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# National Animal Health Monitoring System (NAHMS)

**NAHMS Swine 2021 Large Enterprise Study  
(LES) Manual**

**2021 NAHMS SWINE LARGE ENTERPRISE  
SURVEY (LES) MANUAL**

## Contents

<b>Chapter 1 – General Information .....</b>	<b>1</b>
BACKGROUND.....	1
HOW NAHMS SWINE STUDY INFORMATION IS USED.....	2
PURPOSE OF THE NAHMS SWINE 2021 LARGE ENTERPRISE STUDY.....	2
OBJECTIVES OF THE NAHMS SWINE 2021 LARGE ENTERPRISE STUDY .....	2
BENEFITS OF PARTICIPATION IN THE NAHMS SWINE 2021 LARGE ENTERPRISE STUDY.....	3
OVERVIEW OF NASS DATA COLLECTION.....	3
OVERVIEW OF VS DATA COLLECTION.....	4
<b>Chapter 2 – Terms and Definitions .....</b>	<b>5</b>
<b>Chapter 3 – Enumerator Procedures .....</b>	<b>17</b>
THINGS TO DO PRIOR TO THE FIRST SITE CONTACT.....	17
WHO TO INTERVIEW .....	17
LARGE ENTERPRISE SURVEY (LES) INTERVIEW(S) STEPS.....	17
SPECIAL SITUATIONS .....	20
MORE ON THE CONSENT FORM AND INFORMATION ABOUT PHASE 2.....	20
DELIVERING COMPLETED WORK TO THE FIELD OFFICE.....	20
<b>Chapter 4 – General LES Instruction, Question and Response Formats .....</b>	<b>21</b>
GENERAL INSTRUCTION FORMATS .....	21
GENERAL QUESTION FORMATS.....	24
<b>Chapter 5 – Questionnaire Overview and Questions of Note .....</b>	<b>31</b>
LES SECTIONS OVERVIEW.....	31
<b>SECTION 1 – SITE INVENTORY .....</b>	<b>31</b>
<b>SECTION 2 – BREEDING AND PREWEANING ANIMAL MANAGEMENT .....</b>	<b>31</b>
<b>SECTION 3 – NURSERY AGED PIG MANAGEMENT.....</b>	<b>31</b>
<b>SECTION 4 – GROWER/FINISHER AGED PIG MANAGEMENT .....</b>	<b>32</b>
<b>SECTION 5 – BIOSECURITY.....</b>	<b>32</b>
<b>SECTION 6 – OVERALL FARM MANAGEMENT.....</b>	<b>32</b>
<b>SECTION 7 – CONCLUSION.....</b>	<b>32</b>
QUESTIONS OF NOTE .....	33



## **Chapter 1 – General Information**

### **BACKGROUND**

The NAHMS Swine 2021 Large Enterprise Study is being conducted jointly by the National Agricultural Statistics Service (NASS) and the National Animal Health Monitoring System (NAHMS). NAHMS is an information gathering and disseminating organization within the Animal and Plant Health Inspection Service (APHIS), an agency of the U.S. Department of Agriculture.

The purpose of the NAHMS program is to collect and analyze animal health data to provide current and scientifically sound information on the health status of U.S. livestock and poultry. The information is intended to benefit both livestock producers (by facilitating efficient production and animal welfare), industry leaders (by creating a reference guide and referral for trade negotiations with other countries) and the general public (education). Special emphasis is placed on obtaining valid estimates of management practices, production measures, biosecurity practices, disease status and disease prevention measures used in the national herd.

The NAHMS program is not designed to detect, regulate or eradicate major epidemic diseases, but rather to obtain snapshots of the levels (e.g., prevalence) of different swine diseases. Overall herd health is often related to animal genetics, herd management practices, the environment in which the herd is located and exposure to infectious agents. The NAHMS program attempts to measure these factors and to report the findings to the livestock industry, as well as to the general public.

NAHMS was started in 1983. In the first few years after it was established, animal health and economic data were collected for various types of livestock through several State programs. Since 1989, surveys have been national in scope and have focused on hogs from farrowing to market, dairy cattle, cow-calf operations, cattle-on-feed operations, equids, catfish, poultry, goats and sheep. NASS State offices and NASS field enumerators were involved in most of these projects.

In 1990, NAHMS conducted its first swine study. The NAHMS Swine 2021 Large Enterprise Study will be the sixth study of the more commercial side of the swine industry.

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## **HOW NAHMS SWINE STUDY INFORMATION IS USED**

Information gathered in NAHMS studies is used to:

- Provide industry groups with information regarding their industry on a national level.
- Facilitate trade negotiations and exports by providing other countries with a summary of the structure and health status of the US industry.
- Identify information needs to promote funding for animal health research.
- Define health care areas that need more emphasis in veterinary education programs.
- Help scientists identify the most costly health problems.
- Help drug companies decide which new products to develop.
- Assist government policy makers in making more informed decisions affecting the swine industry.
- Benefit consumers by providing factual information on how swine are raised.

**Some of these points may be useful in persuading a reluctant owner/manager to participate in the survey.**

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## **PURPOSE OF THE NAHMS SWINE 2021 LARGE ENTERPRISE STUDY**

The purpose of the National Agricultural Statistics Service (NASS) component of the Study (Phase 1) is to compile essential industry information involving the areas of swine housing, swine management, production metrics and site biosecurity. To identify vital information, a needs assessment was completed involving industry representatives, producers, veterinarians and animal health officials. The needs assessment was used to develop the study objectives.

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## **OBJECTIVES OF THE NAHMS SWINE 2021 LARGE ENTERPRISE STUDY**

- Describe current U.S. swine production practices for gestation, farrowing, nursery, grower/finisher and wean-to-finish phases, specifically as they relate to housing, productivity, biosecurity and morbidity and mortality prevention.
- Determine the producer reported prevalence of select respiratory, neurologic, gastrointestinal, systemic and foodborne pathogens found in weaned market pigs.
- Describe antimicrobial use patterns in pigs from postweaning to market age
- Evaluate the presence of select pathogens and characterize isolated organisms from biological specimens (feces, oral fluids).

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## **BENEFITS OF PARTICIPATION IN THE NAHMS SWINE 2021 LARGE ENTERPRISE STUDY**

The information collected will be useful to individual producers, the Swine industry, animal health officials and veterinary groups.

### **Benefits to Individual Producers**

- Participating producers will receive links to reports and information sheets that will enable them to compare their operation - including management decisions and practices - with others in the swine industry. These publications will present study summary data on a national, regional and operation size basis for general management and production topics as well as specific health related issues.
- Producers who choose to participate in the second phase of the study will receive oral fluid and fecal test results. These tests would provide the following information:
  - Whether the site has been infected with Senecavirus A (Seneca Valley Virus).
  - The serotypes and species of *Salmonella*, *Campylobacter* and *Enterococcus*, respectively, as well as the antimicrobial susceptibility patterns present on their site(s) from isolates of these three pathogens and generic *Escherichia coli*.

### **Benefits to the Swine Industry**

Baseline characterization of the commercial swine industry, including the following:

- National estimates of disease prevalence based on clinical signs as well as vaccination use, management biosecurity tools and medications used to combat disease by production phase. These estimates are valuable in trade negotiations and in combatting misinformation.
- National estimates of movement practices and feed management in growing pigs for disease planning.

### **Benefits to Veterinarians, Universities and Researchers**

For practitioners, universities, industries and media involved with the swine industry, descriptive reports summarizing all data will be available for comparative analysis and interpretation.

- Information collected will provide basic parameters for animal disease models, including those used to plan for outbreaks of foreign animal diseases.
- Veterinary Services (VS) personnel will have a better understanding of the spectrum and demographics of the swine industry in the event of an emergency response.
- The information collected will help to determine areas needing further research and education.
- Researchers will use the background information provided by this study on the swine industry to support grant applications while national estimates provide the basis for study design and sample selection.

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## **OVERVIEW OF NASS DATA COLLECTION**

NASS will select operations from 13 swine producing States. Operations in these states account for 95.7 percent of operations with 1,000 or more hogs and 93.0 percent of the hogs on operations with 1,000 or more hogs in the U.S. Operations with 1,000 or more hogs account for approximately 15.6 percent of swine operations and sites in the U.S. but 97.2 percent of the swine inventory resides on these operations and sites.

Selected operations will be sent information about the study, including a selection letter, launch sheet, biologics benefits sheet, industry support letters, and a Phase 2 summary sheet, in addition to the LESSF and LESSF Appendix. Note that the operations will receive these materials but that selected sites to which the LES will be administered **will not**. It is important that you provide as much of this study information as is needed by the site contact to ensure they are informed about the benefits and requirements of the study, “sales” points, and that the study is well-supported.

The entire 2021 NAHMS Swine Large Enterprise Study consists of two phases. In Phase 1, NASS will contact approximately 2,200 swine operations with herds of 1,000 or more pigs to complete the 2021 NAHMS Swine Large Enterprise Survey-Site Selection Form (LESSF). The LESSF is a short questionnaire designed to select representative sites (approximately 4,085 total) within operations for further data collection using the 2021 NAHMS Swine Large Enterprise Survey (LES). Both the LESSF and LES will be administered via paper-assisted telephone interviews (PATI) if in-person interviews are not permissible at the time of the study.

The LES focuses on housing, management and productivity topics. Enumerators will also find out if the **operation contact** (representative for the operation) is willing to turn their names and contact information over to APHIS/VS personnel (Phase 2). If yes, consent will be captured on the LESSF (for the operation) and the LES (for each site sub-selected within the operation). Data collection for Phase 1 will occur from June 28, 2021, through August 2, 2021.

***Information provided in this manual will focus on Phase 1 of the study, the 2021 NAHMS Swine Large Enterprise-Consent Form and Process (Phase 2 participation), the LES and your role in the data collection process.***

It will help promote the study when you make these contacts if you have a working knowledge of the materials sent ahead (e.g., the launch sheet) so you may give an accurate picture of what will be involved in completing the study. “Sales” points for the study include the following four areas:

1. The Swine 2021 study has been designed to collect information specifically requested by swine industry representatives, State, and Federal officials.
2. The output reports from this study are useful in trade negotiations.
3. A current snapshot of this swine industry segment in terms of health, management and movement is useful for State and Federal officials in disease response planning (e.g., African Swine Fever).
4. National estimates of modern commercial swine raising combat misinformation.

Participation in this study is voluntary. A respondent may choose to answer every LESSF or LES question, skip certain questions or sections or end the interview at any time. NASS Regional Offices should be able to answer most terminology questions or help in determining things like the “spirit” of a particular question. That is, what is the question really after?

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## **OVERVIEW OF VS DATA COLLECTION**

Phase 2 of the NAHMS Swine 2021 Large Enterprise Study will take place from mid to late September 2021 through January 2022 and involves a second site interview by a VS Veterinary Medical Officer (VMO) or Animal Health Technician (AHT) with optional participation in the biological sample collections mentioned previously.

NASS representatives will turn over information about operation contacts who indicate that they would like the opportunity to participate in Phase 2 of the study, starting in September 2021. This information has been turned over face-to-face between NASS RFO contacts and NAHMS State Coordinators in the past but will instead be electronically turned over for this study.

## Chapter 2 – Terms and Definitions

Enumerators working on the NAHMS Swine 2021 Large Enterprise Study should be familiar with as many of the terms and definitions listed below as possible. To gain the most benefit from training, enumerators should review the definitions of these terms before attending the training session and ask any questions they may have then. **Note:** These terms are tailored to **this** questionnaire’s contents and interview procedures. There are also NASS terms (e.g., Callback)

### **Acclimatization**

The gradual adjustment of an animal to changes in its environment. Before new pigs are introduced into a herd, they are often exposed to biological matter from that herd to develop resistance to herd disease organisms. (See also ‘Feedback.’).

### **Age Group**

This term usually refers to a group of pigs defined either by a set number of head to fill a facility space (e.g., 200 head to fill a room, 500 head to fill a barn, etc.) or by a set length of time to create the group (1 weeks’ worth of weaning or all pigs born in a two week period, etc.) In both cases, the groups of pigs are usually raised to market weight as a single population using management practices common to all (vaccines, vaccination dates, post nursery diet changes, etc). Typically, it will take 1-3 weeks to form a unique age group; therefore, an example age group is “20 to 22 weeks.”

### **All In/All Out**

This describes a management approach in which the animals are moved as a group, allowing a facility unit (pen, room or barn) to be completely empty for a time. All-In, All-Out management usually includes completely cleaning and disinfecting the facility unit before refilling it with animals. All-In, All-Out management can be done at almost any level: room, building or entire site.

### **Antibiotic**

A substance that inhibits or kills microorganisms (e.g., bacteria).

### **Artificial Insemination**

The process by which a gilt or sow is inseminated via an instrument filled with boar semen.

