STANDARD OPERATING PROCEDURES:
5. EPIDEMIOLOGICAL INVESTIGATION AND TRACING

FAD PReP
Foreign Animal Disease Preparedness & Response Plan

United States Department of Agriculture

United States Department of Agriculture • Animal and Plant Health Inspection Service • Veterinary Services

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The Foreign Animal Disease Preparedness and Response Plan (FAD PReP) Standard Operating Procedures (SOPs) provide operational guidance for responding to an animal health emergency in the United States.

These draft SOPs are under ongoing review. This document was last updated in **February 2014.** Please send questions or comments to:

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5.1 Introduction

5.1.1 General

Epidemiological investigation and tracing is critical during any foreign animal disease (FAD) incident, such as in an outbreak of foot-and-mouth disease (FMD), classical swine fever (CSF), or highly pathogenic avian influenza (HPAI). Epidemiological investigation and tracing works to quickly and accurately identify cases of the FAD, locate other livestock and poultry that may be infected, and investigate the source of the outbreak. It also includes tracing all contacts with affected animals and premises, including movements of non-susceptible animals, humans, fomites, animal products or byproducts, and equipment that may have come into contact with the disease agent.

Several key Animal and Plant Health Inspection Service (APHIS) documents complement this standard operating procedure (SOP) and provide further detail when necessary.

- National Animal Health Emergency Management System (NAHEMS) Guidelines:
  - Biosecurity
  - Surveillance, Epidemiology, and Tracing
- FAD Preparedness and Response Plan (FAD PReP) SOPs:
  - Biosecurity
  - Modeling and Assessment Tools
  - Overview of Etiology and Ecology
  - Overview of Information Management
  - Surveillance
- FMD, CSF, and HPAI Response Plans: The Red Books
- Veterinary Services Guidance Document 12001.

FAD PReP documents are available on the internal APHIS FAD PReP website for those who have access to the APHIS intranet at http://inside.aphis.usda.gov/vs/em/fadprep.shtml, and they are available to the public at http://www.aphis.usda.gov/fadprep.

5.1.2 Goals

5.1.2.1 Preparedness Goals

The preparedness goals for epidemiology are as follows:

- Define expectations for epidemiological investigation and FAD tracing before an incident or outbreak, especially for highly contagious FADs.
- Identify individuals who are trained or experienced in epidemiological investigation and tracing activities.

- Identify and pre-position information management resources and other resources necessary to support epidemiology activities and tracing in an actual incident or outbreak.
- Establish priorities for contact tracing and for establishing Infected Zone(s) (IZs), Buffer Zone(s) (BZs), and Surveillance Zone(s) (SZs)
- Identify the resources needed for different disease agents, and for outbreaks of varying size/scale.

5.1.2.2 Response Goals

The response goals for epidemiology are as follows:

- Assign a premises designation and priority of investigation within 6 hours of identifying a potential Infected Premises (IP) or Contact Premises (CP) through tracing activities.
- Identify all CP within 24 hours of identifying the IP or the initial CP.
- Within 96 hours of identifying the index case, characterize the nature of the FAD, identify risk factors for transmission, and develop mitigation strategies.

5.1.3 Guidelines

Rapid, diligent, and complete trace back and trace forward of all contacts with infected livestock or poultry and premises are vital in effectively containing an FAD outbreak. Tracing includes all movements from the IP, including susceptible livestock and poultry, non-susceptible livestock and poultry, animal products or byproducts, vehicles, crops/grains, feedstuffs, and people. Tracing also includes consideration of potential modes of transmission (for example, aerosol and direct contact) and possible contact with wildlife.

Trace-back and trace-forward information is collected for a disease-specific minimum number of days before the appearance of clinical signs in livestock or poultry infected with an FAD. Additional trace-out information is collected for movements that occurred up to the time that the quarantine was imposed. It is highly likely that the first livestock or poultry premises identified with disease (the index case/premises) may not be the first actually infected.

The goals of tracing include identifying all additional CP within 24 hours of identifying the IP or the initial CP. All efforts should be expended to determine the true index premises for the FAD outbreak.

Epidemiological information is produced from the study of factors associated with the distribution and determinants of disease in a population. These activities involve strategic epidemiology planning and analysis, as well as tactical or field epidemiology to determine the actual movements of animals, people, conveyances, and other potential fomites to and from IP. Epidemiological techniques are used to:

- understand the characteristics of the FAD (for example, clinical signs, incubation period, and populations affected) and outbreak characteristics (for example, sources, disease incidence patterns, and geographic distribution) as they affect specific populations;

- identify risk factors associated with the FAD occurrence (for example, age, production practices, species, and wildlife);
- provide information for decisions on designing and implementing control measures against the FAD; and
- evaluate the effectiveness of the control measures implemented, and adjust them as the situation dictates.

The Emergency Management Response System (EMRS) and other appropriate information management systems are used to collect and report epidemiological data, as well as premises status data. EMRS is flexible and scalable—from a single case on an FAD to a national outbreak.

5.1.4 Coordination

The following activities are coordinated by the specified entities in the event of an FAD outbreak:

- *Reporting of accurate disease epidemiological information*. Disease Surveillance Branch (Operations Section) and Situation Unit (Planning Section).
- *Biosecurity and safety measures.* Animal Biosecurity and Disease Prevention Group in the Disease Support Branch (Operations Section) and the Medical Unit (Logistics Section).
- *Tracing activities.* Disease Surveillance Branch (Operations Section) and Situation Unit (Planning Section) on their respective activities.
- *Collecting, analyzing, and reporting epidemiological data*. Situation Unit (Planning Section).
- *Quarantine and movement restrictions.* Animal Movement and Permits Group and Surveillance Geographic Information System (GIS) Cell prepare maps of the IZ, BZ, and SZ.

5.1.5 Assumed Ongoing or Completed Response Activities

These procedures assume the following outbreak response activities are in progress or have been completed:

- Disease confirmation—completed/ongoing
- Quarantine—ongoing
- Surveillance—ongoing
- Monitoring, countermeasure use, and inoculation—ongoing
- Biosecurity procedures—ongoing
- Security measures and crowd control—completed/ongoing
- Health and safety procedures—ongoing.

