nutrient Management Act 38 standards and approved by the county Conservation District.

<sup>2</sup>Manure Management Plan: do not need to be written by a certified specialist (farmer can develop the plan themselves according to Manure Management Manual standards) and no submission or approval is required.

# Animal Density and Nutrient Balance

- Whole farm nutrient balance
  - Determined by Animals not Crops
  - Low animal intensity
    - <1.25 AEU/Acre
    - Nutrient Deficient
    - More land than manure – You will have choices
  - Medium animal intensity
    - 1.25 – 2.25 AEU/Acre
    - Nutrient Balance
    - Probably need most or all of the land for manure
  - High animal intensity
    - >2.25 AEU/Acre
    - Nutrient Excess
    - Not enough land for manure – Export Manure
    - **Act 38 Nutrient Management Plan required if >2 AEU/Acre**





# LAND APPLICATION OF MANURE

A supplement to Manure Management for Environmental Protection

## Manure Management Plan Guidance

361-0300-002



# LAND APPLICATION OF MANURE

A supplement to Manure Management for Environmental Protection

## MANURE MANAGEMENT PLAN

## WORKBOOK

To Be Completed, Implemented and Retained  
By All Farmers that Land Apply Manure



October 29, 2011

*Public release of revised MMP's expected – June 2024*


*3<sup>rd</sup> type of plan...*

## *Nutrient Balance Sheet (NBS)*

- NBS tracks manure that is exported from a CAFO or CAO
- NBS determines application rates and setbacks at farms that import manure from a CAFO or CAO

# *Who can develop plans?*

Act 38 NMP	Certified Plan Writer
NBS	Certified Plan Writer Certified Manure Broker Level 2
MMP	Anyone

 PennState Extension | Pennsylvania Nutrient Management Program

## Pennsylvania Nutrient Management Program

The Pennsylvania Nutrient Management Program provides a comprehensive source of information about Pennsylvania's Nutrient Management Act (Act 38, 2005) Program, and associated technical guidance and educational information. It also provides limited information concerning related programs.

The web site has been developed and is maintained through a workgroup representing various partnering agencies actively involved with the Pennsylvania Nutrient Management Act Program. Contributions to this site represent the collective efforts of that workgroup.

### Search

Search the Pennsylvania Nutrient Management Program Website...


### Latest News

- OCTOBER 30, 2023**  
**NM Tech Manual Version 12 Record of Change–October 2023**  
Version 12.0, Record of Change October 2023 of the Pennsylvania Act 38 Nutrient Management Program Technical Manual has been approved by the State Conservation Commission and has been made available on the Pennsylvania Nutrient Management Program website. The official release date is October 2023.  
[Read More](#)
- OCTOBER 30, 2023**  
**Administrative Manual Version 6.0 Record of Change–October 2023**  
Version 6.0, Record of Change 2023 of the Pennsylvania Nutrient Management and Manure Management Program Administrative Manual has been approved by the State Conservation Commission and has been made available on the Pennsylvania Nutrient Management Program website. The official release date is October 2023.  
[Read More](#)
- OCTOBER 30, 2023**  
**Tech Manual Update Bulletin Pennsylvania Nutrient Management Act Program Version 12; Record of Change October 2023**  
The Pennsylvania Act 38 Nutrient Management Program Technical Manual has been developed in order to provide consistent program guidance, further refining the requirements in the regulations, to be utilized in the development, review, and implementation of Act 38 Nutrient Management Plans.  
[Read More](#)
- OCTOBER 15, 2023**  
**Standard NBS Format Version 7.0 Released – October 2023**  
The Nutrient Management Program has updated the Nutrient Balance Sheet (NBS) spreadsheet to Version 7.0. Format updates were added to create...