### **Biosecurity**

The specific practices and procedures used by an operation to prevent entry of or limit the spread of, diseases/pathogens. Examples of biosecurity would be requiring visitors to shower or use a footbath before entering the hog production areas.

### **Boar/Young Male for Breeding**

Intact male pig used for breeding.

### **Bred/Breeding**

All actions from mating to farrowing that culminate in a gilt or sow becoming pregnant and delivering a litter of piglets.

### **Bred Gilt**

A gilt that is either slated to enter the breeding herd or has done so and has been inseminated either naturally (with a boar) or artificially.

### **Breeding females**

All gilts and sows used for breeding.

### **Breeding males**

All boars used for breeding, including teaser boars, who function primarily to detect sows returning to estrus.



**Breeding Herd**

All gilts, sows and boars actively used for breeding on a site. Entry to the breeding herd is usually after a period of holding or quarantine. In the case of females, this holding period may occur in a Gilt Development Unit.

**Business and Non Business Visitors**

A Business Visitor to the site is someone that is there to perform a service to the site. This would include veterinarians (sometimes overlooked as a business visitor), nutritionists, electricians, engineers, plumbers, mechanics, salesmen, etc. A Non Business Visitor could be anyone else like a tour group, wife or children of an employee or family friends on a social call.

**Callback**

A situation in which a respondent who has been contacted must, for any reason, be re-contacted. A callback may be needed to clarify a response from the original interview because of its relationship to other reported data or to talk with the person best able to provide the information requested.

**CNS (Central Nervous System) signs**

The CNS is the brain and spinal cord. Signs of diseases affecting the CNS can include walking in circles, walking in an uncoordinated manner and/or with a head tilt, pressing the head against the wall or seizures.

**Common Swine Industry Audit**

In October 2014, the National Pork Board officially announced a new common swine industry audit platform for pork producers, packers and processors. The goal of the common audit process is to provide consumers with greater assurance of the care taken by farmers and pork processors to improve animal wellbeing and food safety. This audit tool builds on the existing Pork Quality Assurance Plus (PQA Plus) program.

**Company Veterinarian**

A veterinarian who only works for the swine operation.

**Composting**

A method of decomposing plant remains and other once-living materials (like pigs) to make an earthy, dark, crumbly substance that is excellent for enriching soil.

**Confidentiality**

The assurance from NASS and the USDA to survey respondents that individual information collected on authorized USDA surveys will not be released to any person, organization or institution, including court subpoenas. The assurance of confidentiality is backed by federal law. See the "NASDA Employee Handbook" for regulations.

**Continuous flow**

A management approach where animals are moved in and out as needed, in contrast to All in/All out movement. At least one pen, room or building always contains some animals.

**Contractee**

A person who is responsible for producing a contractor's hogs for a fee or other financial consideration. This person may own the operation where the hogs are raised but not the hogs themselves.

**Contractor**

Person or firm offering a contract agreement to a producer (contractee) to raise the person's or firm's hogs. The contractor typically owns the hogs and might supply the feed, medicine or other such items, but does not take care of the animals.

### **Cull (sows, gilts and boars) or “Culled Breeding Stock”**

The action of removing animals from the herd or slating them for removal for a reason usually related to poor performance (e.g., sows no longer suitable for breeding). Usually, these animals are sent to slaughter (or rendering) similar to market hogs or euthanized on or off the site.

### **Daily haul and spread (waste storage and treatment)**

Waste is removed and taken to an area such as a field where it is placed.

### **Danish Entry or “Bench” system**

A biosecurity method to prevent entry of disease into a swine housing area. A single room Danish entry set up includes a bench that divides the room in half. Clothing worn into the room from outside is hung on hooks in the “dirty” side. The employee/visitor sits on the bench divider and removes his or her footwear without letting soles touch the floor. After removing the footwear, the visitor spins around and puts on farm footwear to cross over to the “clean” area. The Danish entry method also has been used in combination with a shower which is the next stop on the “clean” side <http://porkgateway.org/resource/biosecurity-of-pigs-and-farm-security/>.

### **Deep vs. Shallow Pit Holding (waste collection and handling)**

A temporary holding place for manure usually right below the pig housing area. A Deep Pit has a capacity of a month or more of waste while a Shallow Pit has a capacity of less than one month of waste.

### **Disinfect**

To destroy pathogenic and other kinds of microorganisms by physical or chemical means. Common disinfectants include alcohol, phenols and quaternary ammonium solutions.

### **Earthen Manure Storage Pond (waste storage and treatment)**

Manure is stored as excreted or with some minimal addition of water to facilitate handling and is stored in earthen ponds, for periods typically less than one year. The earthen ponds are not designed, either through depth or storage time, with the intention to promote treatment through anaerobic biological activity. Clean out usually removes all sludge from the pond.

### **Earthen Treatment Lagoon (waste storage and treatment)**

These are anaerobic treatment lagoons (uncovered or covered) and are designed and operated to combine waste stabilization and storage. These lagoons have varying lengths of storage (up to a year or greater), depending on the climate region, the volatile solids loading rate and other operational factors. Clean out does **not** remove all sludge.

### ***E. coli* (*Escherichia coli*)**

*E. coli* is a Gram-negative, flagellated bacilli. *E. coli* is the more general name for a group of bacteria of which some perform necessary intestinal function and some cause disease, usually of an intestinal nature (diarrhea). The age of onset may range from within a few days of birth to after weaning.

### **Edema disease (*E.coli* enterotoxemia)**

Toxins from certain types of *E. coli* in the intestines of nursery pigs (after weaning) can result in edema (swelling) throughout the piglet; this often can be seen as swollen eyelids. Some neurological signs, like walking in circles or not being able to get up and diarrhea can be seen.

### **Electronic Sow/Gilt Feeding**

Group housed sows and gilts eat by entering a machine individually that portions out their feed and they eat it within the machine.

### **Employee**

Anyone who performs any sort of swine husbandry on the swine site for money. ***This could include the owner of the site and his or her family.***

**Estrous cycle**

This is a period of time in sexually mature females which starts with the growth of an ovarian follicle and ends with a “rest” before the next cycle. There are several phases in this cycle, perhaps the most notable being “estrus.” In pigs and other species, this is the time the female will accept sex with the male. Also called “heat.”

**Euthanasia**

The act or practice of killing sick or injured animals in a relatively painless way for reasons of mercy.

**Facility**

A structure and/or area where the animals are located or to which they have access.

**Farrow**

When a sow or gilt gives birth to a litter of piglets.

**Farrowing Phase**

Production phase in which sows and gilts give birth to piglets.

**Feedback**

The process of feeding essences of feces or other biologic material from swine that are already on site to new herd entries to expose them to pathogens endemic to the site without making them sick. Other materials could include placentas and stillborns.

**Feeder Pigs**

Weaned pigs weighing approximately 40-60 pounds that are to be fed out for the slaughter market or sold as is.

**Feral Swine or Hogs**

Wild, free roaming swine. They can carry and transmit diseases to domestic swine and other animals, including humans.

**Flush-under slats (waste collection and handling)**

Waste is hosed or power washed between the slats in a pig dunging area.

**Flush-open gutter (waste collection and handling)**

Waste is hosed or power washed into a gutter from a pig dunging area.

**Formed Liquid/Slurry Storage tank (waste storage and treatment)**

Manure is stored as excreted or with some minimal addition of water to facilitate handling and is stored in tanks, usually for periods less than one year.

**Gestation**

Time from conception to birth, typically about 114 days in pigs.

**Gestation phase**

A time period in a sow’s or gilt’s life when they are presumed pregnant but have not yet farrowed.

**Gilt**

A sexually mature female pig that has not yet produced a litter of piglets.

**Gilt Development Unit (GDU)**

A facility dedicated to replacement gilts destined for the breeding herd. The GDU prepares the gilt for entry into the breeding herd proper often by exposing her to pathogens endemic to the breeding herd (which may be on another site) via vaccination or other acclimations such as feedback. The GDU also often provides boar exposure and time to gain weight. Gilts may be kept there through weaning of first litter and rebreeding (<https://www.ipic.iastate.edu/SowBridge/SB0112GDU.pdf>).

**Glasser's Disease (*Hemophilus parasuis*)**

*H. parasuis* normally inhabits the tonsils but can sometimes travel to the Central Nervous System (CNS), causing inflammation and CNS signs such as tremors, lack of coordination and an inability to rise in nursery aged pigs. Occasionally, swelling and cyanosis (bluish/purplish color) can be noticed in the legs and feet. As the condition progresses, the pig will fall over and thrash all four legs. Death can occur quickly, especially if the pig is stressed.

**Group**

For this questionnaire, a group of animals is essentially animals united under a common factor such as age, similar feed, similar management, similar production phase timing, similar farrowing time, etc. For example, a delivery of pigs might be a group. It's whatever the respondent calls it.

**Group fed on floor**

Sows and gilts that are group housed and have a machine that drops feed from above them to land in piles on the floor.

**Group Housing or Pens (sows or gilts in gestation)**

Gestating sows and gilts that are housed together in pens, as opposed to housing in individual crates during gestation.

**Grower/Finisher Aged Pigs**

The time between when a weaned pig weighs about 40–60 pounds (1-2 months of age) and when the pig is at market or slaughter weight (approximately 300 pounds or 5-6 months of age). Instead of going to market some of these pigs may be groomed to become replacements in the breeding herd.

**Grower/Finisher Facility**

A structure and/or area where grower/finisher aged pigs are located or to which they have access. This term (generally) refers to the physical location where grower/finisher aged pigs are kept in the grower/finisher phase.

**Grower/Finisher Phase**

Production phase (lasting 2-3 months) in which hogs are fed out from 40 to 60 pounds to final market weight for slaughter.

**Hand-cleaned (waste collection and handling)**

Manual removal of waste (e.g., with a shovel).

**Inaccessible**

A respondent who cannot be contacted, interviewed or enumerated during the period set aside for an interview.

**Independent Producer**

Someone raising hogs but not involved in a production contract; that is, not acting in the role of a contractor or contractee. Independent producers can market on their own or through a cooperative.

**Individual Hand-Mating Naturally**

The practice of selecting individual females to be bred physically with a specific boar. Both sow and boar are placed in the same pen and an employee might have to help with the physical aspects of mating.

**Individual Stall/Crate**

Usually an enclosure built for one gilt or sow which houses her during the gestation phase.

**Individually fed in free access stall**

Group housed sows and gilts may enter a stall in front of a trough where they eat somewhat protected from other sows and gilts (entire body or shoulder separations).

**Individually fed in trough, but with group access to the trough**

Group housed sows and gilts eat from a trough with no protection from other sows and gilts (no entire body or shoulder separations).

**Interview**

To ask questions of someone representing a selected sample unit and record the responses.

**Isolation or Quarantine**

A biosecurity procedure where a pig or group of pigs is held separately from other pigs for a period (such as 30 days) to permit evaluation of health and look for signs of disease.

**List Frame**

A sample of potential farm operators or agribusinesses selected from a List Sampling Frame.

**List Sampling Frame (LSF)**

A list of agricultural operators in a State. Each classified operation name becomes a sampling unit or potential respondent. The name may belong to an individual, manager, farm or ranch, corporation or institution.

**Litter**

The product of a farrowing. A collection of newborn pigs born at one time to a sow.

**Lot With Hut or No Building**

An outside area that has little growing vegetation and might contain a hut. Also known as a dry lot. A hut is any portable housing, normally an A frame or three sided, small structure. However, if a portable structure is permanently installed, it is considered an open building with outside access.

**Market Pig (Hog)**

A weaned pig intended for slaughter as opposed to breeding. Market hogs usually weigh 300 pounds or more when sent to slaughter. We indicate 60 pounds in the LES as an entry weight to this designation, but it's whatever the weight the respondent feels is the right entry weight for their production system.

**Mate/Mating**

Natural or artificial insemination of a breeding female. Each time there is an insemination it is considered a separate mating. All the matings within one heat period are called a **service**. A form of natural mating is pen mating.

**Mechanical scraper/tractor (waste collection and handling)**

This is mechanical removal of waste, such as when a long metal pole on a chain is pulled along an alley next to pig soiling areas, collecting manure in a pile for later disposal. Alternatively, a skid loader (small tractor) or other machine performs the same function but using a front loading scoop.

**Mechanical Ventilation**

Air flow in a swine area is created using mechanical rather than natural means (such as breezes). For example, air may be pulled in using fans on the side of the building and then flows out through vents in the ceiling.

**Meningitis**

This is inflammation or irritation of the tissues surrounding the brain and spinal cord (the CNS or Central Nervous System). It invariably leads to CNS signs, such as lack of coordination or even death. (See also "CNS signs.")

**Mummy (ies)**

A dry, shriveled, stillborn pig, often black in color. Mummies are sometimes caused by an infection of the sow during gestation.