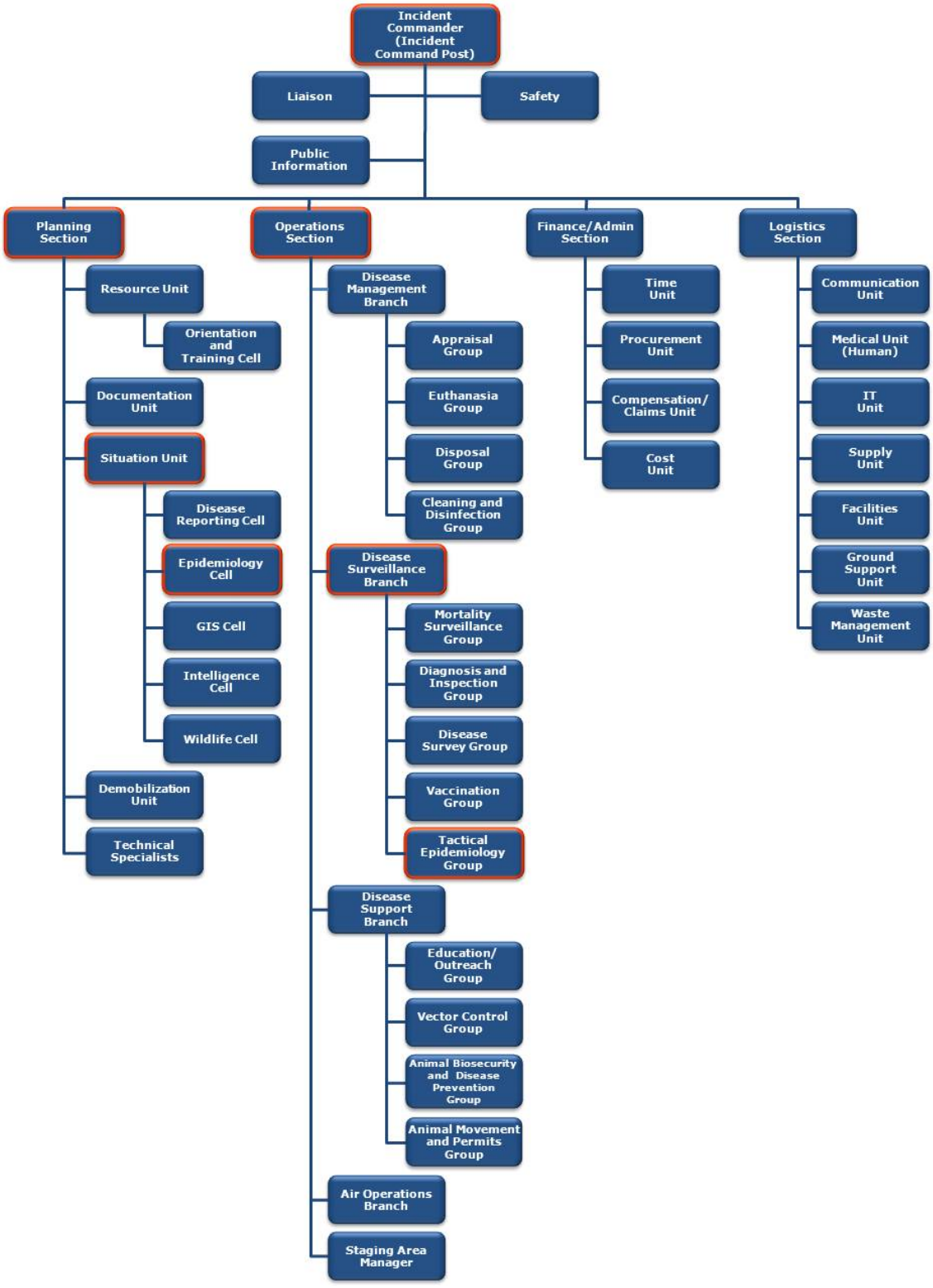
5.2 Purpose

This SOP provides guidance for implementing epidemiology and tracing actions in response to an FAD incident. This SOP also details the responsibilities of epidemiology personnel within the Incident Command Post. Deviations from these procedures may be required to address a given situation.

5.3 Responsibilities

Within the Incident Command System (ICS) structure (Figure 5-1), two staff components are responsible for epidemiological and tracing actions. They are the Epidemiology Cell, located within the Situation Unit of the Planning Section and the Tactical Epidemiology Group, located within the Disease Surveillance Branch of the Operations Section.

Figure 5-1. Example of ICS Structure



Note: GIS = Geographical Information Systems; IT = Information Technology.

The roles and responsibilities of these personnel and the organization structure may vary depending on the size and complexity of the incident. Large-scale incidents may involve multiple premises and may cover large areas. As the response progresses, personnel requirements may change. The following subsections give guidance on the command structure and positions.

5.3.1 Epidemiology Cell, Situation Unit, Planning Section

The Epidemiology Cell uses surveillance reports and other data to plan the response to an outbreak. It establishes priorities and generates epidemiological reports. The Cell also collects and analyzes disease case information reported by the Disease Reporting Officer (DRO). The Cell includes an Animal Epidemiology Group Supervisor and an Animal Epidemiologist.

5.3.1.1 Animal Epidemiology Cell Supervisor

The Animal Epidemiology Cell Supervisor does the following:

- Advises the Planning Section Chief.
- Manages the Epidemiology Cell, including determination of personnel and resources.
- Supervises and coordinates assignment of cases and projects to epidemiologists, and prioritizes tasks to achieve the goals of the Epidemiology Cell.
- Works with and coordinates with groups in the Disease Surveillance Branch, especially the Tactical Epidemiology Group on tracing activities and the Diagnosis and Inspection Group on FAD investigations.
- Advises the Disease Surveillance Branch and Intelligence Cell of the evolving nature of FAD and its spread and any exceptions to the known epidemiological pattern of the outbreak.
- Collects, processes, and verifies data related to the FAD incident and response.
- Coordinates the tracing of stock, persons, products, vehicles, and property that may have had contact with any infected place or other contaminated material.
- Follows through on trace information and ensures that proper surveillance and testing of CP, At-Risk Premises (ARP), and Suspect Premises (SP) are performed in conjunction with the Disease Surveillance Branch.
- Denotes the population and species affected during the FAD response.
- Describes the FAD outbreak characteristics, source, and geographical distribution.
- Evaluates laboratory and surveillance findings to confirm the existence or absence of FAD.
- Recommend ways to control the FAD outbreak situation and changes in the program as justified by epidemiological findings.
- Monitors the incident area during the FAD response.
- Develops epidemiological plans for emergency vaccination strategies for the FAD where appropriate.

- Oversees the generation of justifications for classification of premises and requesting depopulation of CP.
- Supervises the reception, handling, packaging, and dispatch of diagnostic specimens to laboratories during the FAD response.

5.3.1.2 Animal Epidemiologist

The Animal Epidemiologist does the following:

- Provides technical support and assistance with data collection protocols, data entry tasks, data analysis, and evaluation of results under the guidance of the Animal Epidemiology Cell Supervisor.
- Monitors and makes recommendations on quarantine issues and quarantine release.
- Compiles surveillance data and writes the justification for area quarantine release at the end of an FAD outbreak.
- Coordinates with the Disease Surveillance Branch to recommend strategies and priorities.
- Describes the nature of the FAD situation and outbreak characteristics.
- Develops or adapts questionnaires and other tools for accurate and appropriate information collection and analysis for the FAD (biosecurity, repopulation, and surveillance).
- Ensures that a premises classification is assigned to any new IP or CP identified through tracing, sets the priority of investigation for these premises, and coordinates with the Disease Reporting Cell and Tactical Epidemiology Group on these issues.
- Monitors tracing and investigation information received from the field and the status of the information in EMRS.
- Provides epidemiological justifications and requests depopulation of CP.
- As needed, advises and consults with the Disease Reporting Cell on other case classifications, lab sampling, and results.
- Supports the Tactical Epidemiology Group and recommends prioritization of tracing and investigation activities.
- Ensures data quality and addresses any issues related to maintenance of data and reporting in EMRS.

5.3.2 Tactical Epidemiology Group, Disease Surveillance Branch, Operations Section

The Tactical Epidemiology Group is the field epidemiology component that verifies and investigates FAD outbreak trace information and conducts follow-up field investigations on recently classified IP to determine adjacent and other potential CP (in conjunction with the Epidemiology Cell in the Planning Section). It also coordinates with the Disease Surveillance Branch and GIS Cell on needed testing and data collection, and ensures appropriate communication and transmittal of field data to the Epidemiology and Disease Reporting Cells.

The group has two major roles: characterizing the disease and evaluating management strategies. It also evaluates surveillance activities, requests quarantines, and recommends depopulation. It oversees the collection and evaluation of information on the FAD and IP to determine the origin of the disease, when it entered the IP, and the risk of its spreading to other farms.

The Tactical Epidemiology Group consists of the Tactical Epidemiology Group Supervisor and the Tactical Epidemiologist. This Group does the following:

- Implements priorities established by the Epidemiology Cell.
- Determines information requirements.
- Collects field and laboratory information.
- Assesses results and risks of the FAD.
- Conducts or coordinates basic tracing and case investigation activity.
- Oversees, ensures, and verifies the collection of source, movement, and contact information by the field and its entry into the database.
- Follows through on trace information and ensures proper surveillance and testing of CP, At-Risk Premises (ARP), and Suspect Premises (SP) are performed in conjunction with the Disease Surveillance Branch.
- Coordinates data collection and validation with the Epidemiology, Disease Reporting, and other appropriate cells.
- Inputs and extracts data from EMRS and other databases.
- Collects field data that assist in the classification and disposition of premises (on the basis of agency and incident policies and SOPs).

5.3.2.1 Tactical Epidemiology Group Supervisor

The Tactical Epidemiology Group Supervisor does the following:

- Manages the Tactical Epidemiology Group, including determining personnel and resources requirements.
- Reports and makes recommendations to the Planning Section Chief, as required.
- Forwards reports to the Situation Unit.
- Monitors the flow of all pertinent epidemiological information to the response team during the FAD outbreak.
- Coordinates with the staff on investigations to ensure that all sources of infection and dangers of contagion are examined.
- Develops methods for determining the source of the FAD and preventing its propagation.
- Assesses the case history and clinical situation and recommends case priorities.

- Assigns tasks to the Diagnosis and Inspection Group for investigating suspected cases of the FAD.
- Collects, processes, and verifies data related to an FAD incident and response.
- Coordinates the tracing of stock, persons, products, vehicles, and property that may have had contact with any infected place or other contaminated material.
- Evaluates laboratory and surveillance findings to confirm the existence or absence of the FAD.
- Recommends ways to control the overall outbreak situation and change the program as justified by epidemiological findings.
- Monitors and responds to the press, public, industry, and affected parties for specific concerns and problems during an FAD response as designated by the Public Information Officer.