#### Pennsylvania Nutrient Management Program

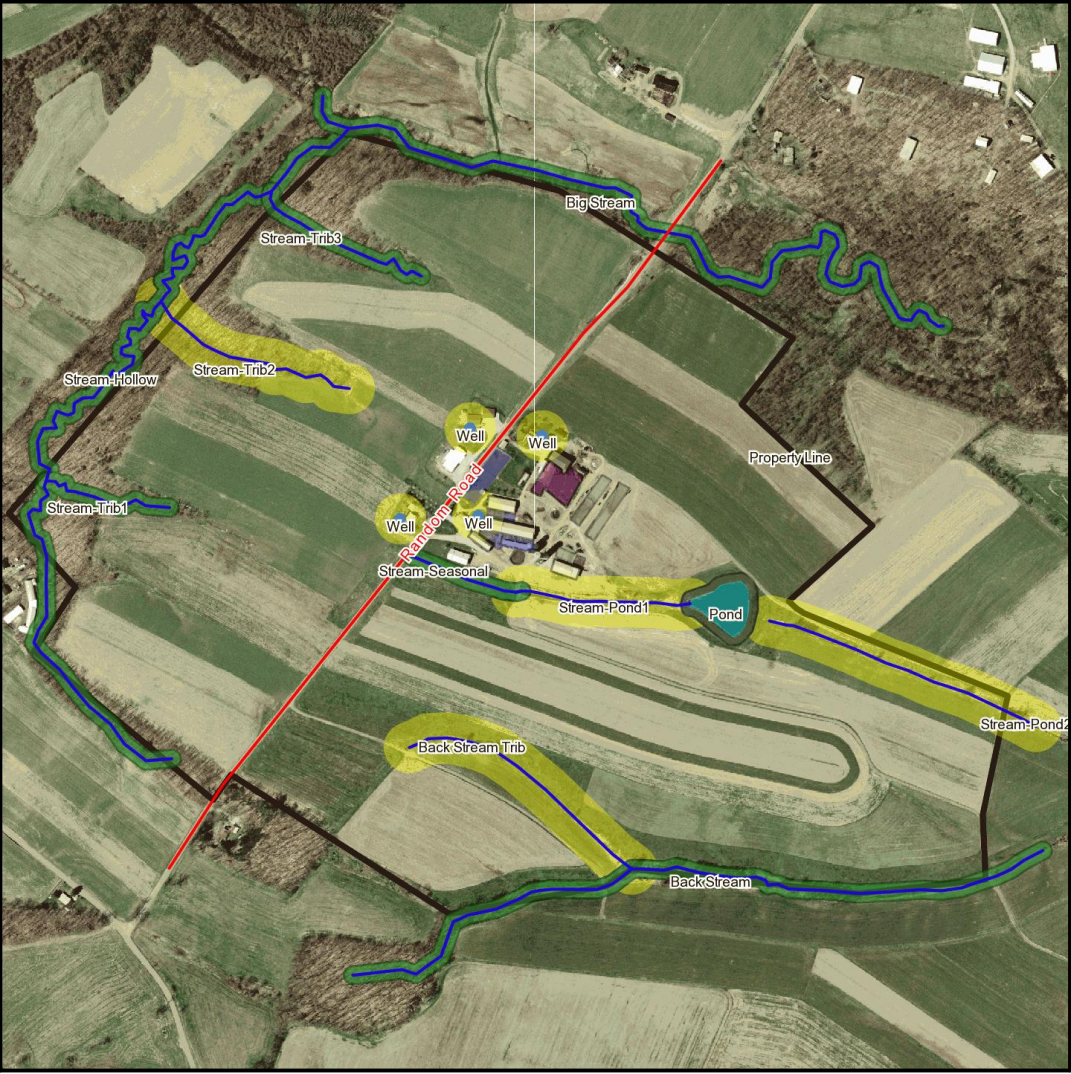
- Upcoming Trainings and Events
- News
- Act 38 Law and Regulations
- Specialist Certification
- Planning Tools
- Planning Resources
- Educational Materials
- SCC Program Information
- Manure Management Manual Program
- Related Programs
- Program Contacts
- Contact Us

[Nutrient Management Specialists Listing](#)



All plans must have an

*Application Setback Map*



\* 564.0 feet per inch  
 0 282 564 846 1128 feet

**Legend**

field/ CMU	water	manure stacking	AHUA
farm boundary	stream	vegetative buffer	well
homestead	sinkhole area	100' manure setback	road
forest	sinkhole	150' manure setback	



## An example – DEP MMP...

### Manure Application Setbacks – streams, lakes, ponds

#### 100 ft Setback if:

- No BMPs

#### 50 ft Setback if:

- Soil Test <200 ppm P
- No-till practices used
- Residue or cover crop

#### 35 ft Setback if:

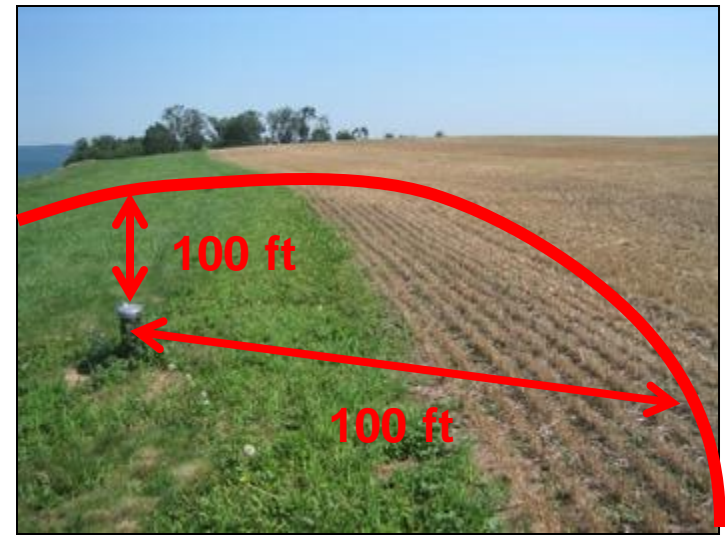
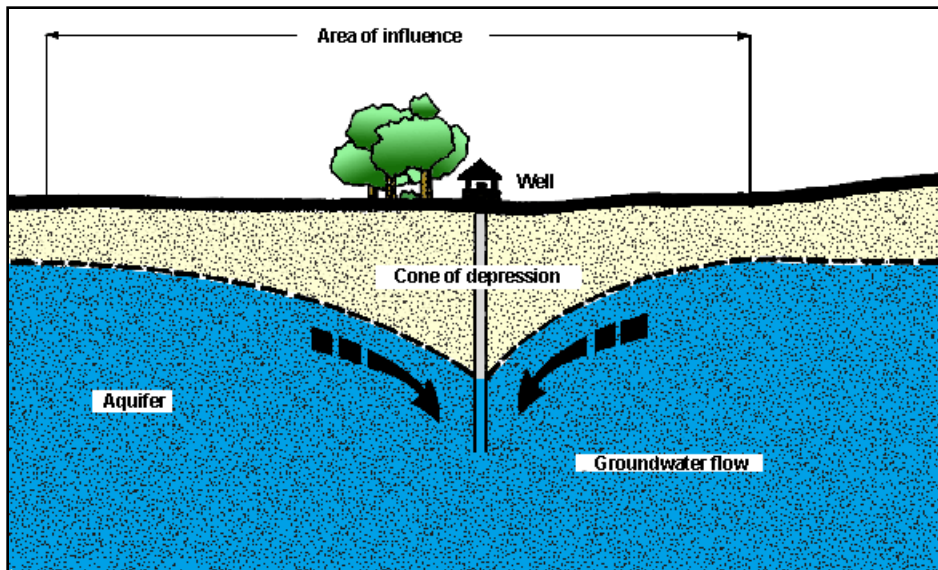
- Permanent vegetated buffer