**Mycoplasma**

This is the name of a family of very small bacteria. The most common type seen on swine farms infects the lungs of all ages of pigs, but especially market pigs, causing pneumonia, which manifests in signs such as coughing (particularly when a pig gets up), labored breathing, poor growth, reduced appetite and increased post-weaning mortality. Fever might be present. Another variety can infect the joints, causing arthritis and lameness in pigs.

**Nonresponse**

Failure of a respondent to reply to a survey questionnaire. This may be the result of two types of nonresponse: item nonresponse (refusal of respondent to answer one or more questions) or survey nonresponse (refusal of respondent to answer any or most of the questions).

**Nursery Aged Pigs**

The time between weaning and about 40–60 pounds or 1-2 months of age.

**Nursery Facility**

A structure and/or area where nursery aged pigs are located or to which they have access. This term (generally) refers to the physical location where nursery aged pigs are kept in the nursery phase.

**Nursery Phase**

A production phase in which newly weaned pigs are managed, fed and housed until they go into a grower/finisher management phase. This phase usually lasts until the pig is about 50-60 pounds so for five to eight weeks after weaning.

**Nursing pigs**

Piglets nursing on their mother.

**On or Offsite Farrowing Unit**

A building or facility in which sows and gilts farrow and care for their piglets until weaning. This may be on the same physical site as the one being enumerated or separate from it.

**On or Offsite Nursery Unit**

A building or facility in which nursery aged pigs are fed and managed separately as a nursery phase. This may be on the same physical site as the one being enumerated or separate from it.

**Open Building With Outside Access**

Any building for housing swine that is open on one or more sides and provides swine with access to an outside area (such as an uncovered pen). Open sides of the building might have a curtain.

**Open Building With No Outside Access**

Any building for housing swine that is open on one or more sides, but swine are kept inside the building. Open sides of the building might have a curtain.

**Operation**

The overall business and top level management unit for a swine rearing facility, which might contain one or more sites. For example, “EB and Son Hogs” might be the name of an operation encompassing all production phases of swine rearing (e.g., gestation, farrowing, nursery and grower/finisher) on one or more **sites** (geographic locations), each devoted to a different production phase or combination of phases. (See also “Site.”)

**Out of Business**

A farm or ranch operator who no longer raises crops, livestock or poultry. He may own farmland which is being operated by someone else.

**Out of Scope Operation**

University, extension, experimental and prison farms.

**Parity**

The number of times a sow has farrowed in her lifetime. The parity for a gilt is zero.

**Pasture With Hut or No Building**

An outside area that has growing vegetation and might contain a hut. A hut is any portable housing, normally an A frame or three sided, small structure. However, if a portable structure is permanently installed, it is considered an open building with outside access.

**Porcine Epidemic Diarrhea and Porcine deltacoronavirus**

Both are Coronaviruses discovered in the United States approximately six years ago and they have similar clinical signs. Sows go off feed and sometimes vomit and piglets often become emaciated and die within a short time.

**Pen Mating (w/multiple females and one or more boars)**

One or more boars are introduced to female pigs in a pen or other enclosure for natural breeding. The swine might be left together for different lengths of time and it might not be possible to tell how many matings actually occurred during the time the boars and sows were together.

**(Target) Population**

A defined set of farms or operations to which a survey pertains. The population elements must be defined in space and time as well as content. For example, the population to be surveyed might be described as all farms in the country with fewer than 100 hogs.

**PRRS (Porcine Reproductive and Respiratory Syndrome)**

A disease caused by the PRRS virus. In herds in which the virus is established, the signs are not readily evident. In the adult pig, clinical signs are generally reproductive (may not farrow as often or produce as many piglets), mild fever and poor appetite. In piglets to finishers, clinical signs are generally those of secondary infections with other agents, particularly bacterial lung invaders. In a herd that has never had the virus before or receives a new strain, the results are initially devastating, with early farrowings (at 105 to 112 days gestation instead of 114). There is an increase in stillborn, mummified and weak live born piglets, as well as increased preweaning mortality.

**Pork Quality Assurance Plus (PQA Plus)**

This is an education and certification program developed by the National Pork Board and is intended to demonstrate commitment to improve swine farm practices.

**Premises**

A site, including the land and swine buildings on it.

**Preweaning mortality**

Piglets that are born alive but die between birth and weaning off the sow.

**Rebreed/Breed back**

An industry term(s) referring to the first effort to breed (inseminate) a sow again right after a farrowing. A failure to rebreed is indicated by a return to estrus (heat) after breed.

**Refusal**

A person representing a sample unit who refuses to provide sufficient information to complete the questionnaire or who will not give an interviewer permission to complete the questionnaire.

**Renderer (Rendering)**

A company that processes animals into food for other animals (e.g. cat food) or into basic products like lard.

**Replacement (animals)**

Usually a breeding animal brought in young (e.g., a gilt) to replace breeding animals lost to culling. This will maintain breeding herd size and production. However, a replacement can be any stage or type of pig. For example, if a producer does not have enough weaned pigs to fill their nursery facility they may bring weaned pigs in from somewhere else and call them “replacements.”

**Reproductive failure (such as failure to rebreed or farrow)**

A general term used to describe a gilt or sow that is inferior in her ability to produce piglets. The term includes a variety of more specific problems such as a failure to rebreed or failure to farrow or small litter sizes. Reproductive failure is one reason to cull sows and gilts.

**Respondent**

The person who provides the information necessary to complete a survey interview.

**Sample**

The total number of sampling units selected from a sampling frame.

**Sampling Frame**

The list that identifies every sampling unit within the target population. The sampling units are the individual members of the target population whose characteristics are to be measured.

**Sampling Units**

Potential respondents to a survey selected to comprise a sample from the sampling frame. The sampling units are individual members of the target population whose characteristics are to be measured.

**Scours**

An industry term for diarrhea in pigs. Many diseases or conditions can cause scours.

**Seneca Valley Virus (SVV or SVA)**

A virus that causes vesicles upon the snout and hooves of swine and is clinically indistinguishable from other, more dangerous foreign animal diseases, such as foot and mouth disease.

**Service**

One or more matings within a single estrous cycle.

**Site (separate)**

One geographic location or address that functions to produce one or more production phases (e.g., breeding, nursery, grower/finish). A site can be a part of an operation or it can be the whole operation, if the operation has only one site. (See also “Operation”).

**Slats**

Planks or strips of material, separated by spaces, used to form a floor. Designed to let feces, urine and waste food drop below the living area.

**Solid storage (waste storage and treatment)**

The storage of manure, typically for a period of several months, in unconfined piles or stacks. Manure is able to be stacked due to the presence of a sufficient amount of bedding material or loss of moisture by evaporation.

**Sow**

A female pig that has produced one or more litters of piglets.

**Stillborn**

Piglets born dead but usually fully developed and of normal color.



### ***Streptococcus suis***

The most common cause of meningitis in nursery pigs. The pig becomes uncoordinated, often with uncontrolled eye movements, is feverish and, as the condition progresses, falls over and thrashes with all four legs on the floor, similar to signs associated with *Hemophilus parasuis*. Death can occur quickly, especially if the pig is stressed. *Strep. suis* is Gram-positive and lives on the tonsils and upper respiratory tract of the normal healthy pig.

### **Survey**

The collection of data pertaining to specific sample units. A sample is selected and information collected from individual sampling units using a survey. Data reported by the selected sampling units, when summarized, provides an indication of what the total would be if all the sample units within the sampling frame had reported.

### **Survey Period**

The period during which survey data collection can occur.

### **Swine Influenza**

In swine, a disease caused by the Swine Influenza Virus. Humans can transmit the disease to pigs and vice versa. The disease is more common in the spring and autumn in finisher (market) pigs. Sick pigs look depressed and huddle or pile on top of each other for warmth, as is typical in an animal with a fever. The animals often are open mouth breathing and breathing is labored. When the pigs are moved, many cough, some uncontrollably (paroxysm coughing). They often have a nasal discharge and puffy eyes. Mortality is generally low and they recover in about a week.

### **(Target) Population**

A defined set of farms or operations to which a study pertains. The population elements must be defined in space and time as well as content. For example, the population to be surveyed might be described as all farms in the country with 1,000 hogs or more.

### **Teaser Boar (heat check boar)**

A boar used to detect estrus/heat in a female but not mate with her. They may be vasectomized. The presence of the teaser boar will allow sight, sound, smell and touch to increase the number of females showing a standing response. It is important that these teaser boars be allowed to mount and breed occasionally.

### **Total Confinement**

The practice of raising hogs in a totally enclosed area. Often but not always animals are totally confined inside a building that has mechanical ventilation.

### **TGE (Transmissible gastroenteritis)**

An infectious disease caused by a coronavirus. Piglets less than 21 days of age are all affected and generally die. Clinical signs initially include watery diarrhea (in the piglet, foul smelling, yellowish green diarrhea that often contains undigested milk), vomiting and loss of appetite in pigs of all ages. Nursery pigs affected with this disease generally don't grow well, but growers/finishers are usually mildly affected and will survive if their water supplies are adequate.

### **Unmated**

A breeding female that has not yet been inseminated either naturally (with a boar) or artificially. This term pertains to a female while in a current estrous cycle.

### **Unmated Replacement Gilt**

A gilt that is slated to enter the breeding herd that has not yet been inseminated either naturally (with a boar) or artificially.

### **Veterinarian Client Patient Relationship (VCPR)**

A VCPR exists when your veterinarian knows your pigs well enough to be able to diagnose and treat any medical conditions they develop. The VCPR allows your veterinarian to take responsibility for making clinical judgments about pigs, accepting the responsibility for providing them with medical care, keeping a written record of your pigs' medical care, advising you about the benefits and risks of different treatment options and providing oversight of treatment, compliance (your follow through on their recommendations) and outcome. A VCPR is established when your veterinarian examines your animals in person and is maintained by regular veterinary visits as needed to monitor your animals' health.

<https://www.avma.org/public/PetCare/Pages/VCPR-FAQs.aspx>.

### **Weaned Pigs (Hogs)**

Piglets no longer nursing on their mother. This includes nursery and grower/finisher age pigs.

### **Weaning**

The process of transitioning baby pigs from mother's milk to solid food, which also implies removal from the mother.

### **Weaning Age**

The age at weaning which is approximately two to four weeks of age.

### **Wean-to-Finish Facility**

A structure and/or area where both nursery aged pigs and grower/finish aged pigs are located or to which they have access. The distinguishing factor here is that swine are kept in this facility throughout both the nursery phase and the grower/finisher phase, rather than there being separate nursery and grower/finisher facilities.

### **Wean-to-finish Phase**

Production phase in which newly weaned pigs are managed, fed and housed until they go to slaughter or are sold. It combines a nursery and a grower/finisher phase. The pigs are managed (e.g., fed) like nursery aged pigs from the time they come in until about two to four months of age, when they are subsequently treated like grower/finisher pigs. The pen or enclosure to which they are initially moved often was designed to hold older, larger pigs, so many of these newly weaned piglets can fit in the pen. As the pigs grow, some have to be moved out to a new pen or enclosure to prevent overcrowding. This second move is sometimes referred to as the "split."

### **Written Manure or Nutrient Management Plan (NMP)**

The National Pollutant Discharge Elimination System (NPDES) plan for concentrated animal feeding operations (CAFOs) spells out minimum regulatory requirements for the NMP. States often have their own rules to implement the regulation. The two most important functions in maintaining a valid NMP are: (1) The year to year basic balancing of manure nutrients to crop requirements and (2) keeping good records. <https://www.nationalhogfarmer.com/environment/outlining-nutrient-management-plans>



## Chapter 3 – Enumerator Procedures

### THINGS TO DO PRIOR TO THE FIRST SITE CONTACT

Familiarize yourself with the NAHMS Swine 2021 Large Enterprise Study by reviewing the information you received in your training, the LESSF, the LES and this manual. This manual is designed to familiarize you with the LES.

Things to bring with you on your initial contact with the *site contact*:

- This manual,
- NAHMS Swine 2021 Large Enterprise Study launch sheet,
- NAHMS Swine 2021 Large Enterprise Study timelines and biologic incentives sheet,
- Industry Support Letters,
- Two copies (one for the *site contact* if in person) of the Large Enterprise Survey (LES),
- A copy of the Phase II Survey Summary,
- Pen/pencils, and
- Your business card information to leave with the *site contact*, especially in the case of a phone conversation disconnect.

**NOTE:** Farm biosecurity is much tighter since the (swine) Coronavirus outbreak in 2013 and 2014. Compounding that is the current fear of African Swine Fever entering the United States. Don't be surprised if the site contacts insist on meeting you at a place of their choice *that is not the farm itself*, if in person interviews are conducted.