5.3.2.2 Tactical Epidemiologist

The Tactical Epidemiologist does the following:

- Coordinates with other groups to collect, analyze, and report data.
- Denotes the population and species affected during the FAD response.
- Describes the FAD outbreak characteristics, source, and geographical distribution.
- Develops new hypotheses, theories, policies, and policy interpretations.
- Estimates morbidity and mortality rates.
- Evaluates identification, depopulation, and disinfection rates.

Members of the Epidemiology Cell and Tactical Epidemiology Group share information and may be collocated at any of the emergency operations centers, depending on the levels that are mobilized.

5.3.3 Disease Reporting Cell

The Disease Reporting Cell determines premises classification and is responsible for FAD disease data accumulation, entry, accuracy checking, and reporting. It also does the following:

- Prepares, reviews, and enters field investigation data, movement data, and contiguous premises data.
- Determines premises classifications.
- Retrieves routine and specialized reports from EMRS.
- Validates all reports of FAD investigations and results of laboratory tests to ensure the completeness and accuracy of data entry into EMRS.
- Summarizes and organizes tabular epidemiological information and graphics.

- Acts as a primary contact for the laboratory, assists the Tactical Epidemiology Group in investigations, and maintains the EMRS database.
- Provides FAD case information.

5.3.3.1 Disease Reporting Cell Leader

The Disease Reporting Cell Leader does the following:

- Directs the activities of the Disease Reporting Cell, including the DRO, other veterinarians, EMRS data entry specialists, other data entry personnel, and laboratory specialist.
- Supervises and organizes the orderly, efficient retrieval of routine and specialized disease reports from EMRS.
- Coordinates all reports of FAD investigations and results of laboratory tests to ensure the completeness and accuracy of data entry into EMRS.
- In cooperation with the Epidemiology Cell, coordinates the use of EMRS to summarize and organize tabular epidemiological information and graphics.

5.3.3.2 EMRS Data Entry Specialist

The EMRS Data Entry Specialist enters and recovers data from EMRS, which are used to generate reports on current FAD management.

5.4 Designation of Zones, Areas, and Premises

A critical component of an FAD response is the designation of zones, areas, and premises. Epidemiological investigation and tracing are used to classify premises. The Incident Management Team designates zones and premises in an FAD outbreak. These zones, areas, and premises designations are used in quarantine and movement control efforts.

Table 5-1 summarizes the premises designations that would be employed in an FAD outbreak response. Table 5-2 summarizes the zone and area designations that would be used in an FAD outbreak response.

Table 5-1. Summary of Premises Designations

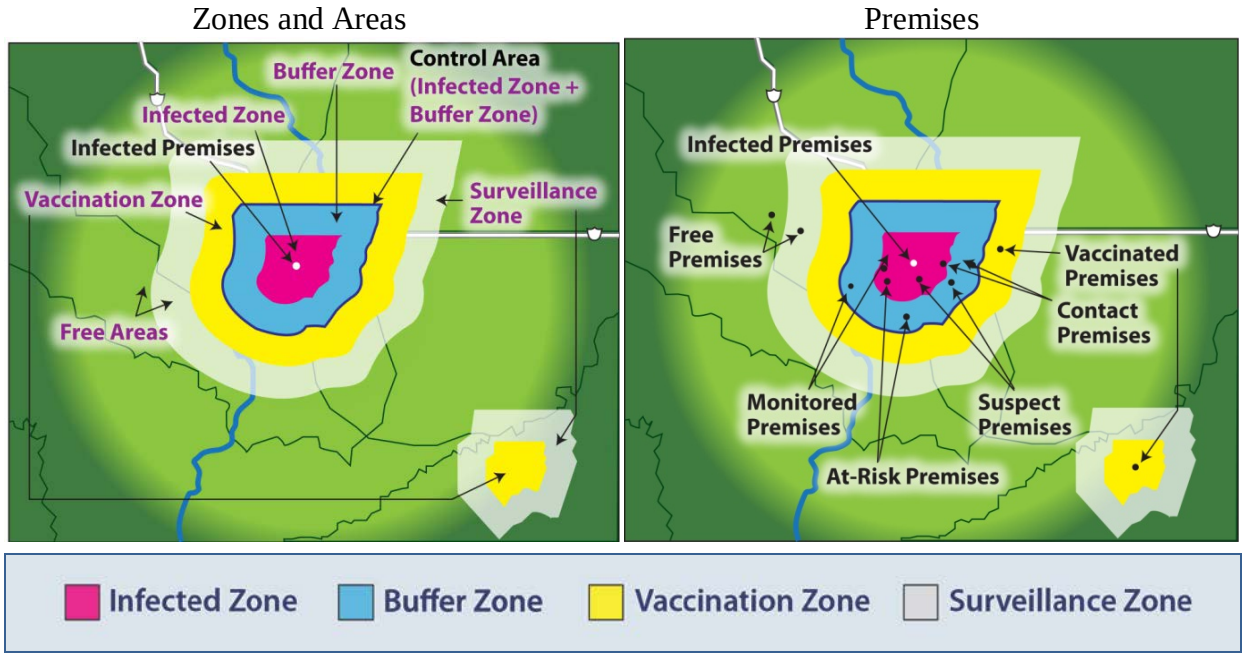
Premises	Definition	Zone
Infected Premises (IP)	Premises where a presumptive positive case or confirmed positive case exists based on laboratory results, compatible clinical signs, case definition, and international standards.	Infected Zone
Contact Premises (CP)	Premises with susceptible animals that may have been exposed to the FAD agent, either directly or indirectly, including but not limited to exposure to animals, animal products, fomites, or people from Infected Premises.	Infected Zone, Buffer Zone
Suspect Premises (SP)	Premises under investigation due to the presence of susceptible animals reported to have clinical signs compatible with the FAD. This is intended to be a short-term premises designation.	Infected Zone, Buffer Zone, Surveillance Zone, Vaccination Zone
At-Risk Premises (ARP)	Premises with susceptible animals, but none have clinical signs compatible with the FAD. Premises objectively demonstrates that it is not an Infected Premises, Contact Premises, or Suspect Premises. At-Risk Premises seek to move susceptible animals or products within the Control Area by permit. Only At-Risk Premises are eligible to become Monitored Premises.	Infected Zone, Buffer Zone
Monitored Premises (MP)	Premises objectively demonstrates that it is not an Infected Premises, Contact Premises, or Suspect Premises. Only At-Risk Premises are eligible to become Monitored Premises. Monitored Premises meet a set of defined criteria in seeking to move susceptible animals or products out of the Control Area by permit.	Infected Zone, Buffer Zone
Free Premises (FP)	Premises outside of a Control Area and not a Contact or Suspect Premises.	Surveillance Zone, Free Area
Vaccinated Premises (VP)	Premises where emergency vaccination has been performed. This may be a secondary premises designation.	Containment Vaccination Zone, Protection Vaccination Zone

Table 5-2. Summary of Zone and Area Designations

Zone/Area	Definition
Infected Zone (IZ)	Zone that immediately surrounds an Infected Premises.
Buffer Zone (BZ)	Zone that immediately surrounds an Infected Zone or a Contact Premises.
Control Area (CA)	Consists of an Infected Zone and a Buffer Zone.
Surveillance Zone (SZ)	Zone outside and along the border of a Control Area.
Free Area (FA)	Area not included in any Control Area.
Vaccination Zone (VZ)	Emergency Vaccination Zone classified as either a Containment Vaccination Zone (typically inside a Control Area) or a Protection Vaccination Zone (typically outside a Control Area). This may be a secondary zone designation.

Figure 5-2 illustrates all the zones and premises.

Figure 5-2. Example Zones and Premises



Note: Figures are not to scale. The Vaccination Zone can be either a Protection Vaccination Zone or Containment Vaccination Zone.

For details on the zones, areas, and premises, see the *APHIS FAD Framework: Response Strategies*. For additional information on integrating the zones, areas, and premises designations with specific FAD response strategies, see the disease-specific response plans, such as the *FMD Response Plan: The Red Book*.

These documents are available on the following sites:

- APHIS Emergency Management public website at: http://www.aphis.usda.gov/fadprep.
- APHIS FAD PReP internal website (for APHIS employees) at: http://inside.aphis.usda.gov/vs/em/fadprep.shtml.

5.5 Considerations for Size of Control Area

The perimeter of the CA should be at least 6.2 miles (10 kilometers) beyond the perimeter of the closest IP. The size of the CA depends on the circumstances of the FAD outbreak, including the IP transmission pathways and estimates of transmission risk, livestock movement patterns and concentrations, distribution of susceptible wildlife in proximity, natural terrain, jurisdictional boundaries, and other factors. The boundaries of the CA can be modified or redefined when tracing and other epidemiological information becomes available. Table 5-3 reviews the factors used to determine the size of the CA.