## 2<sup>nd</sup> example – same for all plans...

### Manure Application Setbacks – wells

- No mechanical manure application:
  - Within 100 feet of an active private drinking water source
    - Well or a spring
  - Within 100 feet of an active public drinking water source
    - Unless authority requires greater distances



# ***Brief History of Pa Act 49***

## **1. Pennsylvania Act 49 of 2004**

- Legislation passed as a legitimate response to concerns to the *“Manure Export Loophole”*

## **2. Certification began in October 2006**

## **3. During rule formation...**

- Extension, agency, and industry personnel worked together to make the rule as reasonable as possible, within the parameters of the legislation
- PennAg Industries Manure Hauler and Applicator Council formed
- ***5 certification levels*** implemented into the rule



# *Certification Levels with Brief Description*

## *--Hauler Levels*

### **1. Manure Hauler Level 1**

- “Trucker” level – Transports but does not land apply manure

### **2. Manure Hauler Level 2**

- “Employee” – Land applies manure. Must be supervised.

### **3. Manure Hauler Level 3**

- “Owner or Manager” – Supervises others.
- Attends Orientation class. Completes 35 question test.

### **4. Manure Broker Level 1**

- Determines end use of manure.
- Cannot write Nutrient Balance Sheet (NBS).

### **5. Manure Broker Level 2**

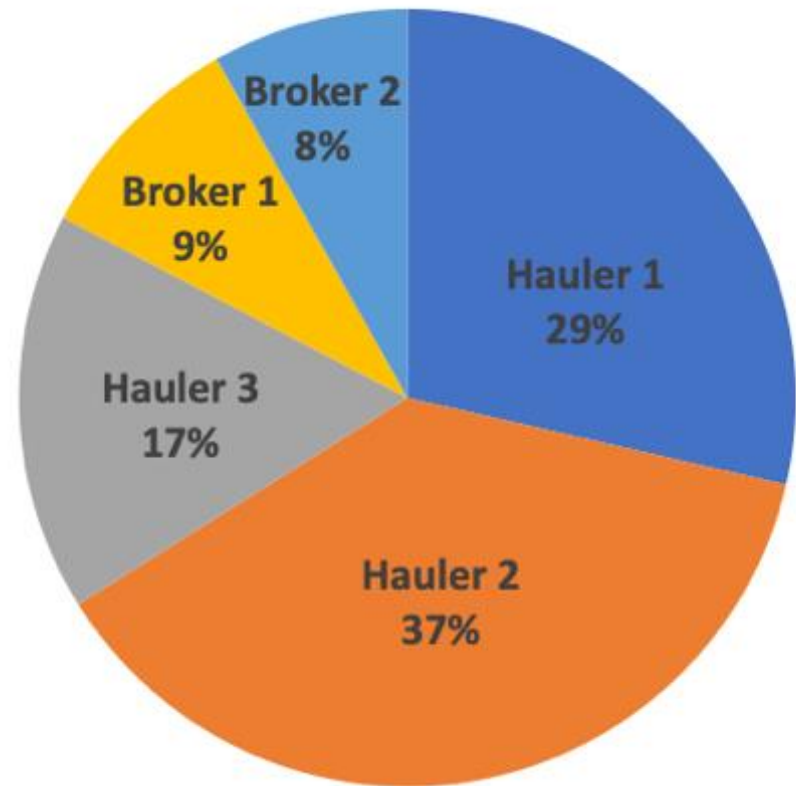
- Determines end use of manure.
- Can write NBS.

# Numbers Certified Haulers & Brokers

– from Mike Aucoin, SCC, March 1, 2018

- Hauler Level 1 - 231
- Hauler Level 2 - 303
- Hauler Level 3 - 134
- Broker Level 1 - 74
- Broker Level 2 - 66

**Total - 808**



## Type of Manure Worked With

Certification Level*	Both Liquid and Solid Manure	Liquid Manure Only	Solid Manure Only
Manure Hauler Level 2	23	35	21
Manure Hauler Level 3	20	21	5
Manure Broker Level 1	6	5	7
Manure Broker Level 2	5	5	18
<b>Total</b>	<b>54 (total)</b>	<b>66 (total)</b>	<b>51 (total)</b>
<b>*Manure Hauler Level 1 not represented.</b>			

## Number of Farms Worked on Annually

Certification Level*	Average Number of Farms Worked on Annually
Manure Hauler Level 2	49.4
Manure Hauler Level 3	30.8
Manure Broker Level 1	51.4
Manure Broker Level 2	26.4
<b>Average</b>	<b>38.5 (average)</b>
<b>*Manure Hauler Level 1 not represented.</b>	

# *Food Processing Residuals (FPRs)*

- Jurisdiction of DEP
- Considered an 'additional nutrient source' in nutrient/manure application planning
- Can be mixed with manure
- Guidance is separate from manure and found in the FPR Manual
- Application setbacks are different
- Currently, there is a FPR Workgroup in early active stages that is working to redraft FPR regulation/policy