### WHO TO INTERVIEW

At the LESSF interview, you and the *operation contact* selected sites within the operation to be visited for completion of the LES. Then the *operation contact* provided information about the person(s) you will need to talk to on those sites, the *site contact(s)*.

**NOTE:** A great strategy between the call to arrange the site interview and the day of the interview is to drop off or mail a copy of the LES to the site contact prior to the interview so they have a chance to look it over and decide the best people to respond and the records needed.

If any of these people are too busy to be interviewed at the time you were scheduled to visit, set up a later appointment at their convenience. Be sure to keep the appointment. If an emergency prevents you from doing so, inform the *site contact* beforehand and re-schedule the interview(s).

A note for in-person interviews (if conducted): If the *site contact* or the person the site contact said should do the interview is not present or available when you contact them but is expected soon, either wait or make other contacts and return later, **unless** you meet the other contacts at a farm. That would increase the risk of transferring a disease from one operation's pigs to another.

### LARGE ENTERPRISE SURVEY (LES) INTERVIEW(S) STEPS

First, formulate and practice an introduction that briefly explains the study and gains a *site contact's* cooperation. You can repeat the "sales" points or your variation of them when you contact the site to arrange for a time to interview. Say it in your own words so it is comfortable to share and be prepared to answer the respondent's questions about the details of the study. Contact the *site contact* and attempt to arrange a time to meet. Up to seven calls should be made to try to administer the questionnaire.

Prior to starting the LES with the *site contact* ensure that there is a EPAID, Site Number, Contact name and address on the site's LES. Make changes to the name and address information within the LES, if necessary. This will help the VS Data Collector locate the site if the *operation*

*and site contact* consents to the opportunity to participate in Phase 2.

1. Site Contact and interview.

- If, after exhausting your contact protocol and the enumeration window has ended, you are unable to make contact with the site, **check code 8 in Section 7, Question 3 on the LES.**
- When you make contact, use your introduction to explain why you are calling (NAHMS background, current study and the phases involved in the study). If the site contact refuses the interview, **check code 3 in Section 7, Question 3 of the LES and thank the site contact. Then fill out Question 4 in Section 7 and enter the time and date in Questions 5 and 6.**
- If this is an “Out of Business” site, **check code 2 in Section 7, Question 3 on the LES and thank the site contact. Enter the time and date in Questions 5 and 6**
- **(Unlikely to occur)** If this is an "Out of Scope" site, **check code 6 in Section 7, Question 3 on the LES and thank the site contact. Enter the time and date in Questions 5 and 6**
- Introduce the LES, briefly. You can tell them something along the lines of the example below.

“The site questionnaire asks for information only for the site. For every production phase we ask how the pigs are housed and what kind of biosecurity measures the site takes (like do they wash animal transport truck trailers). If there are sows on the site, we ask about things like mating practices, piglet productivity, where they get the sows and culling reasons. If the site has weaned pigs we ask about sourcing and mortality.”

- Fill out the LES.
- Prior to filling out Section 7 (Conclusion) of the LES, introduce Phase 2 information. Tell them upfront that health and medication use information is to be collected, but how that combats misinformation. Mention how biologic collections and antimicrobial susceptibility profiles from the site will benefit the site and the swine industry (e.g., objective summary data on food safety pathogens will also combat misinformation). You can summarize the Phase 2 questionnaire in your own words or use the example below.

“The Phase 2 questionnaire asks veterinary type questions again at the site level. There are three sections representing breeding animals, nursery and grower/finisher aged pigs. In each we ask about diseases that have been giving you trouble over the past year, vaccine and antimicrobial use and diet components.”

- Attempt to obtain the *site contact*'s consent to the opportunity to participate in Phase 2 of the study in Section 7, Question 1. More information regarding this consent is found in the Appendix attached to the LES.

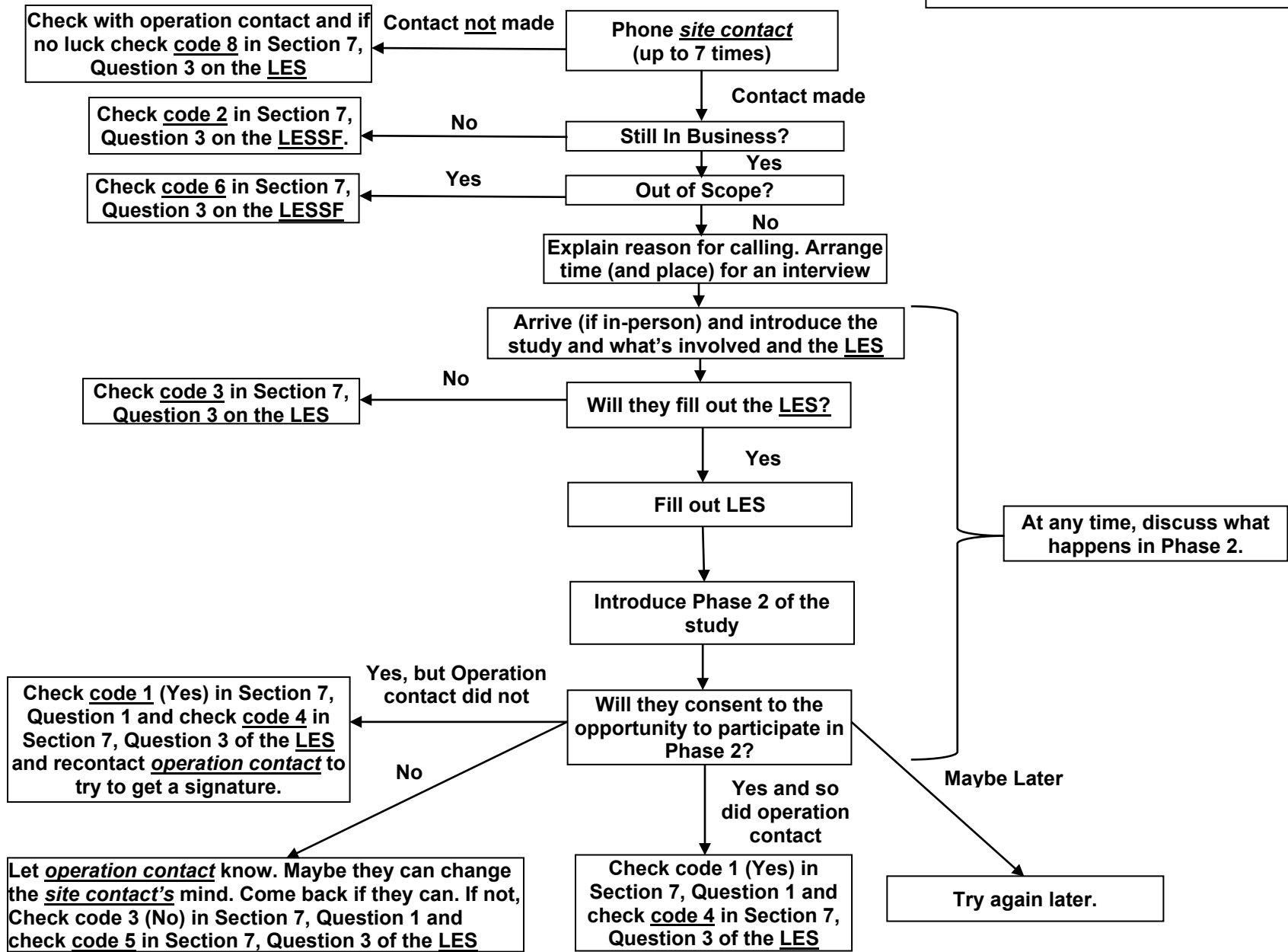
If they consent, thank them and go to **Section 7, Question 1 of the LES and check code 1 (Yes), ensure the operation's contact information is up to date in Section 7, Question 2, check code 4 in Section 7, Question 3, and enter the time and date in Questions 5 and 6.**

If they **don't** consent, go to **Section 7, Question 1 of the LES and check code 3 (No), check code 5 in Section 7, Question 3, check the appropriate code in Section 7, Question 4, and enter the time and date in Questions 5 and 6.**

- Ensure that the *site contact* is able to access the study materials they would like. Thank them for everything.

*See the flowchart on the next page for a graphic overview of the LES interview(s) steps.*

**Site level visit steps**



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## SPECIAL SITUATIONS

An operation or site may be a **show pig business**. Show pigs are raised primarily for exhibition and are managed a bit differently than their commercial counterparts. For the purposes of this study there is absolutely **no difference** in the way that the questionnaires are filled out. Show pig operations or sites can have breeding swine, piglets, nursery age pigs, grower/finisher age pigs and their own biosecurity, housing and medication practices.

The same is also true for **niche market businesses**. These are entities that market their pigs as organic, pasture raised or some other designation that sets them apart from a more commercial marketing chain.

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## MORE ON THE CONSENT FORM AND INFORMATION ABOUT PHASE 2

*Site contacts* that are willing to have their names turned over to VS for potential participation in Phase 2 of the NAHMS Swine 2021 Large Enterprise Study will be asked to consent to the opportunity to participate in Phase 2 of the study in Section 7, Question 1 of the LES. By consenting, the operation agrees to be contacted by a VMO that will provide information about participation in the second phase of the study. There are **two** additional concerns that the *site contacts* may have about participation in Phase 2.

### 1. Private Veterinary Practitioners

Some respondents may feel that having a VMO visiting their site will conflict with the services provided by their own veterinarian. Explain that you will be glad to explain the program to the operation's veterinarian and that producer and veterinary organizations, such as the American Association of Swine Veterinarians (AASV), have participated in the design and review of the questionnaires. Additionally, the VMO's job is only to provide professional expertise in collecting accurate animal health and production data on the Phase 2 questionnaires and assisting with biologics collections.

### 2. Serious Diseases

Some operators may be apprehensive about the VMO's enforcement and quarantine power regarding certain animal diseases. Explain that the on-farm tests are **not** for epidemic or regulatory type diseases. The VMO would enter the production areas **only** for those optional tests that the *operation contact* and *site contacts* agree to. Alternatively, a site designate can collect the samples. Phase 2 interviews can be done in the respondent's home, office, local coffee shop, or over the phone. The VMO interview and the biologics collections are also **not** intended to detect the presence of any regulatory type diseases. Remind them that NAHMS is not a regulatory agency.

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## DELIVERING COMPLETED WORK TO THE FIELD OFFICE

Forward completed LESSFs and LESs to your supervisor or the State, according to your survey instructions.

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## Chapter 4 – General LES Instruction, Question and Response Formats

This chapter provides information about conventions used throughout the questionnaire regarding instructions, how to enter responses and different types of questions used in the questionnaire. *It's our intention here to show the general formats you will encounter and only concentrate on specific questions as needed later in Chapter 5.* Please consult the LES for reference as you read through this material.

Sometimes you will need to probe the respondent to get an adequate answer to a question. You should probe when the respondent can't answer the question, when the answer isn't enough to record, when you think the answer may be incorrect because it doesn't fit with other information already obtained, when the response isn't in the right units and when you think the respondent didn't understand the question.

### NOTE: Unknown Response/Decline to Answer

Always enter a response for every question unless you are instructed to do otherwise. **If the respondent declines to answer a question or does not know the answer, leave the response box blank and indicate “DK” (if the question provides no option for DK response) or “Declined” in the margin.** When the data are analyzed later on, it is very important to know if the respondent declined to answer a question, did not know the answer or if the answer should have been zero, “no” or “none.” **By providing a response for every part of every question, you will improve the quality of the data and the information published as the result of this study.**

**Also:** If the respondent doesn't know the answer to a question **give them time to let them ask someone who does.** You can call them back later if need be.

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### GENERAL INSTRUCTION FORMATS

Throughout the questionnaire there are instructions to the enumerator or the respondent or both. These instructions are of **four** types.

- The **first** type is separate from questions and their responses. They often indicate a skip (**don't** read these aloud) or provide context for a series of questions coming up (**do** read these aloud).
- The **second** type is at the end of the question itself in parenthesis and guides the response and possibly a skip.
- The **third** type is within the question (in parenthesis). What is in the parenthesis in a question requires word substitution when reading the question unless it is simply an example (“e.g.”).
- The **fourth** type is within the responses and response categories in brackets and instructs as to how to fill in the response category. It is not read aloud.

**INSTRUCTION EXAMPLE A:** This example is of the **first** type of instructions and indicates a major skip. These instructions should **not** be read aloud to the respondent.

**If Items 1a and 1b BOTH = NO, SKIP to Section 3**

**INSTRUCTION EXAMPLE B:** This is another example of the **first** type of instructions and provides context for questions coming up. These instructions with a “NOTE:” should **be** read aloud **or** paraphrased aloud to the respondent to give them context.