Table 5-3. Factors to Consider in Determining CA Size for an FAD

Factors	Additional Details
Jurisdictional areas	• Effectiveness and efficiency of administration • Multi-jurisdictional considerations: Local, State, Tribal, and multistate
Physical boundaries	• Areas defined by geography • Areas defined by distance between premises
FAD epidemiology	• Reproductive rate • Incubation period • Ease of transmission • Infectious dose • Species susceptibility • Modes of transmission (fecal-oral, droplet, aerosol, vectors) • Survivability in the environment • Ease of diagnosis (for example, no pathognomonic signs, requiring diagnostic laboratory testing) • Age of lesions
IP Characteristics	• Number of contacts • Transmission pathways and transmission risk o Extent of animal movement o Number of animals o Species of animals o Age of animals o Movement of traffic and personnel to and from premises (fomite spread) o Biosecurity measures in place at time of outbreak
Contact or contiguous premises characteristics	• Number and types of premises • Susceptible animal populations and population density • Animal movements • Movement of traffic (fomites) and personnel to and from premises • Biosecurity measures in place prior to outbreak
Environment	• Types of premises in area or region • Land use in area or region • Susceptible wildlife and population density • Wildlife as biological or mechanical vectors
Climate (for aerosol spread of disease)	• Prevailing winds • Humidity
General area, region, or agricultural sector biosecurity	• Biosecurity practices in place prior to outbreak • Biosecurity practices implemented once outbreak detected
Number of backyard or transitional premises	• Types of premises, animal movements, and network of animal and fomite movements
Continuity of business	• Continuity of business plans and processes in place or activated at beginning of outbreak (such as surveillance, negative diagnostic tests, premises biosecurity, and risk-assessments) • Permit processes, memorandums of understanding, and information management systems in place or activated at beginning of outbreak

5.6 Considerations for Size of Other Zones

Table 5-4 lists minimum sizes of zones; in an FAD outbreak, the IZ, BZ, CA, and SZ are likely to be larger than these minimum sizes.

Table 5-4. Minimum Zone Sizes

Zone	Minimum size and details
Infected Zone (IZ)	◆ Perimeter should be at least 3 km (~1.86 miles) beyond the perimeters of presumptive or confirmed Infected Premises. Will depend on disease agent and epidemiological circumstances. This zone may be redefined as the outbreak continues.
Buffer Zone (BZ)	◆ Perimeter should be at least 7 km (~4.35 miles) beyond the perimeter of the Infected Zone. Width is generally not less than the minimum radius of the associated Infected Zone, but may be much larger. This zone may be redefined as the outbreak continues.
Control Area (CA)	◆ Perimeter should be at least 10 km (~6.21 miles) beyond the perimeter of the closest Infected Premises. Please see Table 5-3 for factors to consider in determining the size of a Control Area. This area may be redefined as the outbreak continues.
Surveillance Zone (SZ)	◆ Width should be at least 10 km (~6.21 miles), but may be much larger.

Table 5-4 lists the minimum sizes of zones and areas during vector-borne outbreaks.

Table 5-5. Minimum Sizes of Zones and Areas for Vector-Borne Disease

Zone or area	Minimum size and details
Infected Zone (IZ)	◆ Perimeter should be at least 10 km (~6.2 miles) beyond perimeters of presumptive or confirmed Infected Premises. Will depend on disease agent and epidemiological circumstances. This zone may be redefined as the outbreak continues.
Buffer Zone (BZ)	◆ Perimeter should be at least 20 km (~12.4 miles) beyond the perimeter of the Infected Zone. Width is generally not less than the minimum radius of the associated Infected Zone, but may be much larger. This zone may be redefined as the outbreak continues.
Control Area (CA)	◆ Perimeter should be at least 30 km (~18.6 miles) beyond the perimeter of the closest Infected Premises. Please see Table 5-3 for factors to consider in determining the size of a Control Area. This area may be redefined as the outbreak continues.
Surveillance Zone (SZ)	◆ Width should be at least 20 km (~12.4 miles) but may be larger depending on the known geographic range of vector.

5.7 Three Basic Epidemiological Principles

There are three basic epidemiological principles that form the foundation for response strategies to contain, control, and eradicate FADs in the U.S. domestic livestock and poultry population:

1. *Prevent contact between the disease and susceptible animals.*

a. This is accomplished through quarantine of infected animals, movement controls in the IZ(s) and BZ(s) (CA(s)), and biosecurity procedures to protect non-infected animals.

b. Certain circumstances may warrant accelerating the depopulation of animals at risk for exposure to the disease to decrease the population density of susceptible animals.

c. There is a serious but lesser transmission risk posed by people, material, conveyances, and animals that may have been in contact with the disease and serve as mechanical vectors. Contact with susceptible animals should be prevented and transmission risk mitigated through biosecurity and cleaning and disinfection measures.

2. *Stop the production of FAD agent in infected or exposed animals.* This is accomplished by slaughter or mass depopulation (and disposal) of infected and potentially infected animals.

3. *Increase the disease resistance of susceptible animals to the FAD agent or reduce the shedding of virus by infected or exposed animals.* This can be accomplished by emergency vaccination if a suitable vaccine is available and can be administered in a timely manner.

5.8 Etiology and Ecology

An important focus of epidemiologists' work is discovering the etiology (origin and cause) and ecology (interactions between host and pathogen factors) of diseases. These are included in the Overview of Etiology and Ecology SOPs for specific diseases.

5.9 Emergency Management Response System (EMRS)

EMRS 2.0 is a web-based application used by Federal, State, Tribal, and local animal health officials in reporting of routine investigations of suspected cases of an FAD; surveillance and control programs; State specific disease outbreaks; and national animal health emergency responses.

EMRS employs a custom secure role protected interface built upon the Microsoft Dynamics platform. It uses a SQL server relational database to track investigations, general tasks, and manage resources. The investigation data are also available through a mapping interface, allowing the user to view real-time, high quality maps of outbreak areas, respond to patterns, and deliver the maps to decision makers, government institutions and the public.

5.10 Procedures

Epidemiological and tracing information is obtained from many sources, including reports from field veterinarians, producers, industry, farm supply and service providers, and the public.

The source of the infection and the locations to which it may have already spread must be determined quickly. The epidemiology and tracing teams prepare a prioritized list of field investigations to be conducted and forward it through the Disease Surveillance Branch to the Operations Section Chief for activity deployment. This is done for each operational period.

During all phases of the FAD outbreak, the epidemiology staff ensures the flow of epidemiological information to the Situation Unit by direct entry into EMRS; by telephone, e-mail, or fax; or as directed by the responsible supervisor. The Situation Unit ensures that epidemiology, laboratory, and inspection reports are submitted to the appropriate staff component.

5.10.1 Tracing

5.10.1.1 Definitions

5.10.1.1.1 Tracing

Tracing is the process of determining the movements of animals, animal products, fomites, and persons that may be involved in the spread of a disease agent.

5.10.1.1.2 Tracing Period

The epidemiologically significant period of interest for tracing purposes on FAD confirmed positive premises is from the estimated date of introduction of the FAD until the onset of clinical signs, or the maximum incubation period for the specific disease as cited by the World Organization for Animal Health (OIE) before the onset of clinical signs. In many cases, traces are two times the maximum incubation period. For trace forward, the period of interest needs to extend forward to the date the premises was quarantined. Field determination of the tracing period must be made with consideration for the species present and their propensity for expressing clinical signs.

5.10.1.1.3 Trace Back

Trace back is the identification of the origin and movements of all animals, animal products, possible fomites, people, possible vectors, and that have entered an IP. Any premises that was the origin of such a movement should be investigated a potential IP and the possible premises of origin.

5.10.1.1.4 Trace Forward

Trace forward is the tracing of all animals, animal products, possible fomites, people, and possible vectors that have left an IP. Premises that received the animals or goods should be investigated and kept under surveillance or quarantine.

5.10.1.2 General

Box 5-1 explains the fundamental importance of movement tracing in an FAD response effort.

Box 5-1. Importance of Movement Tracing in an FAD Outbreak

Tracing

One of the single most important and urgent veterinary activities during an FAD outbreak is to rapidly and diligently trace-back and trace-forward movements from an IP. This tracing will aid in the control of the spread of the FAD and limit the impact of the outbreak. Tracing should include all movements from the premises, including susceptible livestock and poultry, non-susceptible animals, animal products, vehicles, crops and grains, and people. Tracing will also include consideration of all potential modes of transmission and possible contact with wildlife.

Trace-back and trace-forward information should be collected for the specified period prior to the appearance of clinical signs in an animal infected with an FAD (*The Red Books* define the length of this period). Additional tracing information will be collected for movements up to the time that quarantine was imposed.