# *Manure Storage Siting*

*Always seek professional help from agencies*

*Specific guidance is in regulation (section 83.351)*

Some details:

- Flood plain considerations
- 100 foot setback from:
  - Stream, river, spring, lake, pond, reservoir, Exceptional Value wetland, well, open sinkhole, property line (unless waiver)
- Depending on when the operation came into existence it may have 200 or 300 foot setback if:
  - Located on slope  $>8\%$  or capacity  $>1,500,000$  gallons

# Pasture & Animal Concentration Area (ACA) Management

- All pastures on the farm must be included in the plan
  - Identified on the farm map
- General pasture management options:
  - **Option 1:** Grazing plan that meets the requirements of the PA Tech Guide Prescribed Grazing (528) standard (or)
  - **Option 2:** Assure that pasture management:
    - Maintains dense vegetation in the pasture throughout the growing season
    - Minimizes bare spots
    - Maintains an average vegetation height across the pasture during the growing season at least 3 inches high
    - Assure nutrients and soil are not leaving 'edge of field'
- Pastures which are overgrazed or areas with high foot traffic – that are denuded of vegetation can be considered [ACAs](#)

## *Animal Concentration Areas (ACAs)*

- Also called “Animal Heavy Use Areas”
- Barnyards, feedlots, loafing areas, exercise lots or other similar animal confinement areas that will not maintain the dense vegetation of a pasture
- Do not include pastures meeting the requirements of pasture definitions
- ACAs may exist within pastures
  - Walkways, feeding areas, watering areas, shade areas
  - Not considered ACAs if water from or precipitation onto these areas does not result in runoff of manure or sediment to streams, lakes, ponds, or sinkholes
- Local agency personnel can provide expertise in determination and management





# *Agricultural Manure Odor Sources*



## **1. Buildings**



## **2. Storages**

## **3. Application**



# *Odor Complaints*

***Manure application  
is the #1 odor complaint driver.***

***Application is NOT addressed in PA odor regulation.***



# *PA Act 38 Nutrient & Odor Management Act*

## **Act 38 Odor Management Plans**

- Required for *new or expanding*  
CAO' s, CAFO' s, VAO' s
- Plan only covers *animal housing*  
and *manure storages*
- Does not cover manure application.
- Is primarily based on proper siting and conflict avoidance.
- PA tries to avoid potential odor conflict by implementing Odor Planning but does not make odor measurements.

*Factors affecting odor perception from PSU survey  
of swine farm neighbors (Mikesell)*

*Factor*

*Less odor if ....*

- |                                  |                        |
|----------------------------------|------------------------|
| • Distance.....                  | • More distant         |
| • Direction.....                 | • Live West or North   |
| • Know producer?.....            | • Better known         |
| • Farm Attractiveness.....       | • More attractive      |
| • Self-recorded health rating... | • Higher health rating |

*Important point: Odor perception affected by:*

*physical and personal factors.*

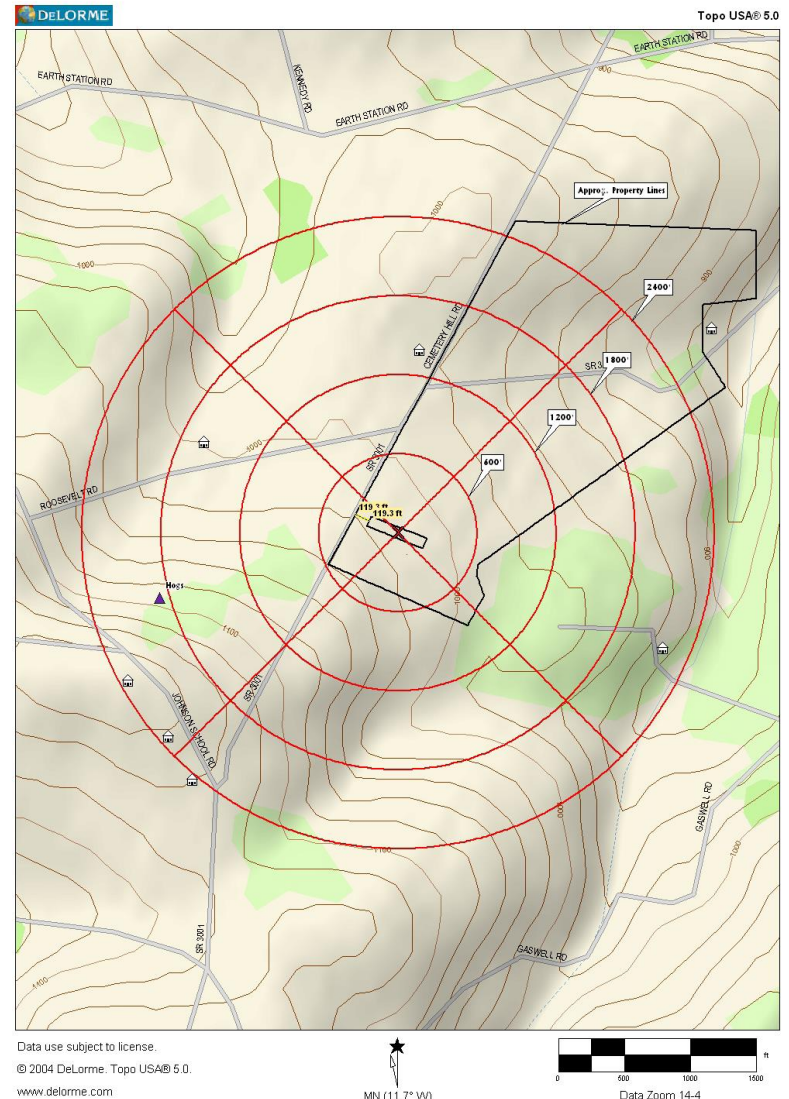
*Which factors above are physical? Which are personal?*