**NOTE:** For the purposes of this study, **all-in/all-out management means that every single animal is removed from a room, building, or site, and the pig areas are then cleaned and disinfected before any new animals arrive. If a facility (room, building, or site) is never completely empty of swine, the management approach is referred to as continual flow.**



**INSTRUCTION EXAMPLE C:** The question (only part of it shown) below is an example of the **second** type of instruction and provides response direction. The *question* is read to the responder, but unless the responder is reading along in the questionnaire, the instruction in parentheses is mostly an instruction to the enumerator.

14. Between **December 1, 2020** and **May 31, 2021**, were any of the following acclimatization procedures used for **ANY** newly arriving breeding females: (Check **Yes** or **No** for all)
- a. Feedback of feces from other swine?..... 0232 <sub>1</sub> YES <sub>3</sub> NO
- b. Feedback of mummies, placentas or stillborn pigs?..... 0233 <sub>1</sub> YES <sub>3</sub> NO

**INSTRUCTION EXAMPLE D:** These questions from Section 4 have all four examples of instructions. The parenthesis content in the initial Question 15 requires the enumerator to read the response to Question 10 when reading Question 15 to the respondent. It is an example of the **third** type of instruction. Question 10 in this section asked how many nursery aged pigs entered a grower/finisher facility or became grower/finisher aged pigs wean-to-finish facility(ies) on this site. Let’s say the answer to Question 10 was 100 pigs. When reading Question 15, the enumerator could say “Of the 100 pigs you just mentioned, how many died?”

Between Questions 15 and 16 is an example of the **first** type of instruction—a skip. It is not read aloud. In Question 16 we have another example of the **third** type of instruction, so let’s say the response to Question 15 was 20 pigs. Question 16a could be read “Of the 20 pigs that died, how many head or what percent of the deaths were primarily due to Scours? How about from lameness?” and so on down the list. At the end of the “stem” of Question 16 is an example of the **second** type of instruction, which tells the enumerator to make sure there is at least a zero in every cell of the column picked (Head or Percent). It is not read to the respondent. Finally, at the end is an example of the **fourth** type of instruction in parentheses which instructs the enumerator to calculate a total of head or percent and to make sure that the total equals Question 15 (20 pigs) or 100 percent of those 20 pigs, respectively. This instruction is also not read to the respondent.

			<b>Head</b>
15. Of the (Item 10) pigs, how many <b>died</b> ?.....			0440
<b>If Item 15 = ZERO, SKIP to Section 5</b>			
16. Of the (Item 15) pigs that died, how many head or what percent of the deaths were primarily due to: (Enter <b>Zero</b> if None)		<b>Head</b>	<b>OR</b>
a. Scours? .....		0441	0449
b. Lameness? .....	+	0442	+ 0450
c. Injury or trauma such as from tail biting?.....	+	0443	+ 0451
d. Respiratory problems?.....	+	0444	+ 0452
e. Stress?.....	+	0445	+ 0453
f. Other known problems? (Specify: <sup>5446</sup> _____)	+	0446	+ 0454
g. Unknown problems?.....	+	0447	+ 0455
<b>Total (Should equal Item 15 or 100%) =</b>		0448	= <b>100%</b>

**INSTRUCTION EXAMPLE E:** This question from Section 2 has three types of instructions. The **second** type is in parenthesis after the initial Question 21 (called the “stem” of the question) and tells the enumerator to make sure there is at least a zero in every cell of the column. This instruction is not read to the respondent.

There is an example of the **third** type of instruction within the stem which requires word substitution. Let’s say 6 piglets died per Question 20. The stem of Question 21 would be read,

“Of the 6 piglets that died, what percent were disposed of by Burial on this site?” You probably wouldn’t have to repeat the whole stem for each disposal method after that.

At the end is an example of the **fourth** type of instruction in parentheses which instructs the enumerator to make sure that that total percent in the column equals 100 percent of the deaths reported earlier in Question 20. This instruction is not read to the respondent.

21. Of the (Item 20) piglets that died, what <b>percent</b> were disposed of by: (Enter <b>Zero</b> if None in a disposal type)		<b>Percent</b>
a. Burial <b>ON</b> this site?.....		0260
b. Incineration <b>ON</b> this site?.....	+	0261
c. Renderer pickup <b>ON</b> this site such as a “dead box” at the end of the driveway?.....	+	0262
d. Renderer pickup <b>OUTSIDE</b> of this site?.....	+	0263
e. Composting <b>ON</b> this site?.....	+	0264
f. Composting <b>OUTSIDE</b> of this site?.....	+	0265
g. Some other means? (Specify: <sup>5266</sup> .....)	+	0266
<b>Total (Should equal 100%) =</b>		<b>100%</b>

**INSTRUCTION EXAMPLE F:** This example also from Section 2 has one instruction of the **second** type (“Enter Zero if None”) and two sequential instructions of the **third** type. When a reference to a previous response category is enclosed in parentheses, you fill in the response entered in that previous question when you read the question. For example, if the response for Question 19b was “35,” you should say “35” in place of the “(Item 19b)” when you read response category 19c. There is the same relation and reading format between 19c and 19d.

19. Between <b>December 1, 2020</b> and <b>May 31, 2021</b> : (Enter <b>Zero</b> if None)		<b>Head</b>
a. How many sows and gilts farrowed, counting each time a sow farrowed separately?.....		0255
b. How many total pigs were born, including stillborns and mummies?.....		0256
c. How many of the (Item 19b) pigs were born alive?.....		0257
d. Of the (Item 19c) pigs born alive, how many have been or will be weaned?.....		0258

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## GENERAL QUESTION FORMATS

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**NOTE:** “Item” (in the questionnaire) is synonymous with “Question” in this manual.

**NOTE:** If the respondent doesn’t know the answer to a question (e.g., what number of Nursery aged animals died between **December 1, 2020** and **May 31, 2021**) **give them time to let them ask someone who does** (e.g., the Nursery manager). You can call them back later if need be.

**1. Yes/No Questions.** Many questions ask for a “Yes” or “No” response. **"Yes" is always indicated by code "1" and "No" by code "3."** Sometimes in this questionnaire a “Not Applicable” (N/A) option will be indicated by code “2” and a “Don’t Know” (DK) by a “4.”

If a “N/A” or “DK” option is not offered and if the respondent answers with "Don't Know", “This question doesn’t apply to me” or declines to answer a specific question, write "DK", “N/A” or "declined" beside the answer cell in the margin, respectively.

**NOTE: Yes/No Questions** often occur **in groups** of responses after the main question or "stem" of the question. It’s important to check “Yes” or “No” for **all** responses in the group. Examples are below.

**QUESTION EXAMPLE A:** This serves as an initial screening question to determine if you should continue with Section 2. If the answer to Question 1a or 1b is “Yes,” then continue to Question 2. If the site did not have either breeding activity (1a or 1b) between **December 1, 2020** and **May 31, 2021** (including the beginning and end dates) then go to Section 3.

1. Between **December 1, 2020** and **May 31, 2021**: (Check **Yes** or **No** for both)
- a. Did any sows or gilts farrow?..... 0200 <sub>1</sub> YES <sub>3</sub> NO
- b. Were any sows or gilts bred?..... 0201 <sub>1</sub> YES <sub>3</sub> NO

**If Items 1a and 1b BOTH = NO, SKIP to Section 3**

**QUESTION EXAMPLE B:** This Yes/No/N/A question from Section 5 has five different subpart questions each for three categories (Employees, Business Visitors and Non Business Visitors). The main question or "stem" of the question is attached to a question number (5) and the five different endings to the question-the subparts-are identified with a lower case letter (a, b, c, d and e). Each subpart must be asked separately.

**NOTE:** How you answer Question 5 depends the answer to Question 4. If Business or Non Business visitors (or both) can’t go in the pig areas. Check N/A in their columns in Question 5.

Read the question stem followed by the ending subpart for each category (e.g., “Before entering the swine facilities on this site, are Employees required to take a shower immediately prior to entry?”) at least in the first reading for the first subpart and first category. The next categories can be paraphrased to some extent (e.g., “Is there the same shower requirement for Business and Non Business visitors?”). Note the **type 3** instruction within the stem. You will need to know how Employees (can be family or owners), Business (includes veterinarians) and Non-Business visitors are defined in Chapter 2 (Terms and Definitions).

5. Before entering the swine facilities on this site, are (column heading) required to:	<b>Employees</b>	<b>Business Visitors</b>	<b>Non-Business Visitors</b>
a. Take a shower immediately prior to entry?.....	0512 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO	0517 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>2</sub> N/A	0522 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>2</sub> N/A
b. Change to clean boots and coveralls first?.....	0513 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO	0518 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>2</sub> N/A	0523 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>2</sub> N/A
c. Use the Danish Entry or “Bench” system?.....	0514 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO	0519 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>2</sub> N/A	0524 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>2</sub> N/A
d. Wait 24 hours or more after visiting any other swine site?.....	0515 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO	0520 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>2</sub> N/A	0525 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>2</sub> N/A
e. Use footbaths?.....	0516 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO	0521 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>2</sub> N/A	0526 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>2</sub> N/A

**2. Quantity Questions.** The response to these questions is a number (a whole number most of the time but not always). *It’s important in multipart Quantity questions (like below) to **always** answer each subpart (**unless** it is part of a skip) in some fashion. For example, in Example C below, if there were no nursing pigs on June 1, 2021 enter “0” in the response cell for 1c. This is stated in the instruction after the “stem.” Also, approximate values are acceptable for **all** quantity questions.*

**QUESTION EXAMPLE C:** Here the quantity under consideration is **number of pigs or “Head”**. Indicate how many head of pigs were in each category in subparts a through g on the site on **June 1, 2021**. **Then** add them together to get the response for 1h and check the total (total swine on this site on June 1) with the respondent. In this case the question could be read initially as, “Of the total swine on hand on this site on June 1, how many were sows, unmated replacement gilts and bred gilts in the breeding herd? How many were unmated replacement gilts for breeding not yet in the breeding herd, such as those in a Gilt Development Unit?” and so on. **Note:** If the respondent is unsure of any of these terms (like what a Gilt Development Unit is or what constitutes being in the breeding herd), consult Chapter 2.

1. Of the total swine on hand <b>June 1, 2021</b> on <b>this site</b> , how many were: (Enter <b>Zero</b> if None)	<b>Head</b>
a. Sows, unmated replacement gilts and bred gilts in the breeding herd?.....	0100
b. Unmated replacement gilts for breeding <u>not yet in the breeding herd</u> , such as those in a Gilt Development Unit? .....	0101
c. Nursing pigs?.....	0102
d. Boars and young males for breeding, including teaser boars?.....	0103
e. Cull sows, gilts and boars?.....	0104
f. Weaned hogs under 60 pounds?.....	0105
g. Market hogs 60 pounds and over, <b>excluding cull sows, gilts and boars?</b> .....	0106
h. Then the total number of <b>this site</b> on <b>June 1, 2021</b> is:.....	= 0107

**QUESTION EXAMPLE D:** These two questions from Section 2 are an exception to the general rule in quantity questions in that we ask for numbers with one decimal place rather than whole numbers. The first question asks for the average number of litters-per sow-this site had in the 6 month period. The second asks what the average parity (number of times given birth) breeding females in the breeding herd had-per site-the 6 month period. Having site records available helps. Some people can rattle these numbers off the top of their head accurately and some can’t. **Tell the respondent that approximations are fine for these questions.** Question 12 in Section 5 has a question on distance that also asks for a response with **two** decimal places.

25. Between <b>December 1, 2020</b> and <b>May 31, 2021</b> , what was the approximate average number of litters per sow?.....	<b>Litters</b> 0282
<b>NOTE: For the purposes of this study, parity is the total number of farrowings a gilt or sow has</b>	
26. Between <b>December 1, 2020</b> and <b>May 31, 2021</b> , what was the approximate average parity of breeding females (gilts and sows) in the breeding herd?.....	<b>Average Parity</b> 0283

**QUESTION EXAMPLE E:** Question 7 from Section 2 asks percent quantities in each of two categories of production types of breeding swine and has five subparts (a-e). When asking questions like these it helps to show the responder the question. *Some enumerators bring or send along a separate questionnaire for the responder to follow along with.* In this case you could read the question as follows: “What percent of sows and gilts housed in groups from the previous question in the Gestation stage receive feed using Electronic Sow/Gilt Feeding? How about in Farrowing?” (*Chances are no Farrowing stage uses an electronic feeder.*) You could ask this question one subpart and one category at a time until the responder got the gist of what you were asking, making the full preamble with the stem unnecessary after.

**Make sure each category in Question 7 adds to 100 percent of feed types generally or currently used in group housing for each category AND** if there is a quantity in either column for response e, write in what the other feeding method was between the parentheses given or nearby. The other category could be a combination of feeding methods in the facility.