5.10.1.3 Sources of FAD Tracing Information

Epidemiologists and animal health officials are encouraged to use whatever resources they have to find the information needed to complete FAD traces in the time needed for effective and efficient control of the disease. Tracing information can be obtained from many sources (such as reports from field veterinarians, producers, industry, farm service providers, or the public). EMRS will be used to collect and report epidemiological data, including movement tracing information, locally and nationally. The following sources of information are currently likely to be needed to complete FAD traces and investigations.

- Generic database
- Action or market records
- Phone calls to owners
- Import permit systems
- Certificates of veterinary inspection
- Official identification devices
- Phone calls to accredited veterinarians
- Test charts (brucellosis, tuberculosis, and market)
- Vaccination records
- State databases, such as USAHERDS
- Dairy Herd Improvement Association records
- *National Poultry Improvement Plan* records

- Global VetLink and Veterinary Services Process Streamlining (electronic health certificates)
- Records of tags issued by State.

The FAD PReP/NAHEMS Guidelines: Surveillance, Epidemiology, and Tracing describes many of these sources in greater detail.

5.10.1.4 Resources Used

The response to an FAD outbreak will involve a variety of State and Federal personnel to collect information, including State and Federal epidemiologists, animal identification coordinators, database administrators, livestock and poultry inspectors, and others.

5.10.1.5 Tracing Movements to and from Affected Farm or Ranch

When an FAD is confirmed on a farm or ranch, the following actions must occur:

- Initiate eradication procedures.
- Obtain information from the owner and employees about the types of movement activities to and from the premises to include movement of personnel, animals, vehicles, milk, meat, manure, equipment, feedstuffs, visitors, pets or other movements from and to the premises for two incubation periods (specific to the FAD agent) before the initial alert report.
- Provide dates of movement, types of movement, and the complete address of the final destination to the Disease Reporting Cell to help ensure that exposed premises are located and quarantined immediately. Information on movements from the IP should also be obtained for the period from the alert report to the present.
- The Disease Reporting Cell Leader designates a person to coordinate tracing information and movements outside the area of operation.
- Transmit tracing information immediately to the Animal Movement and Permits Group for action (for example, quarantining a premises or informing a State that animal products from an IP have been moved into it).

5.10.1.6 Tracing Movements from Affected or Exposed Slaughter Facilities

Tracing the movement of fresh, frozen, or chilled animal products from an affected or exposed slaughter facility can be difficult. The following actions apply to tracing movements from affected or exposed slaughter facilities:

- Contact the veterinary inspector and plant manager to determine the inclusive dates of movements to be traced.
- Prioritize the information to be transmitted on the movements of animal products as follows:
  - Interstate movements.
  - Intrastate movements outside the CA.

- Intrastate movements within the CA.

- Assess the risk of FAD spread posed by each shipment. With regard to FAD spread to livestock or poultry, shipments into areas with high-density animal populations would be of greater concern than shipments to large metropolitan areas.
- Ensure that the list of movements to be traced immediately contains only fresh, frozen, or chilled products from the species of livestock or poultry involved.
- Transmit to the appropriate authorities a list of all other products shipped, including processed products from involved species; processed, fresh, frozen, or chilled products from noninvolved species; hides; and offal. This is to prevent the spread of the FAD by potential surface contamination of products and transport vehicles.
- Pay special attention to shipment of products containing tissues in which the FAD agent is known to survive and may contribute to the spread of the pathogen.

5.10.1.7 Tracing Movements from Markets

The procedures for tracing animals, vehicles, and personnel from a market classified as an IP, CP, or SP are essentially the same as those for an individual premises. The primary differences are the number of movements, extent of the movements, existence of records of movements from auction markets, and extent of human contact with livestock or poultry.

After determining the number of days to be covered prior to the reported FAD outbreak, the person tracing should identify the individuals who have the records that supply the needed information (for example, commission firms, dealers, inspectors, State inspectors, or veterinarians). Local movements should be traced as early as possible. If the area is not within a CA, the need to complete the tracing is much more urgent.

Movements outside the CA, but within the State, must be reported immediately to the Animal Movement and Permits Group. Movement outside the State should be reported to the Animal Movement and Permits Group and directly to the State of destination and to other Quarantine and Movement Control Units in other areas or regions in which the movement has occurred or will occur.

A list of all personnel employed by the facility and of events involving other human contact with livestock and poultry should be obtained from the facility managers. Each person on the list should be contacted to determine their (1) movements since the time of exposure to infection in the facility and (2) ownership or other contact with livestock or poultry away from the facility. Each movement must be evaluated and its risk assessed.

5.10.1.8 Trace Premises

Premises traced from confirmed IP should be considered a CP. If the CP is not located in a CA, a 10 km buffer zone should be established around it. These premises should be quarantined and follow the testing protocol described for the SP and BZ until test results prove them free of the FAD. Epidemiological information and a detailed description of subsequent follow-up visits to the premises and laboratory testing results must be included.

5.10.1.9 Creating a Trace Action in EMRS

The tracing section of EMRS allows the creation of tracing actions for animals, animal groups, or items. Before a tracing action is created, you would usually have created a Herd Exam and Lab Submission for an FAD Investigation and a Premises Diagnosis on an index herd or flock that is positive for the FAD. If the disease requires a rapid response, the trace process may begin at any time during the initial investigation sequence and does not have to wait for lab results.

Two basic types of traces can be created in EMRS, an index trace and a placeholder trace.

- An index trace on an infected premises to document the movement of traced animals or items on or off of an index premises, these traces can be transferred to other premises to continue the traceline.

- A placeholder trace can be created to any non-index premises where an animal or item of interest is located, with or without an evident link to an index trace. For example, an animal with a brand from an Infected Premises is located without knowing the sequence of movements which led to the current location of the animal. This allows animal health officials to start at any point where they have information and start working both forward and backwards in the traceline. If an animal is known to exist on an index trace, then the placeholder trace can be linked to the index trace and if the two tracelines later meet at a premises, they can then be joined—this completes the loop.

To document the collection of index tracing and create an index trace in EMRS, take the following steps:

- Create a Task to schedule and assign an investigator to gather index trace information if not already done in the initial investigation.

- The investigator gathers information on the movement of animals, groups of animals, people, or items (fomites, including equipment) on or off the index premises.

- Create index trace segments onto and off of the premises to other traced premises.

- Add one or more distinct movements to each trace to reflect the dates on which the animals or items moved between premises.

- Load one or more individual animals, groups of animals, or items that are associated to each movement.

- Attach supporting documentation for each trace to the trace document, and prepare it for transfer.

To create a placeholder trace using information known about an animal or item of interest, take the following steps:

- Create placeholder trace segments onto or off of the premises to other traced premises if movement records exist.

- Add one or more distinct movements to each trace to reflect the dates on which animals or items moved between premises.
- Load one or more individual animals, groups of animals, or items that are associated to each movement.
- Attach supporting documentation for each trace to the trace document and prepare it for transfer.

The system automatically moves traces for transfer to a queue and notifications can be sent to the receiving party. Once a trace has been transferred to a traced premises, EMRS allows you to document and status the disposition of each animal, animal group, or item on the traced premises so if animals are located they can be accounted for based on individual ID or groups associated to the traces.

This ultimately allows you to determine how many of the total animals, groups, or items that are being traced have been located, or accounted for, in the entire tracing process.

Also, see Attachment 5.D for information on trace concepts and EMRS.

5.10.2 Recalling Animals and Animal Products from Trade Destinations

Typically, the destination country representative refuses to accept the animals or products, which are returned to the United States. FAD response officials consult with APHIS port officials to determine whether the livestock, poultry, or products can be returned to the owner without undue risk or if the livestock, poultry, or products need to be destroyed immediately at the port.

5.10.3 Epidemiological Response Procedures

Draft case definitions typically exist prior to an incident. Epidemiologists at the national level review these case definitions within 24 hours of the first presumptive or confirmed positive case (index case). The case definition may need to be routinely modified on the basis of additional information or the changing needs of the eradication effort.

Within 96 hours of identifying the index case, the nature of the outbreak is characterized, risk factors identified, and mitigation strategies developed. Within 6 hours of identifying a potential IP or CP through tracing activities, premises classification and priority of investigation are assigned.

A stamping-out policy is likely to be implemented on IPs and possibly CP. If resources are limited, prioritizing the species to be depopulated or euthanatized may be necessary. On the basis of the epidemiology of the outbreak, premises are prioritized so that those with a high potential for active spread of FAD are depopulated first. Animals considered most likely to produce or shed FAD viruses are given priority for depopulation and disposal.