# Act 38 Odor Management Plans

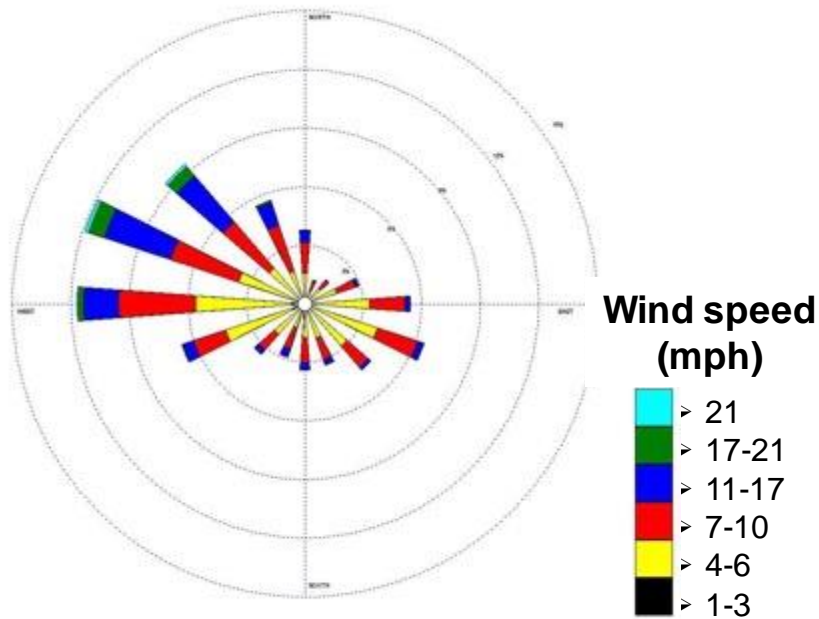
Based on the

## *Odor Site Index (OSI)*

- *The proposed site is evaluated for potential odor conflict*
- *Factors & numbers are assigned that produce a final OSI score (similar to P-Index approach)*
- *Special certification training required*

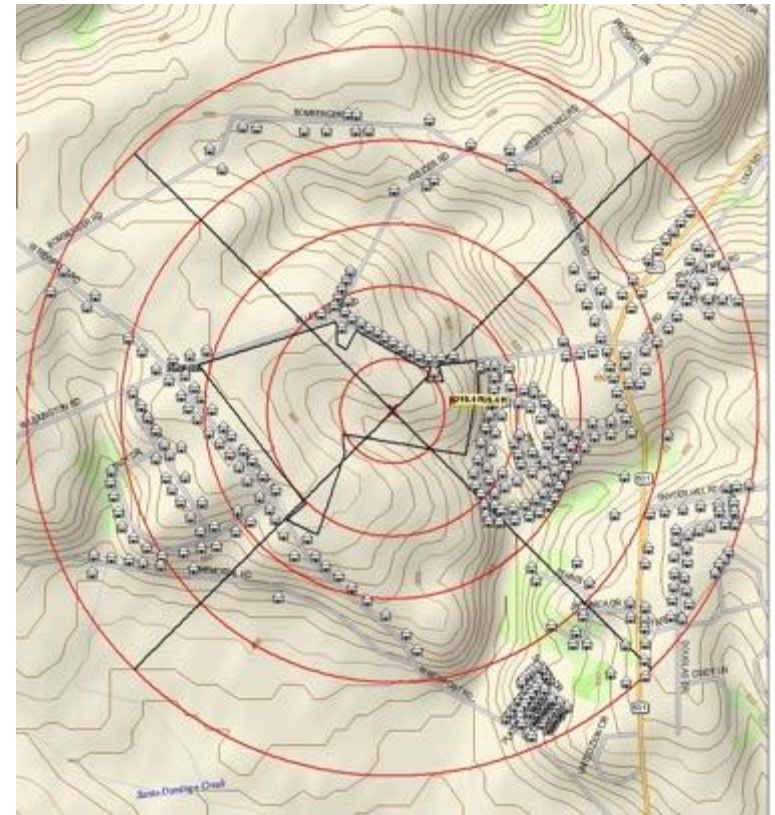


# Wind Direction and OSI Quadrants



## Harrisburg, PA – *wind rose*.

Larger 'pie' means wind comes from that direction more often.