6. Which type of <b>housing</b> is used for <b>most</b> animals in the (column heading) facility? ( <b>Enter</b> Code from List 6 below for each column).....	<b>Gestation</b> 0210	<b>Farrowing</b> 0211
<b>LIST 6 – Housing</b>		
1 - Individual stalls or crates	3 - Other (Specify: Gestation <sup>5210</sup> _____)	
2 - Group housing such as in pens	Farrowing <sup>5211</sup> _____)	

**If Item 6 = 2, CONTINUE for that phase; otherwise SKIP to Item 8.**

7. What percent of animals housed in groups in the (column heading) facility receive feed in the following methods? (Enter <b>Zero</b> if None)	<b>Gestation</b>	<b>Farrowing</b>
a. Electronic Sow/Gilt Feeding?..... +	0212	+ 0217
b. Group fed on floor?..... +	0213	+ 0218
c. Individually fed in trough, but with group access to the trough?..... +	0214	+ 0219
d. Individually fed in free access stall?..... +	0215	+ 0220
e. Other feeding methods? (Specify: <sup>5216</sup> _____) (Specify: <sup>5221</sup> _____) +	0216	+ 0221
<b>Total (Should equal 100%) =</b>	<b>100%</b>	<b>100%</b>

**Note:** If the questionnaire response requests a quantity measure the respondent cannot answer in, work with them to calculate the quantity as stated in the responses. In the example above, if the *site contact* only knew the approximate number of group housed Gestation and/or Farrowing animals that received feed, you could ask how many gestation and farrowing pigs there were in the group housing in Question 6 on a given day (referring back to Question 1 in Section 1 if need be to assist the respondent’s thoughts) and divide those numbers up for each category of pig by feeding method. Then calculate the proportion: how many in each feeding method for that category divided by the total number in that category.

**3. Head or Percent Questions.** Respondents will be asked questions that allow them to respond in one or the other of two different types of quantity units. If the answer is “Zero” or “None” then enter “0” in the column cell with the chosen units. Some questions refer to a quantity in a previous question(s) response to use as the basis (a denominator) for the chosen quantity like in Example F.

**QUESTION EXAMPLE F:** In Section 2, Question 22 gives the respondent a choice in how to answer. They can respond in number of head or the percent of head based on the response in Question 20. If Question 20 had a response of 100 deaths you can start Question 22 by asking, “Of the 100 pigs that died, how many head or what percent of the preweaning deaths were primarily due to scours?” Once they pick a unit, change the wording to reflect that unit as you go down the subparts of Question 22a-f. **Make sure the “Head” category adds up to the total in Question 20 or the “Percent” category adds to 100 percent.**

20. Subtract Item 19d from Item 19c and enter result. This is the number of preweaning deaths that occurred between <b>December 1, 2020</b> and <b>May 31, 2021</b> .....	<b>Head</b> 0259				
<b>.....Question 21 eliminated for clarity.....</b>					
22. Of the (Item 20) piglets that died, how many head <b>or</b> what percent of the preweaning deaths were <b>primarily</b> due to: (Enter <b>Zero</b> if None)					
a. Scours?.....	0267	<b>Head</b>	<b>OR</b>	0274	<b>Percent</b>
b. Crushed by sow by being laid on?.....	+	0268	+	0275	
c. Starvation or refusal to eat?.....	+	0269	+	0276	
d. Respiratory problems?.....	+	0270	+	0277	
e. Other known problems? (Specify: <sup>5271</sup> .....)	+	0271	+	0278	
f. Unknown problems?.....	+	0272	+	0279	
<b>Total</b> (Should equal Item 20 or <b>100%</b> ) =		0273	=		<b>100%</b>

**4. Code Category Questions** With these questions you choose one or more codes representing responses as the answer. Most of the questions on the LES are Yes/No, Quantity or Code questions. For questions answered with a code number, there are (in this questionnaire) two ways that the answer may be provided.

1. You check a box next to the code that matches the respondent’s answer. There are few of this type and they are considered in “Hybrid Questions and Oddballs.”
2. You enter the number that goes with the respondent's answer in a response space (like a box or cell) from an accompanying list. Most code questions in the LES are like this, and they are primarily found at the beginning of Sections 2-4 when we ask about housing type and characteristics.

**Note:** For either type, when a question specifies to select ONE answer from a list, the respondent must choose only ONE answer from several possible choices that you offer.

**QUESTION EXAMPLE G:** This example from Section 1, Question 2, requires that you enter one code from List 1 below the question in the response box to the right of the question. There is a slight possibility that no answers fit or that two fit as a summary of the responsibilities of the respondent. Perhaps the respondent acts as the company veterinarian and farm manager on this site (this does occur). In that case, select code “8” and explain briefly in the Specify space between the parentheses or in the margin. **However, a combination of 6 and 7 is not possible and is not a correct time to use code 8. If the respondent is a veterinarian, they either are a private one (who services other operations unrelated to this site or operation) or are strictly devoted to sites within this operation-that is, a “Company Vet.”**

2. Which of the following describes <u>your</u> day-to-day responsibilities on this swine site? ( <b>Enter</b> Code from List 1 below).....		<b>Code</b> 0108
<b>LIST 1 – Primary Role</b>		
1 - Contractor that owns the swine 2 - Contractee that raises or manages the swine 3 - Independent producer who markets on their own 4 - Independent producer who markets through a cooperative	5 - Farm manager/herdsman 6 - Company Veterinarian 7 - Private or Other Veterinarian 8 - Other-include combination of above responses if applicable (Specify: <sup>5108</sup> .....)	

**QUESTION EXAMPLE H:** This example from Section 2, Question 2 requires that you fill in separate codes for two production categories using List 2 just below them. This concept of Flow is defined above the question and in Chapter 2.

**NOTE: For the purposes of this study, all-in/all-out management means that every single animal is removed from a room, building, or site, and the pig areas are then cleaned and disinfected before any new animals arrive. If a facility (room, building, or site) is never completely empty of swine, the management approach is referred to as continual flow.**

2. How do <b>most</b> sows and gilts flow through the (column heading) phase? ( <b>Enter</b> Code from List 2 below for each column).....	<b>Gestation</b>		<b>Farrowing</b>
	0202		0203
<b>LIST 2 – Flow Management</b>			
1 - Continual flow 2 - All pigs removed, but swine areas not cleaned and disinfected	3 - All-in/all-out by room 4 - All-in/all-out by building 5 - All-in/all-out by site		

**5. Hybrid Questions and Oddballs.** This subsection deals with questions that don't fit in the categories given previously and are in a style that rarely occurs in this questionnaire.

**QUESTION EXAMPLE I:** This example from Section 2 combines a categorical code question whose answer steers the respondent to a quantity question dependent on the categorical code response. Read verbatim, “Were the newly arriving breeding females (add “From Question 8” if need be) always, sometimes or never put through an isolation or quarantine process when being introduced to the breeding herd?” (Response could be “Once in a while” which means “Sometimes” so that is the box that you check). Then, if applicable you could ask something like, “How many days did they stay in isolation or quarantine?”

11. Were the newly arriving <u>breeding females</u> always, sometimes or never put through an isolation or quarantine process when being introduced to the breeding herd?		<b>Days</b>
0225	<input type="checkbox"/> <sub>1</sub> Always <input type="checkbox"/> <sub>2</sub> Sometimes <input type="checkbox"/> <sub>3</sub> Never	0226
<b>If Always or Sometimes</b> How many days did it last?.....		

**QUESTION EXAMPLE J:** The very next question (12) is also a categorical code question and is simpler than the one before it. It leads into the next question (13) about which specific diseases breeding females were tested for.

12. Were all, some or none of the newly arriving <u>breeding females</u> tested for disease before being introduced to the breeding herd?.....	0227	<input type="checkbox"/> <sub>1</sub> All <input type="checkbox"/> <sub>2</sub> Some <input type="checkbox"/> <sub>3</sub> None
<b>If Item 12 = None, SKIP to Item 14</b>		

**QUESTION EXAMPLE K:** Both of these examples from Sections 3 and 4, respectively refer to a previous quantity question. In Section 3 we asked how many **recently weaned pigs** (Section 3, Question 8) pigs entered a nursery or wean-to-finish facility(ies) between **December 1, 2020** and **May 31, 2021** (inclusive of the beginning and end dates). In that section, Question 12a first asks the age these pigs were when they entered either type facility(ies). Then Question 12b and 12c asks what age they were when they either physically left a nursery facility(ies) to enter a grower/finisher facility(ies) (to become **grower/finisher aged pigs**) or stayed in the same wean-to-finish facility(ies) and simply became **grower/finisher aged** (fed and managed as such) pigs. The age they left **is** split out by type of facility(ies). The age they entered **wasn't**.

In Section 4 we asked how many **nursery aged pigs** (Section 4, Question 10) entered a grower/finisher facility(ies) or transitioned to being fed and managed as **grower/finisher aged** pigs within a wean-to-finish facility(ies) between **December 1, 2020** and **May 31, 2021**. Question 14a and 14b first asks the age these pigs were when they entered either type facility(ies), but its split out by type of facility(ies). Then Question 14c asks what age they were when they left the site. The age they left **is not** split out by type of facility(ies). The age they entered **was**.

The reason for the odd phrasing of these questions is because freshly weaned pigs can follow different paths. For Section 3, Question 12, freshly weaned pigs can enter a nursery facility(ies), which is designed to handle them as **nursery aged** pigs for a couple of months until they are old enough to be moved to a physically separate grower/finisher facility(ies) (to be managed and fed as **grower/finisher aged** pigs) where they stay until market age. Alternatively, freshly weaned pigs can enter a wean-to-finish facility(ies), which is designed to handle them all the way up to market age. Both **nursery aged** pigs and **grower/finisher aged** pigs can be in one wean-to-finish facility(ies). The pigs just transition to different feed and management systems within that facility(ies).

If this site places most of its newly weaned pigs in a wean-to-finish facility(ies), enter the age in days they entered the wean-to-finish facility(ies) in Section 3, Question 12a. Then, enter the average age they were at the time they transitioned to being fed and managed as grower/finishers in the box in 12c. Check the N/A box in 12b. In Section 4, Question 14, enter the **same** number as Section 3, Question 12c in Section 4 in Question 14b and check the N/A box in 14a. Then enter the age in days **they left the site for good** in 14c.

If this site places most of its growing pigs in physically separate nursery and grower/finisher facilities, enter the age in days they entered in Section 3, Question 12a and the average days old they were in the box in 12b when as **nursery aged** pigs left the nursery facility(ies) to go to a grower/finisher facility(ies). Check the N/A box in 12c. In Section 4, Question 14, enter the **same** number as Section 3, Question 12b in Section 4, Question 14a and check the N/A box in 14b. Then enter the age in days **they left the site for good** in 14c.

**Note:** If the quantity in days is next to a N/A box that is checked, **leave it blank**.

**Note:** If the site raises “feeder pigs” (50, 60 pound pigs) mainly then 12b will be when they leave the site.

		Days
12. What was the average age, in days of the Item 8 pigs when they:		0322
a. First entered the nursery <b>or</b> wean-to-finish facility(ies)?.....		0324
	0323	0324
b. Left the nursery facility(ies)?.....	<input type="checkbox"/> N/A	
c. Transitioned within the wean-to-finish facility(ies) to be fed and managed as	0325	0326
<b>grower/finisher aged</b> pigs?.....	<input type="checkbox"/> N/A	



14. What was the average age, in days of the Item 10 pigs when they:		<b>Days</b>	
a. Entered the grower/finish facility(ies)?.....	0435 <input type="checkbox"/> 1 N/A	0436	
b. Transitioned within the wean-to-finish facility(ies) to be fed and managed as <b>grower/finisher aged</b> pigs?.....	0437 <input type="checkbox"/> 1 N/A	0438	
c. Left the site, such as went to market?.....		0439	

**QUESTION EXAMPLE L:** This example (Section 4, Question 9) is from some relatively new questions on manure management (more on them in Chapter 5, Questions of Note). It is a categorical code question which means generally that you only check one box, but in this case, you should check the boxes **for all the months that apply**.

8. How many times in the last <b>three years</b> has the <u>manure storage and treatment</u> been cleaned out?.....				<b>Times</b>
				0408
9. What month(s) of the year do you typically clean out the <u>manure storage and treatment</u> system? (Check <b>all</b> that apply)				
0409 <input type="checkbox"/> 1 January	0412 <input type="checkbox"/> 1 April	0415 <input type="checkbox"/> 1 July	0418 <input type="checkbox"/> 1 October	
0410 <input type="checkbox"/> 1 February	0413 <input type="checkbox"/> 1 May	0416 <input type="checkbox"/> 1 August	0419 <input type="checkbox"/> 1 November	
0411 <input type="checkbox"/> 1 March	0414 <input type="checkbox"/> 1 June	0417 <input type="checkbox"/> 1 September	0420 <input type="checkbox"/> 1 December	

**QUESTION EXAMPLE M:** This example below from Section 3 is an instance of where a box is checked with the respondent’s answer and the box is next to a code with no answer. There is one similar to it at the beginning of Section 4. The idea behind the question is that although we primarily care about **nursery aged pigs** in the section-no matter how they are housed, we need some idea of how they are housed for questions coming up, like the one in Example K. If this site raised nursery aged pigs in the 6 month time period, ask the producer what type of facility(ies) **most** of them initially went to.