Information on new Suspect Premises may be received from a variety of sources, including a public hotline, field results, and epidemiological field visits. The Tactical Epidemiology Group does the following:

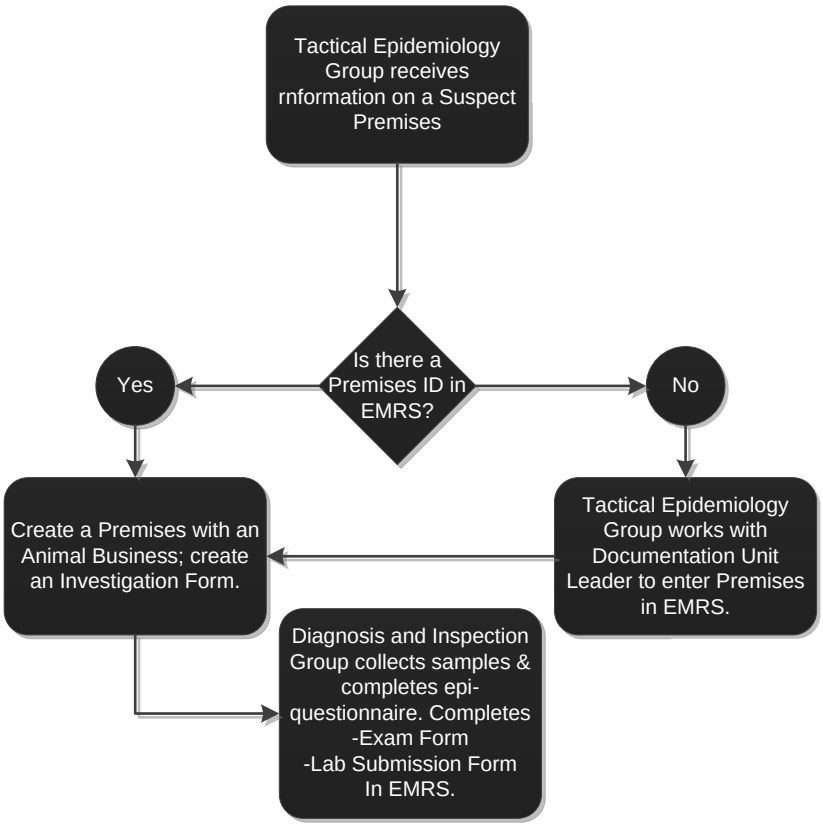
- Works with the Documentation Unit Leader to assign a premises identification (ID) number, which requires a street address.
  - Using a full text search in EMRS on names, partial names, or address numbers (using * as a wild card), determines whether each address identified has a premises ID.
  - If no ID is located, ensures that the Documentation Unit Leader enters the new premises into EMRS.
- After a Premises is created in EMRS with an Animal Business, an Investigation Form needs to be created (if an FAD investigation).

The Diagnosis and Inspection Group then collects samples and completes an epidemiological questionnaire on the new SP (Attachment 5.A, 5.B, and 5.C). The Diagnosis and Inspection Group will ensure that the following are completed

- Exam Form
- Laboratory Submission Form.

Figure 5-3 shows actions to be taken upon a report of a new SP.

Figure 5-3. Flowchart for Assigning Premises ID and Tasking an FAD Investigation During an FAD Incident



All Suspect Premises that undergo diagnostic sampling receive a quarantine notice, if one does not already exist. Quarantines are in effect until they are released according to specific release requirements.

Samples (swabs/tissues/probing/serum) will be couriered or hand-delivered to the designated laboratory. Results from these samples will be faxed or delivered electronically, as appropriate, to the DRO of the Disease Reporting Cell. Positive isolation of a virus and characterization of the isolate, as well as all other confirmatory diagnostics, must be performed at the National Veterinary Services Laboratories. The case definition for an IP will be developed by the Center for Epidemiology and Animal Health of the Science, Technology, and Analysis Services in accordance with the current FAD-specific case definition and specific characteristics of the outbreak.

Negative test results do not mean a herd or flock is free of infection. A statistical sample of animals from a larger group is tested and such a sample cannot ensure 100 percent freedom from infection; also, a virus cycle may not be shedding at the time of sampling. However, diagnostic testing helps epidemiologists locate infection and gives the opportunity for the physical examination of animals.

The DRO, often in consultation with the Epidemiology Cell, evaluates the significance of laboratory findings and declares IP on the basis of the current case definition of the FAD.

CP are determined by epidemiologists (on the basis of information from the Disease Surveillance Branch, Diagnosis and Inspection Group, and/or field information). Epidemiologists write a request for CP classification and present it to the DRO. (The request is addressed to the DRO and bears the epidemiologist's name.) The request identifies the premises, states the link in a simple sentence or two, and documents the justification for the classification. Epidemiologists focus on how the CP is placed at risk relative to the IP. Generally, requests consist of a paragraph, but a simple diagram and comprehensive documentation is ideal. The DRO verifies the accuracy of the information and ensures the Premises is re-classified in EMRS.

Epidemiologists write a justification for depopulating CPs on the basis of actual epidemiological links. The DRO makes the final decision on depopulation. Epidemiologists must establish a justifiable epidemiological link of risk to merit depopulation. On a practical level, this consists of feasible means of contact that may involve fence line contact, presence of free-ranging livestock and poultry or wildlife, heavy rodent infestation between premises, human traffic, animal movements between premises, employees with susceptible livestock or poultry at home, or other premises owned or frequented by an owner.

Epidemiologists give the DRO a copy of the CP justification and make a manila folder with the premises ID number on the tab (written with a permanent marker) and address on the front. The DRO prints the investigation summary with the CP classification made and provides that in the folder to the Operations Section. As much of this process should be conducted electronically in EMRS as possible.

The DRO tasks the Operations Section with the depopulation of IP and CP. Appraisal, depopulation, disposal, and cleaning and disinfection (C&D) all are undertaken by the Operations Section. Only the DRO and appropriate designees can classify premises and make the necessary entries in EMRS.

Depopulation or C&D crews may find previously unidentified CP and potential IP when they are at a known IP. Crews can call for premises ID if they see obvious CP or sick livestock or poultry, so they can be handled while they are in the vicinity. Epidemiologists may travel to the area with these crews if the situation needs further investigation.

For a contiguous area with numerous IP, all livestock or poultry in the area may be designated as one herd or flock, respectively, classified as a CP or an IP, and depopulated. In consultation with officials, the epidemiologist determines when this is necessary and delineates the dimensions of the "herd" or "flock." The Incident Commander must approve the designation of a neighborhood herd or flock for depopulation.

Investigative and Enforcement Services (compliance officers), police escorts, and warrants are available when faced with premises with uncooperative owners, quarantine violators, or in dangerous neighborhoods.

The DRO or designee monitors CP and adjusts the status of these premises in EMRS as follows:

- For CP, if test results from depopulation efforts were negative and C&D of the premises was completed, the DRO changes their status to negative (by inserting an end date for the CP status and entering a start date for the negative status);
- For CP not tested, if C&D was completed, the DRO changes their status to undetermined;
- For CP, if C&D was completed, the DRO changes their status to undetermined if no additional testing was done. If environmental swabs, sentinel animals, or testing of repopulated livestock or poultry was done on the premises and test results were negative, the DRO changes their status negative.

Epidemiologists work with the GIS Cell to develop maps which illustrate the geographic distribution of disease.

Quarantines associated with diagnostic visits to premises where disease is not found can be released according to the appropriate protocol.

5.10.3.1 Sentinel Animals

After a specified number of days has passed after C&D (based on the incubation period of the agent in question), sentinel animals may be placed on an IP. Sentinel animals may or may not be used in an incident, depending on the species and FAD in question.

In order to use sentinel animals, diagnostics must be completed in the IZ and there must not have been disease activity in the Control Area for a specified period of time (again, defined by the incubation period of the agent). The epidemiologist writes a summary of the diagnostic testing required for the sentinel animals, if sentinel animals are going to be used.

5.10.3.2 Epidemiological Investigation Report

An epidemiological investigation report provides information on the outbreak such as the

- origin of the FAD outbreak,

- total number of animals confirmed positive for the FAD,
- total number of States with confirmed FAD outbreaks, and
- tracing information.

These reports are generated and updated daily by the Tactical Epidemiology Group and are sent to the Situation Unit for review. Attachment 5.E contains a sample report.

5.10.3.3 Establishing Incident Epidemiological Priorities

The Epidemiology Cell establishes and tracks epidemiological priorities for the FAD incident. It generates a report that lists priorities by category, such as tracing and diagnostic testing, and periodically updates priorities as the situation and requirements change. The Cell distributes the report to the Planning Section Chief, Situation Unit Leader, and Tactical Epidemiology Group.