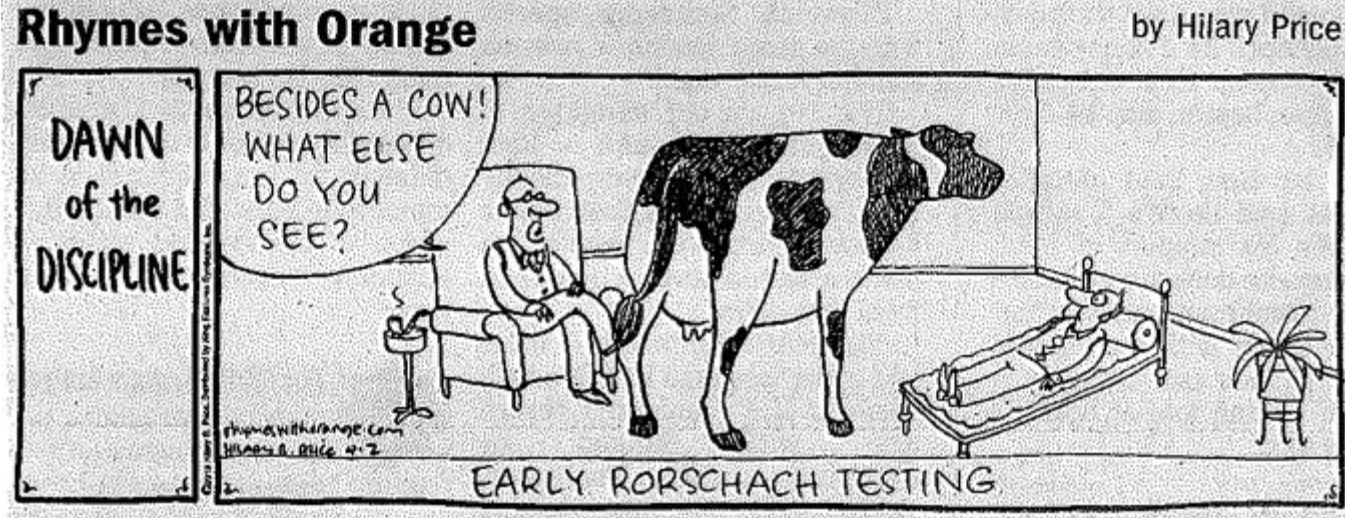


OSI places and 'X' at the center of the proposed animal housing unit to divide evaluation radius into 4 quadrants (North, East, South, West).

*Which quadrant do you think scores highest in the OSI?*

# *Odor Site Index – Considers these when Assessing Potential of Odor Conflict*

- Number of AEU' s
- Species
- Proximity to property lines
- Neighbors
  - Number
  - Direction
  - Distance
  - Houses & Public Use Facilities



# OSI Odor Source Factors

- **Size:** More animals = higher index.
- **History of livestock** at the site: No previous livestock = higher index.
- **Species:** Some animals smell worse and get higher scores.