2. Between <b>December 1, 2020</b> and <b>May 31, 2021</b> , did this site raise <b>nursery aged pigs</b> (weaning to approximately 60 pounds)?.....		0301
		<input type="checkbox"/> 1 YES <input type="checkbox"/> 3 NO
<b>If Item 2 = NO, SKIP to Section 4</b>		
3. Between <b>December 1, 2020</b> and <b>May 31, 2021</b> , in which of the following facilities did this site initially place <b>most</b> of its <b>weaned</b> pigs? <u>Check one box below only (3a or 3b)</u>		
a. A <u>Nursery</u> facility(ies).....		0302 <input type="checkbox"/> 1
b. A <u>Wean-to-Finish</u> facility(ies).....		0303 <input type="checkbox"/> 1

**6. A bit more on Other Specifics**

- When completing questions that have an “Other” specify, ensure that the “Other” answer does not fit any of the provided categories.
- Always attempt to get a specify (write-in answer) to the Other.
- If a response possibly fits into another category, place it in that category and write a succinct note in the margin to explain the logic behind the placement.

## Chapter 5 – Questionnaire Overview and Questions of Note

This chapter provides an overview of the LES that you can use as a snapshot of the whole questionnaire for yourself and any respondents. The overview will hopefully give you a more holistic view of what's involved in this important data collection. After the overview are questions or groups of questions in the questionnaire that deserve some explanation in case you haven't had a lot of experience with the swine industry.

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### LES SECTIONS OVERVIEW

This is a **site** level questionnaire. The time frame involved in the first four sections are either **June 1, 2021** or between **December 1, 2020** and **May 31, 2021** (inclusive of the beginning and end dates). The shorter, six month time frame is to aid recall. In Sections 5 and 6 we often don't have a time frame as many questions reflect a timeless/current site or operational policy. Sections 5 and 6 also use time frames such as the last three months, the last three years and between **June 1, 2020** and **May 31, 2021** (inclusive of the beginning and end dates) for veterinary contact, feral swine and antibiotic questions.

### SECTION 1 – SITE INVENTORY

This section collects static (June 1, 2021) site inventory and gives us some idea of the roles and responsibilities of the respondent on that site.

### SECTION 2 – BREEDING AND PREWEANING ANIMAL MANAGEMENT

If this site is a breeding site (place where gilt and sow breeding and farrowing has taken place in the last 6 months) there is a good chance that this will be the only section filled out in the LES besides Sections 5 and 6 ([a selling point](#)). That is because many operations segregate production phases into separate geographic sites so that if disease breaks out on one site there is less of a chance it will spread to other production phases. We are interested only in active breeding sites and to complete this section there must have been breeding or farrowing in gilts or sows between **December 1, 2020** and **May 31, 2021**. Section 2 is roughly divided into four subsections.

The first subsection concentrates on housing structure and management for gestating and farrowing sows and gilts by asking about the type of building, type of housing/feeding process within the building, the set up for manure removal and storage and the “flow” of animals. Flow is a surrogate measure for biosecurity where we determine whether there is a potential break in disease transmission based on the flow. For example, if there is continuous flow, new animals entering can pick up a pathogen going around from the animals that are already there. If animals are moved in and out as groups (such as by weekly litters) at the pen, room or building level and the area is cleaned before new ones come in, there is a break in disease transmission potential as older groups will not necessarily share the airspace with newer ones.

The second subsection asks how many new breeding animals entered the site in the six month period and any quarantining, testing or disease acclimatization that was done with the new arrivals. The third subsection asks questions about the numbers of sows and gilts bred in the six month period, the way they were bred and how the resultant farrowing turned out in terms of production numbers at birth and then later in the prewean period. Finally, the fourth subsection looks at breeding herd age, average parity, and sows that leave the herd by death or culling. This subsection provides an important complement to the second subsection.

### SECTION 3 – NURSERY AGED PIG MANAGEMENT

This section starts by determining whether there are weaned pigs and whether they are managed in a separate nursery facility(ies) or wean-to-finish facility(ies). As the name indicates, this section gets into the details about how an operation manages **nursery aged** pigs. Section 3 is roughly divided into three subsections.

We again ask about housing structure and management, but for nursery aged pigs by recording the type of building, type of housing within the building, the set up for manure removal and storage, and the “flow,” similar to Section 2 in the first subsection. The second subsection records numbers of new nursery aged pigs that entered in the six month period, where they came from and how old they were when they no longer were fed and managed as nursery aged pigs (e.g., were ready to be fed and managed as **grower/finisher aged** pigs whether in a separate grower/finisher facility(ies) or the same wean-to-finish building(s)). The last subsection looks at mortality numbers and causes among nursery aged pigs that came in during the six month period.

#### **SECTION 4 – GROWER/FINISHER AGED PIG MANAGEMENT**

This section is almost identical to Section 3 except that it is for **grower/finisher aged** pigs. More detailed manure storage questions are asked than in the previous two sections.

#### **SECTION 5 – BIOSECURITY**

This section starts with asking how dead weaned pigs were disposed of on the site. Previously, in Section 2 we asked the same for dead sows and gilts and preweaned piglets. Subsequent questions focus on who or what may enter the site and what must occur prior to entry. The last questions concern rodent and wildlife control and any threat posed to the site by feral pigs.

#### **SECTION 6 – OVERALL FARM MANAGEMENT**

This section asks about manure nutrient testing, the relationship this site has with a veterinarian and use of swine industry programs. The last two questions ask very general questions about who is involved in decisions regarding antibiotic use and the records kept surrounding antibiotic use.

#### **SECTION 7 – CONCLUSION**

This section has two purposes: (1) obtaining the proper response codes after completion of the LES interview and (2) recording if the site will participate in Phase 2 of the study.

**Question 1:** Indicate the site operator’s willingness to consent to the opportunity to participate in Phase 2 of the study here. Brief information regarding what consent entails is described in the question and below, in the Appendix attached to the questionnaire. Make sure that you describe the benefits and requirements of Phase 2 to the site contact, especially if they are unsure. This would be a good time to let them know that the operation contact had consented as well (as applicable).

**Question 2:** Ensure that the site operator’s name, phone number, address, and email address are all current from the LESSF form. If they are not, please update them here.

**Question 3:** Check the box next to the correct response that applies to the outcome of this interview. This would already be taken care of if this interview was refused, the site contact was inaccessible or they were out of business. Pay attention to the skip instructions after this question.

**Question 4:** If the interview response code for Question 1 is **3 or 5**, check the reason that best fits why the site contact refused to complete the LES or completed the LES but refused Phase 2.

**Question 6:** Enter the military time when the interview ended.

**Question 7:** Enter the date on which the interview took place.

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**Recontact the initial *operation contact* after you have done all the site interviews and ask if they are willing to consent if they haven’t already concerning participation in Phase 2 of this project. It may be helpful to remind the *operation and site contacts* that the sample of swine operations for the NAHMS Swine 2021 Large Enterprise Study was selected from the **confidential** list maintained by NASS. Please explain to the operator that APHIS will continue to uphold the confidentiality requirements.**

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**QUESTIONS OF NOTE**

**Section 2, Questions 6 and 7:** These two questions go together. In the initial few questions in Sections 2, 3 and 4 we establish what type of facility that section’s pig type(s) live in and that facility’s manure management. Additionally, for breeding animals we ask about what type of housing (contained area an individual or group resides in) within a facility is used on the site most often. Here, for those sites that house most sows and gilts in groups from Question 6 (code option 2) in the type of facility established in Question 3 (not shown), we ask the way the gestating and farrowing sows and gilts are fed as a group. Please refer to Chapter 2 for definitions of 7 a-e.

6. Which type of <b>housing</b> is used for <b>most</b> animals in that (column heading) facility? (Enter Code from List 6 below for each column).....	<b>Gestation</b>	<b>Farrowing</b>
	0210	0211
<b>LIST 6 – Housing</b>		
1 - Individual stalls or crates 2 - Group housing such as pens	3 - Other (Specify: Gestation <sup>5210</sup> _____ Farrowing <sup>5211</sup> _____)	
<b>If Item 6 = 2, CONTINUE for that phase; otherwise SKIP to Item 8.</b>		
7. What percent of animals housed in groups in the (column heading) facility receive feed in the following methods? (Enter <b>Zero</b> if None)	<b>Gestation</b>	<b>Farrowing</b>
a. Electronic Sow/Gilt Feeding?.....	+ 0212	+ 0217
b. Group fed on floor?.....	+ 0213	+ 0218
c. Individually fed in trough, but with group access to the trough?.....	+ 0214	+ 0219
d. Individually fed in free access stall?.....	+ 0215	+ 0220
e. Other feeding methods? (Specify: <sup>5216</sup> _____ (Specify: <sup>5221</sup> _____)	+ 0216	+ 0221
<b>Total (Should equal 100%) =</b>	<b>100%</b>	<b>100%</b>

**Section 2, Questions 8 through 14:** These questions from Section 2 determines how many new replacements for the site’s breeding herd were needed in the six month period, what biosecurity measures were used to prevent the arrival of new disease along with the new arrivals and how the site acclimated the new arrivals to disease already present on the site.

Question 9 asks the respondent to divide the number in Question 8 into groups. In the definition for Group in Chapter 2, you can see that animals might be grouped under any common factor, such as age or single purchase or standard shipment to the site. For example, given a site’s number of available vacancies needed to replenish the breeding herd based on a culling rate, this could be an **age** group, such as gilts 23 to 25 weeks of age. The range could be larger after a large breeding herd turnover. This could happen after a new strain of PRRS ravaged the site and large-scale culling went on to break transmission. **“Group” is defined by the respondent. There is likely a specific definition for each site you visit, but most sites usually don’t usually bring in one breeding animal replacement at a time.**

Question 10 may require a search of the respondent’s records, but generally a respondent knows the desired age (in weeks) the site wants new females to be before being brought into the breeding herd. Question 11 is that hybrid discussed earlier and changes the topic to biosecurity methods used with new breeding herd arrivals.

8. Between <b>December 1, 2020</b> and <b>May 31, 2021</b> , how many <u>breeding females</u> (e.g., replacement gilts) were introduced into the breeding herd?.....	<b>Head</b> 0222
<b>If Item 8 = ZERO, SKIP to Item 15</b>	
9. Between <b>December 1, 2020</b> and <b>May 31, 2021</b> , how many <b>groups</b> of <u>breeding females</u> were introduced into the breeding herd as breeding animals?.....	<b>Groups</b> 0223
10. In number of weeks, what was the <b>average age</b> of the (Item 8) <u>breeding females</u> when they were introduced into the breeding herd and commingled with other sows?.....	<b>Weeks</b> 0224
11. Were the newly arriving <u>breeding females</u> always, sometimes or never put through an isolation or quarantine process when being introduced to the breeding herd?	<b>Days</b> 0226
0225 <input type="checkbox"/> <sub>1</sub> Always      } <b>If Always or Sometimes</b> How many days did it last?..... <input type="checkbox"/> <sub>2</sub> Sometimes <input type="checkbox"/> <sub>3</sub> Never	
12. Were all, some or none of the newly arriving <u>breeding females</u> tested for disease either on <b>or</b> before introduction to the breeding herd?.....	0227 <input type="checkbox"/> <sub>1</sub> All <input type="checkbox"/> <sub>2</sub> Some <input type="checkbox"/> <sub>3</sub> None
<b>If Item 12 = None, SKIP to Item 14</b>	

If testing goes on per Question 12, Question 13 asks what diseases new arrivals are tested for. We tried to include common swine diseases that an operation would find economically beneficial to keep out of the breeding herd, but there are others, so please make use of 13d. Finally, there are operations who have specific strains of pathogens that they “live with” in their breeding herd. Some of the methods that a breeding site may use to expose new arrivals to select diseases endemic to the site are listed in Question 14. This exposure works like a vaccine. The new arrivals may get slightly ill, but their immunity gets established prior to their first breeding when you want them healthy as can be.