5.10.3.4 Handling Forms

The electronic records in EMRS are organized so that a premises is associated with an investigation. Nested within are electronic "forms" that represent each of the hardcopy forms and control actions. The Documentation Unit enters all information as soon as it is obtained, but it may take 24 hours or more before new information is available on an epidemiologist's computer. However, information should be entered as soon as possible to ensure accurate information.

All response team personnel place originals into the permanent files. Files are not kept in personal folders.

Routine users will make any corrections to records as necessary; however unless designated to do so in EMRS, records typically should be modified in EMRS by submitting a data correction form rather than modifying EMRS directly. In outbreak situations, this data correction request can be done electronically.

5.10.3.4.1 Survey Form

The Survey Form (one page) has contact information, animal information, and health commentary (generally from surveillance field teams). Anyone who learns of new premises with animals can complete this form. The minimum requirement for completing this form is an address. The survey form is used by the Documentation Unit to create a new Investigation on the premises. Other information on the survey form may create a Herd Exam.

5.10.3.4.2 Hotline Survey Form

The Hotline Survey Form (one page) is completed by veterinarians staffing the hotline and brought to the epidemiologist responsible for a given area or region. After receiving this form, an individual responsible for data entry should enter all contacts into the Initial Contact Form in EMRS.

These Initial Contact Forms will be routed to the Epidemiology Section for review. These reports will be reviewed, evaluated, and converted to an Investigation (or closed) depending on the merits of the report.

5.10.3.4.3 Epidemiology Form

The Epidemiology Form (multipage) has in-depth information obtained at diagnostics visits. The original goes to the Documentation Unit to file in official files; a copy is delivered to epidemiologists. Generally, samples have been submitted once an epidemiologist encounters this form.

5.10.3.4.4 Herd Exam Form

The Herd Exam Form is similar to the Epidemiology Form but is structured for straight-across data entry into an electronic version in EMRS. The entries are structured for analytical usefulness of the form. The Documentation Group creates an electronic Herd Exam Form with this information. Using the reason field in EMRS, assign herd exam forms to verify whether surveillance and diagnostics completed their assignments. Herd Exams are used to record all visits to premises where animals are examined or an examination is attempted. The Herd Exam Form is completed for every premises visit to record the status the visit, any and all findings associated with animals examined, or reasons animals were not examined.

The Data Entry Specialist creates the initial Herd Exam either after completion of a survey to schedule the first visit or (if a survey and visit are conducted together) when the diagnostician returns from the field with the appropriate documentation. In situations where multiple visits are to be schedule in series the Data Entry Specialist should create the next "pending" Herd Exam each time a subsequent herd exam is completed.

5.10.3.4.5 Quarantine Form

The Quarantine Form is an official state document. The Disease Surveillance Branch or Diagnosis and Inspection Group issue quarantines to isolate animals.

5.10.3.4.6 Special Concerns Form

The Special Concerns Form is an orange paper that alerts epidemiologists about problem situations. Check "see epidemiologist" for any premises that present a problem.

5.10.3.4.7 Map Request Form

The GIS Cell obtains the Map Request Form. Epidemiology section maps are also available for entire epidemiological areas. Provide the premises ID of the IP or multiple IPs. Always request a list of premises selected in the Buffer Zone. Epidemiologists receive maps within about a day. The Diagnosis and Inspection Group, Disease Surveillance Branch, and Disposal Group all request three copies of maps. Two copies go to the field, and one stays in the section so the section leader can keep track of progress.

5.10.3.4.8 Data Correction Form

Complete the data correction form to correct EMRS.

5.10.3.4.9 Urgent Premises ID Request Form

The Urgent Premises ID Request Form is for the basic information required to get a premises ID immediately. Make a copy of this form, take it to the Documentation Unit, and wait for a number

assignment. Write this number assignment on your copy of the form and report the following to the Diagnosis and Inspection Group:

- Animals showing clinical signs of the disease of concern.
- Animals that have had contact with diseased animals.
- Animals susceptible to the disease of concern.

5.10.3.5 Determine Premises Status

1. Enter IP and CP classifications before tasking disease control activities.
2. Reclassify CP as IP if they have clinical signs and compatible lesions or virus isolation.
3. Update the case definition of IP classified on the basis of clinical signs and compatible lesions if they are positive on virus isolation.
    a. Make a folder. Write the address, classification, and premises ID number on it.
    b. Print an investigation summary.
    c. Deliver the investigation summary to the Operations Section.
4. In EMRS, create a premises status on an investigation. Click on “Invest Follow-ups” and “Create a Prem Status”.
5. EMRS offers the appraisal, euthanasia and disposal, and C&D forms in the dialog provided in 4.
6. When depopulated and C&D is completed, the IP status will be closed and reverted to “undetermined” unless the laboratory results are negative.

5.11 Modeling and Assessment Tools

5.11.1 Epidemiological Models

Epidemiological models are one of several types of tools that may be used to prepare emergency responders for disease outbreaks, demonstrate to policy makers the potential scope and consequences of an animal disease outbreak, design surveillance and control programs, compare disease control strategies, and estimate the resources needed in the event of an FAD outbreak.

With epidemiological models, users can do the following:

- Examine the possible influence of enhanced surveillance on the magnitude of a simulated outbreak.
- Estimate the number of vaccine doses needed in an FAD outbreak.
- Illustrate the consequences associated with differing probabilities of detection and time to detection.
- Identify areas for targeted preparedness and surveillance activities.
- Provide realistic scenarios for planning and preparedness exercises.
- Evaluate proposed disease control strategies, plans, and policies.

- Assess the potential economic impacts of disease and associated control measures.
- Estimate consequences as part of the risk analysis process.
- Estimate resources needed in an outbreak.
- Assist in the development of animal disease emergency preparedness and response plans.
- Create complex and novel scenarios for use in policy research.
- Communicate and teach principles of epidemiology and disease control.

Various epidemiological models are available to epidemiologists that can simulate FAD spread and control. Such models include Multiscale Epidemiologic Simulation and Analysis and the North American Animal Disease Spread Model. These models and their capabilities are described in further detail in the Overview of Modeling and Assessment Tools SOP.

5.11.1.1 Geographical Information Systems

GIS plays an important role in animal disease control during outbreaks by supporting the Incident Command in visualizing and identifying movement control zones and planning control measures. GIS capabilities can also help to accurately trace disease spread. Attachment 5.F describes the procedures for using a standard global positioning system (GPS) receiver.

5.12 Training

Appropriate training is an important part of responding to an FAD outbreak. USDA AgLearn provides EMRS-specific and epidemiology training. The AgLearn website URL is http://www.aglearn.usda.gov/. You must be a registered user to access the site. Attachment 5.G contains a list of current training courses available specifically for epidemiologists and responders interested in the use of GPS methods.

Attachment 5.A FMD Epidemiology Questionnaire

This attachment contains a sample epidemiological questionnaire that could be employed in the event of an FMD outbreak.

This epidemiological questionnaire is only an example template. Based on the epidemiological situation of the actual outbreak, it may be appropriate to add other questions regarding other risk factors which may play a role in transmission. Such decisions will be made by Incident Command during an outbreak.

Sample FMD Epidemiology Questionnaire

Date: _____

Business/farm name: _____

Primary contact: _____

Business address: _____

Business telephone number: _____

Cell telephone number: _____

Fax number: _____

Home telephone number: _____

E-mail address: _____

Secondary contact: _____

Business address: _____

Business telephone number: _____

Cell telephone number: _____

Fax number: _____

Home telephone number: _____

E-mail address: _____

Farm address (911 and Animal Location): _____

City: _____ Zip code: _____

County: _____ Township: _____

Range: _____ Section: _____

GPS coordinates (decimal degrees): _____

Premises identification number: _____

The purpose of this epidemiological questionnaire is to help the Incident Command determine premises designations: Contact Premises, At-Risk Premises, or Monitored Premises. Additional information will be considered (for example, diagnostic tests) for movement permits.

A. General Information

1. Species on premises: _____
2. Type of premises (commercial or non-commercial): _____
3. Have you observed feral or wild animals on or near the premises?