Pigs  
Ducks

>  
Smell  
Worse  
Than

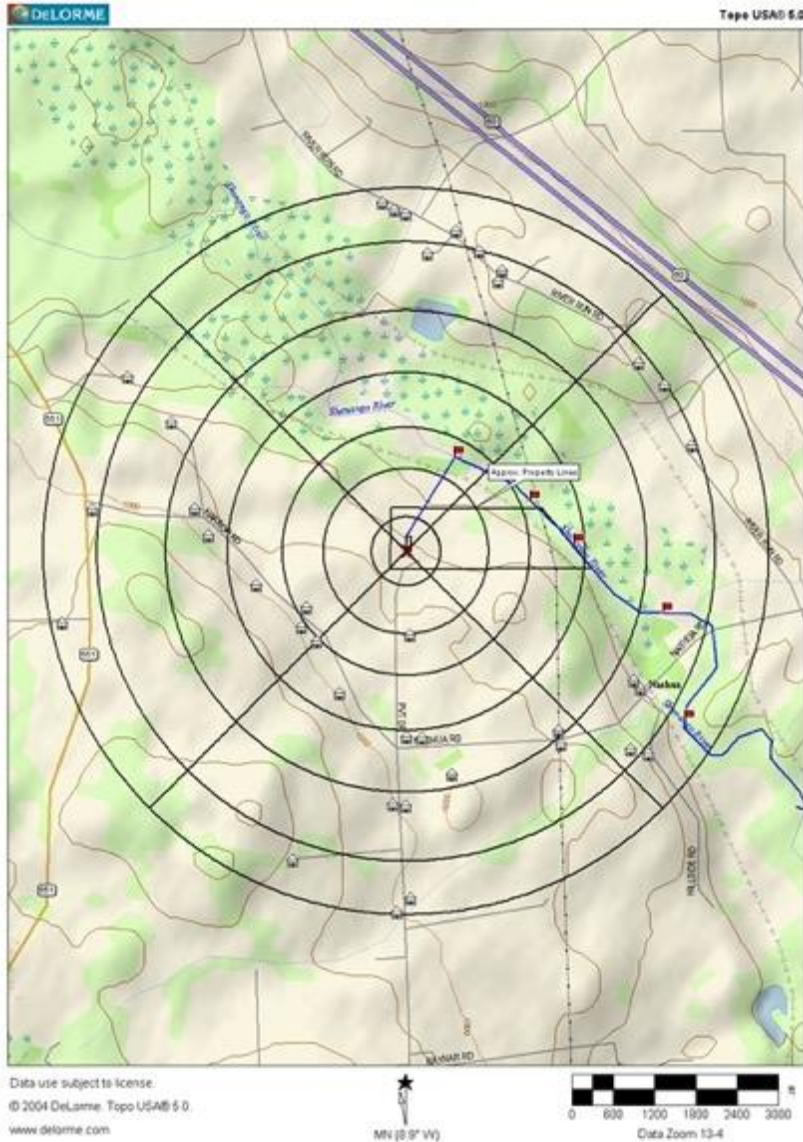
Layers  
Cattle  
Veal

>  
Smell  
Worse  
Than

Broilers  
Turkeys  
Horses

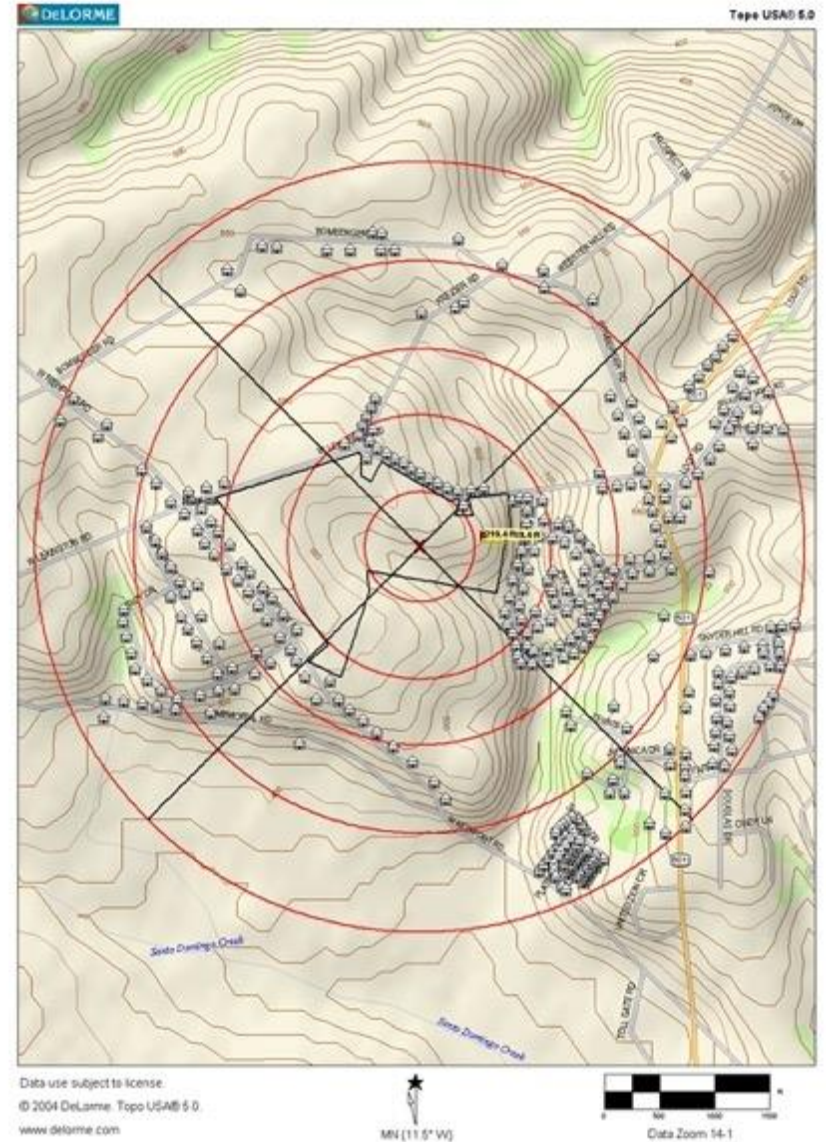


# Good site.



This site's score = 29

# Bad site.



This site's score = 254

# *How many Odor Plans are there?\**

- 922 plans submitted
- 9 plans denied
- 15 plans withdrawn by the operator
- 105 plans rescinded by the SCC

*\*As of August 7, 2023.*

*Regulations effective 2/27/2009, but became active in 2006.*

# *What type of Farms have Approved Odor Management Plans?\**

- 140 Broilers
- 106 Cattle – Dairy & Beef
- 100 Layers
- 68 Swine
- 24 Veal
- 18 Horse
- 33 Multi-Species
- 23 Pullets
- 13 Duck
- 15 Turkey
- 3 Other

\*These numbers from 2016 but give a good idea of distribution between animal types.

# *Proper siting is very important*

## *PA's Odor Site Assessment Program*

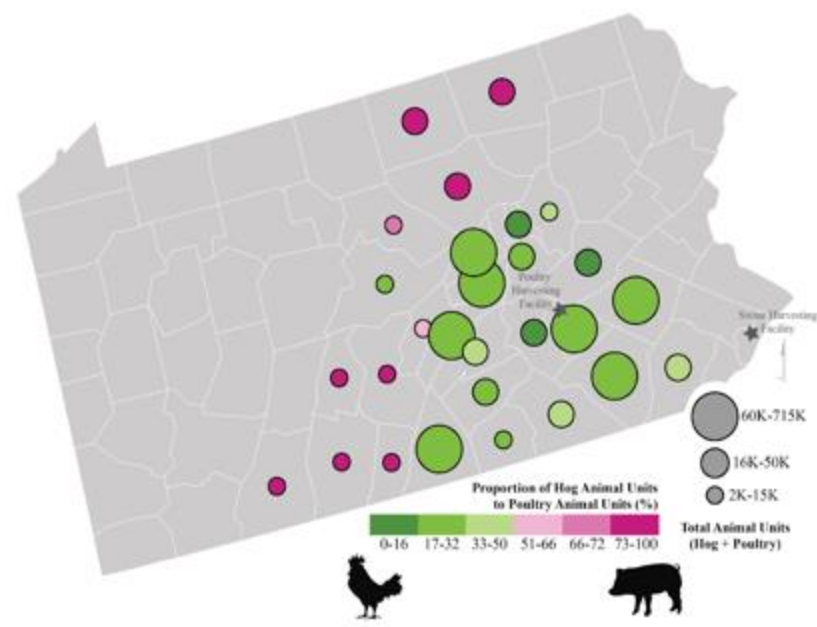
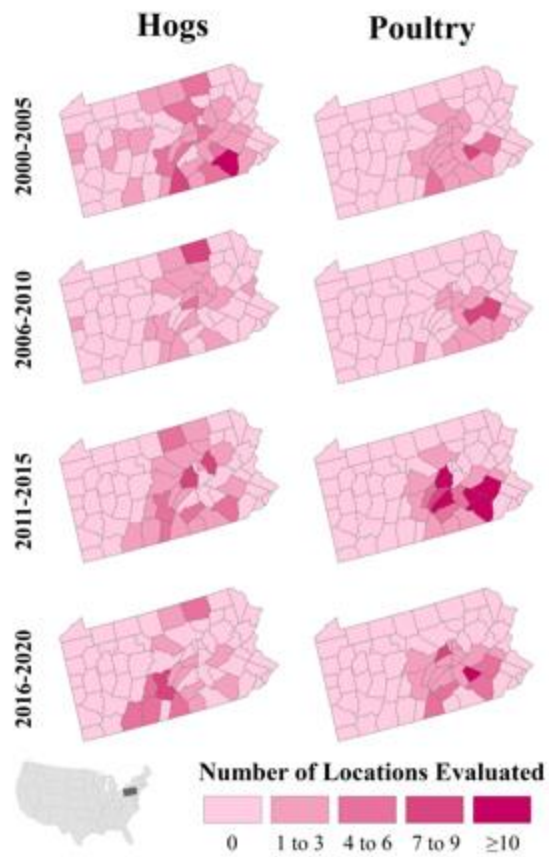
- Dr. Bob Mikesell (PSU Dept Animal Science) provides a free, voluntary site assessment service to anyone interested in building a *new animal housing* facility.
- Voluntary. Not regulatory.
- Program focuses on *odor conflict potential* to promote smart expansion.
- Mostly used by Bell & Evans Poultry and Country View Family Farms (swine). CVFF will often not construct if OSI > 50.