13. For which diseases are newly arriving <u>breeding females</u> tested? (Check <b>Yes</b> or <b>No</b> for all)	
a. Porcine Reproductive and Respiratory Syndrome?.....	0228 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO
b. Mycoplasma?.....	0229 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO
c. Swine Influenza?.....	0230 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO
d. Other? (Specify: <sup>5231</sup> _____)	0231 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO
14. Between <b>December 1, 2020</b> and <b>May 31, 2021</b> , were any of the following acclimatization procedures used for <b>ANY</b> newly arriving <u>breeding females</u> : (Check <b>Yes</b> or <b>No</b> for all)	
a. Feedback of feces from other swine?.....	0232 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO
b. Feedback of mummies, placentas or stillborn swine?.....	0233 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO
c. Exposure to cull boars, gilts and sows?.....	0234 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO
d. Exposure to sick swine?.....	0235 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO
e. Vaccinations?.....	0236 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO
f. Other? (Specify: <sup>5237</sup> _____)	0237 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO

**Section 3, Questions 1 through 3:** The initial question determines whether the respondent will answer any further questions about weaned pigs in Sections 3 and 4. The second question determines if Section 3 is done. This again brings up an important theme. In this questionnaire we ask about **weaned** pigs, **nursery aged** pigs and **grower/finisher aged** pigs. We aren’t usually interested about pigs designated as being in a nursery phase or facility(ies), grower/finisher phase or facility(ies) or the composite of both: a wean-to-finish phase or facility(ies). This survey is

designed to eliminate additional sections that would be necessary if we asked about pigs in phases or facilities they reside in.

For the purpose of this study, those pigs that are fed and managed as **nursery aged** pigs are approximately weaning size (maybe 10 pounds) to approximately 60 pounds. Those that are fed and managed as **grower/finisher aged** pigs are approximately 60 pounds to market weight or about 300 pounds. We ask Question 3 to get some idea of the predominant facility(ies) or housing characteristics of the site. We ask a similar question near the beginning of Section 4- mostly as a check. This way, when we create estimates on how pigs are raised we can categorize by site facility(ies) management types without asking about them individually.

1. Between **December 1, 2020** and **May 31, 2021**, did this site raise **weaned** pigs?.....<sup>0300</sup> <sub>1</sub> YES <sub>3</sub> NO  
**If Item 1 = NO, SKIP to Section 5**

2. Between **December 1, 2020** and **May 31, 2021**, did this site raise **nursery aged pigs** (weaning to approximately 60 pounds)?.....<sup>0301</sup> <sub>1</sub> YES <sub>3</sub> NO  
**If Item 2 = NO, SKIP to Section 4**

3. Between **December 1, 2020** and **May 31, 2021**, in which of the following facilities did this site initially place **most** of its **nursery aged** pigs? Check one box below only (3a or 3b)

a. A Nursery facility(ies).....<sup>0302</sup> <sub>1</sub>

b. A Wean-to-Finish facility(ies).....<sup>0303</sup> <sub>1</sub>

**Section 3, Questions 8 through 10:** Questions 8 through 10 from Section 3 are similar to Questions 10 through 12 from Section 4. These questions cover head counts and off-site sourcing of recently weaned pigs for the facility(ies) type chosen earlier in the section. A pig removed from its mother as it is placed directly into a nursery or wean-to-finish facility(ies) is considered a **recently weaned pig** and would be included in these questions. Also note that we are asking **only** about the facility(ies) type selected in Question 3 earlier in the section, which is the facility(ies) type where this site initially placed **most** of its weaned pigs in between **December 1, 2020** and **May 31, 2021**.

8. Between **December 1, 2020** and **May 31, 2021**, approximately how many **recently weaned pigs** entered the **facility(ies) chosen in Item 3?** (INCLUDE weaned pigs that came from this site, purchases and movements from other facilities).....<sup>0308</sup> **Head**

**If Item 8 = ZERO, SKIP to Section 4**

9. Of the (Item 8) pigs, how many head or what percent originated from: (Enter **Zero** if None)

	Head	OR	Percent
a. This site such as <b>on-site</b> farrowing units?.....	0309		0315
b. Offsite farrowing unit(s) <b>belonging</b> to this operation?.....	0310	+	0316
c. Offsite farrowing unit(s) <b>not belonging</b> to this operation?.....	0311	+	0317
d. An auction, sale barn or livestock market?.....	0312	+	0318
e. Another source? (Specify: <sup>5313</sup> .....)	0313	+	0319
<b>Total (Should equal Item 8 or 100%) =</b>	0314	=	<b>100%</b>

**If Item 9a = Item 8 or 100%,SKIP to Item 12**

10. Between **December 1, 2020** and **May 31, 2021**, how many different **off-site** sources contributed recently **weaned pigs** to the facility(ies) **chosen in Item 3?**.....<sup>0320</sup> **Sources**

**Section 4, Questions 4 through 9:** Other Sections (2 and 3) have versions of Questions 4 and 5 as shown below, but only Section 4 goes into the additional detail contained in Questions 6 through 9. The new questions piggyback on the response to Question 4 here. Based on the facility type used (**Question 4**) to house the most **grower/finisher aged** pigs, first we ask what is done in the short term to collect or gather manure in Question 5. The “pit holding” responses are not considered a form of storage, but rather an interim place to collect waste. Question 6 asks about more long term storage/treatment and then **based on Question 6**, we ask how often in the last three years that storage/treatment system has been cleaned out. Finally, we get at some of the seasonality of cleaning the storage/treatment system and whether methods are used to separate manure solids. Check as many month code boxes as applicable in Question 9. *In Questions 5 and 6 a “1” (None) response should only very rarely be used if at all.*

4. Which type of <b>facility</b> is used for the <b>most</b> grower/finisher aged pigs? ( <b>Enter</b> Code from List 12 below).....	<b>Code</b> 0404		
<b>LIST 12 – Facility Type</b>			
1 - Total confinement with mechanical ventilation 2 - Open building with no outside access	3 - Open building with outside access 6 - Other (Specify: <sup>5404</sup> _____)		
<b>NOTE: The next five items refer to the specific facility reported in Item 4</b>			
5. How was manure from <b>most</b> grower/finisher aged pigs <b>collected and handled</b> in this facility? ( <b>Enter</b> Code from List 13 below).....	<b>Code</b> 0405		
<b>LIST 13 – Manure Collection and Handling</b>			
1 - None 2 - Deep pit holding 3 - Shallow pit holding 4 - Mechanical scraper or tractor	5 - Hand-cleaned 6 - Flush-under slats 7 - Flush-open gutter 8 - Other (Specify: <sup>5405</sup> _____)		
6. How was manure from <b>most</b> grower/finisher aged pigs <b>stored and treated</b> in this facility? ( <b>Enter</b> Code from List 14 below).....	<b>Code</b> 0406		
<b>LIST 14 – Manure Storage or Treatment</b>			
1 - None 2 - Daily haul and spread 3 - Composting 4 - Earthen Manure storage pond 5 - Formed Liquid/Slurry Storage tank	6 - Earthen Treatment lagoon 7 - Solid storage 8 - Below Building in a Deep Pit 9 - Other (Specify: <sup>5406</sup> _____)		
<b>If Item 6 = 1,2 or 3, SKIP to Item 9</b>			
<b>NOTE: The next three items refer to the method used to store or treat manure for the facility in Item 4.</b>			
7. Are any methods used to separate manure solid and liquid parts, such as a screw press?..... <sup>0407</sup> <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO			
8. How many times in the last <b>three years</b> has the <u>manure storage and treatment</u> been cleaned out?.....	<b>Times</b> 0408		
9. What month(s) of the year do you typically clean out the <u>manure storage and treatment</u> system? (Check <b>all</b> that apply)			
0409 <input type="checkbox"/> 1 January	0412 <input type="checkbox"/> 1 April	0415 <input type="checkbox"/> 1 July	0418 <input type="checkbox"/> 1 October
0410 <input type="checkbox"/> 1 February	0413 <input type="checkbox"/> 1 May	0416 <input type="checkbox"/> 1 August	0419 <input type="checkbox"/> 1 November
0411 <input type="checkbox"/> 1 March	0414 <input type="checkbox"/> 1 June	0417 <input type="checkbox"/> 1 September	0420 <input type="checkbox"/> 1 December

**Section 4, Questions 10 and 11:** Section 3, Question 9 is the same as Section 4, Question 11. We ask that the interviewer keep the following in mind. For Question 2 in this section, if this site raised most of its grower/finisher aged pigs in a wean to finish facility, **chances are that the answer for Question 11a is all of the amount in Question 10 or 100%**. This is because if the site raises most of their nursery and grower/finisher age pigs in a wean to finish facility (Section 3, Question 3 and Section 4, Question 2) then naturally all or most would come from this site (and indeed from the same buildings, but we don't ask that).

10. Between <b>December 1, 2020</b> and <b>May 31, 2021</b> , approximately how many <b>nursery aged pigs</b> either entered a grower/finisher facility(ies) <b>or</b> transitioned to become <b>grower/finisher aged pigs</b> within the <b>facility(ies) chosen in Item 2?</b> (INCLUDE nursery aged pigs that came from this site, purchases and movements from other facilities.....)		<b>Head</b>	
		0421	
11. Of the (Item 10) pigs, how many head or what percent originated from: (Enter <b>Zero</b> if None)			
	<b>Head</b>	<b>OR</b>	<b>Percent</b>
a. This site such as <b>on-site</b> nursery aged pigs?.....	0422		0428
b. Offsite unit(s) <b>belonging</b> to this operation?.....	+ 0423	+	0429
c. Offsite unit(s) <b>not belonging</b> to this operation?.....	+ 0424	+	0430
d. An auction, sale barn or livestock market?.....	+ 0425	+	0431
e. Another source? (Specify: <sup>5426</sup> .....)	+ 0426	+	0432
	0427		
<b>Total</b> (Should equal Item 10 or <b>100%</b> ) =		=	<b>100%</b>

**Section 5, Questions 12 through 15:** These questions attempt to get an idea about how big a biosecurity risk other sites (based on distance) and feral swine pose to this site. If the respondent asks for Questions 12 or 13, "Is it miles by drive or as the crow flies" **the answer is by drive** since they will know that with more accuracy. Hunting clubs are places that stock pigs for hunting (as you might guess) and these pigs count as feral swine. **Question 15 covers all the land set aside for the site but not beyond.**

12. To the nearest <b>quarter mile</b> , how many miles is it from this site to the nearest site with any swine? INCLUDE sites regardless of who owns the swine.....		<b>Miles</b>
		0550
13. How many sites with swine are within three miles of this site? INCLUDE sites regardless of who owns the swine.....		
		<b>Sites</b>
		0551
14. Are there feral swine in this county? INCLUDE pigs on hunting clubs or captive on farms..... <sup>0552</sup> <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>4</sub> DK		
15. Between <b>June 1, 2019</b> and <b>May 31, 2021</b> , how many times have feral or wild pigs or evidence of them (such as footprints, rooted up land, low rubbed areas on trees, feces, etc.) been seen on this site?.....		<b>Times</b>
		0553



**Section 6, Questions 10 and 11:** These questions briefly cover antibiotic use on the site and information on record management of those antibiotics. Note that Question 11 includes an N/A option, which should only be selected when the producer did not dispense antibiotics to pigs using that particular delivery method (water or feed) between **June 1, 2019** and **May 31, 2021**. For example, a producer uses antibiotics in water but not in feed. They would select “YES” for Question 10. They would fill out 11a–11d for the **Water** column based on whether they record the information, selecting either **YES, NO or DK** for each row in that column. For the **Feed** column, they would select **N/A** for 11a – 11d since they did not use antibiotics in feed for their swine.

10. Between **June 1, 2019** and **May 31, 2021**, were antibiotics used in swine **water** or **feed** on this site?..... <sub>1</sub> YES <sub>3</sub> NO <sub>4</sub> DK 0611

**If Item 10 = NO or DK, SKIP to Section 7**

**NOTE: For Item 11, check N/A for items 11a – 11d only if antibiotics were not used via that delivery method (e.g., none delivered by Water).**

11. Between **June 1, 2019** and **May 31, 2021**, when antibiotics were used in **water** or **feed on this site** which of the following information was recorded? (Check **Yes, No, DK** or **N/A** for each)

	Water	Feed
a. Date antibiotic use began.....	0612 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>4</sub> DK <input type="checkbox"/> <sub>2</sub> N/A	0616 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>4</sub> DK <input type="checkbox"/> <sub>2</sub> N/A
b. Date antibiotic use ended.....	0613 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>4</sub> DK <input type="checkbox"/> <sub>2</sub> N/A	0617 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>4</sub> DK <input type="checkbox"/> <sub>2</sub> N/A
c. Antibiotic used.....	0614 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>4</sub> DK <input type="checkbox"/> <sub>2</sub> N/A	0618 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>4</sub> DK <input type="checkbox"/> <sub>2</sub> N/A
d. Treatment withdrawal period.....	0615 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>4</sub> DK <input type="checkbox"/> <sub>2</sub> N/A	0619 <input type="checkbox"/> <sub>1</sub> YES <input type="checkbox"/> <sub>3</sub> NO <input type="checkbox"/> <sub>4</sub> DK <input type="checkbox"/> <sub>2</sub> N/A