*Smart Expansion – Integrators have learned benefits of proper siting!*

### Odor Site Assessments 1999-2020

- 538 total assessments
- 254 Swine
- 275 Poultry

*Mapping the locations of these site evaluations demonstrates expansion philosophies these companies are taking on locating new farms – and thereby where they are locating manure shed nutrients.*



Location of animal units (453 kg of animals) of PA swine and poultry. Size of circle indicates county population. Color represents relative contribution of each species.

Map of PA Odor Site Evaluation Service farm locations 2000-2020.

## *Conclusions from PA Odor Site Evaluation Case Study*

- The swine industry expands based on...
  - **Health and Animal Welfare** – Farm isolation from other pigs due to health benefits
  - **Social Forces** – Avoidance of odor conflict through proper siting is critical to success of all parties
  - **Manureshed Impacts** – Farms that need manure nutrients are more likely to be better stewards of liquid manure
  
- The poultry industry does not expand as far...
  - **Health, Animal Welfare, and Consumer Product** – Goal to keep animal transport time below 90 minutes
  - **Manureshed Impacts** – Solid poultry litter is routinely transported through PA's advanced manure broker industry from areas of source to sink, and to the mushroom industry

# Thank you!

## Questions?

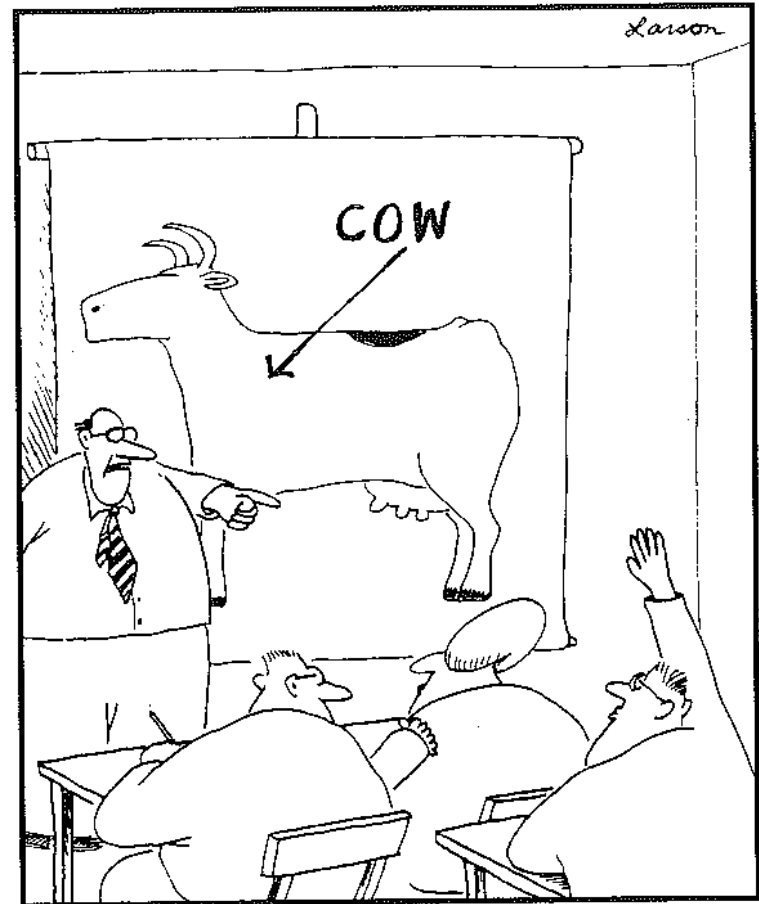
**Robb Meinen**

**Nutrient Management Education Program**

**Penn State Dept. Plant Science**

**(814) 865-5986**

**[rjm134@psu.edu](mailto:rjm134@psu.edu)**



"Yes ... I believe there's a question there in the back."



**Penn State Extension**