   ☐ Yes ☐ No ☐ Don't know

4. Are there backyard premises with susceptible livestock nearby?

   ☐ Yes ☐ No ☐ Don't know

5. Do you have multiple, non-contiguous premises you travel and work between (yes/no)?

   ☐ Yes ☐ No

6. Are there contiguous premises with susceptible livestock (not owned by you)?

   ☐ Yes ☐ No

B. Animal Population on Premises

7. Please identify the animals on the premises.

Species	Males > 1 year	Females > 1 year	< 1 year
a) Swine			
b) Sheep/Goats			
c) Cattle			
d) Other Susceptible Species			

e) Non-susceptible species (type and number): _____

_____

C. Employee Risk Factors

8. Do any of your personnel work at other premises with susceptible animals or have they visited other premises, feedlots, dairy, processing plants, or livestock slaughtering facilities within the past 28 days? ☐ Yes ☐ No

   a) If Yes, what premises? _____

9. Do any of your workers live with someone who works at another livestock premises, feedlot, dairy, processing plant, slaughter facility or rendering plant? ☐ Yes ☐ No

10. Have you hired new personnel during the past 28 days? ☐ Yes ☐ No

    a) If Yes, did they work for another livestock premises before you hired them? ☐ Yes ☐ No

b) If yes, where did they work prior to coming to your premises? _____

11. Has an employee from this premises visited a slaughter/rendering facility within the past 28 days? ☐ Yes ☐ No

    a) If Yes, what facility?_____

    b) If yes, did the person clean and disinfect his vehicle? ☐ Yes ☐ No

    c) If Yes, did the person change outer clothes? ☐ Yes ☐ No

    d) If Yes, did the person disinfect footwear or change into footwear assigned to this premises upon return? ☐ Yes ☐ No

12. Have any of your employees been overseas? ☐ Yes ☐ No

    a) If Yes, where? _____

D. **Biosecurity Risk Factors**

13. Have wild ruminants been seen on the property in the last 28 days? ☐ Yes ☐ No

14. Have rodents, dogs, or cats been observed in livestock housing in the past 28 days? ☐ Yes ☐ No

15. Which of the following **best** describes this farm's usual carcass (normal mortality) disposal method?
    - ☐ Rendering
    - ☐ Composting on site
    - ☐ Burial on site
    - ☐ Incineration on site
    - ☐ Other (specify: _____)

16. Do you dispose of livestock for other farms? ☐ Yes ☐ No

17. Have you maintained all requirements since your last regular biosecurity audit? ☐ Yes ☐ No

    a) If no, what requirements have not been met?

18. What additional biosecurity measures have been implemented? (For example, once the premises has been determined to be within a Control Area, all vehicles, including feed trucks, must now be cleaned and disinfected prior to entry to and exit from the premises.)

E. **Trace Back Information**

In the last 28 days, did the following movements **onto** the farm occur? If yes, please provide as much accurate information as possible for each unique source. You can add more rows by 'right clicking' in the box and selecting "Insert→Insert Rows Below".

19. **Susceptible Animals** ☐ Yes ☐ Don't know ☐ No

If yes,

a. What species? _____

b. How many animals? _____

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Animals tested for FMD prior to movement (Yes/No)	Entered in visitor log (Yes/No)

20. **Milk Products or By-Products** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Milk or product tested for FMD prior to movement (Yes/No)	Entered in visitor log (Yes/No)

21. **Feed trucks** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

22. **Fresh litter/bedding** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

23. **Manure** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

24. **Hoof Trimmers** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

25. **Mortality Pick Up/Renderer** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

a) Did the driver leave the vehicle while on this premises? ☐ Yes ☐ Don't know ☐ No

b) If Yes, what area of the premises did he enter? _____

c) Was driver required to wear outer clothes and foot wear provided by this premises?

☐ Yes ☐ Don't know ☐ No

26. **Company vet/service tech** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

27. **Non-company vet/consultant** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

28. **Construction or service person (e.g., gas, plumbing, pest control)** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

29. **Customer/buyer/dealer** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

30. **Other producer** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

31. **Non-business visitor (friend/neighbor)** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

F. Trace Forward Information

In the last 28 days, did the following movements **off** the farm occur? If yes, please provide as much accurate information as possible for each unique source. You can add more rows by 'right clicking' in the box and selecting "Insert→Insert Rows Below".

32. **Susceptible Animals** ☐ Yes ☐ Don't know ☐ No

If yes,

a) What species? _____

b) How many animals? _____

Destination/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Animals tested for FMD prior to movement (Yes/No)	Entered in visitor log (Yes/No)

33. **Milk Products or By-Products** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Milk or product tested for FMD prior to movement (Yes/No)	Entered in visitor log (Yes/No)

34. **Feed trucks** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

35. **Fresh litter/bedding** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

36. **Manure** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

37. **Hoof Trimmers** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

38. **Mortality Pick Up/Renderer** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

a) Did the driver leave the vehicle while on this premises? ☐ Yes ☐ Don't know ☐ No

b) If yes, what area of the premises did he enter? _____

c) Was driver required to wear outer clothes and foot wear provided by this premises?

☐ Yes ☐ Don't know ☐ No

39. **Company vet/service tech** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

40. **Non-company vet/consultant** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

41. **Construction or service person (e.g., gas, plumbing, pest control)** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

42. **Customer/buyer/dealer** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

43. **Other producer** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

44. **Non-business visitor (friend/neighbor)** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter livestock areas (Yes/No)	Entered in visitor log (Yes/No)

Attachment 5.B HPAI Epidemiology Questionnaire

This attachment contains a sample epidemiological questionnaire that could be employed in the event of an HPAI outbreak.

This epidemiological questionnaire is only an example template. Based on the epidemiological situation of the actual outbreak, it may be appropriate to add other questions regarding other risk factors which may play a role in transmission. Such decisions will be made by Incident Command during an outbreak. This specific questionnaire was designed with the Secure Egg Supply in mind, and may not be appropriate for all HPAI outbreaks.

HPAI Epidemiology Questionnaire

Date: _____

Business/farm name: _____

Primary contact: _____

Business address: _____

Business telephone number: _____

Cell telephone number: _____

Fax number: _____

Home telephone number: _____

E-mail address: _____

Secondary contact: _____

Business address: _____

Business telephone number: _____

Cell telephone number: _____

Fax number: _____

Home telephone number: _____

E-mail address: _____

Farm mailing address (911 and Animal Location): _____

City: _____ Zip code: _____

County: _____ Township: _____

Range: _____ Section: _____

GPS coordinates (decimal degrees): _____

Premises identification number: _____

Number of chickens on premises: _____

The purpose of this epidemiological questionnaire is to help the Incident Command determine premises designations: Contact Premises, At-Risk Premises, or Monitored Premises. Additional information will be considered (for example, diagnostic tests) for movement permits.

A. **Employee Risk Factors**

1. Do any of your personnel work at other poultry premises or have they visited other poultry premises, hatcheries, processing plants, or poultry slaughtering facilities within the past 21 days? ☐ Yes ☐ No

   a) If Yes, what premises?
   _____

2. Do any of your workers live with someone who works at another poultry farm, hatchery, processing plant, slaughter facility or rendering plant? ☐ Yes ☐ No

3. Have you hired new personnel during the past 21 days? ☐ Yes ☐ No

   a) If Yes, did they work for another poultry premises before you hired them? ☐ Yes ☐ No

   b) If Yes, where did they work prior to coming to your premises?
   _____

4. Has an employee from this premises visited a rendering plant within the past 21 days? ☐ Yes ☐ No

   a) If Yes, what plant? _____

   b) If Yes, did the person clean and disinfect his/her vehicle before returning to your premises? ☐ Yes ☐ No

   c) If Yes, did the person change outer clothes before returning to your premises? ☐ Yes ☐ No

   d) If Yes, did the person disinfect footwear or change into footwear dedicated to this premises upon return? ☐ Yes ☐ No

B. **Biosecurity Risk Factors**

5. Are you enrolled in the FAST Eggs Plan? ☐ Yes ☐ No

   a) If Yes, date of last audit_____

6. Have migratory waterfowl been seen on the ground or water within 0.62m (1 km) of your buildings containing chickens in the last 21 days? ☐ Yes ☐ No

   a) If Yes, please describe: _____

7. Have free flying birds been observed in the chicken houses in the past 21 days? ☐ Yes ☐ No

8. Is feed protected from exposure to feces from wild birds, waterfowl, rodents and/or wild mammals? ☐ Yes ☐ No

9. Is water protected from exposure to feces from wild birds, waterfowl, rodents and/or wild mammals? ☐ Yes ☐ No

10. Which of the following describes this farm's usual carcass (daily mortality) disposal method? (Mark ALL that apply)

☐ Rendering ☐ on-farm ☐ off -farm
☐ Composting ☐ on-farm ☐ off -farm
☐ Burial ☐ on-farm ☐ off -farm
☐ Incineration ☐ on-farm ☐ off -farm
☐ Other (specify: _____)

11. Do you dispose of dead birds from other farms? ☐ Yes ☐ No

    a) If Yes, please provide more details._____

12. Have you introduced chicks onto this farm in the last 21 days? ☐ Yes ☐ No

    a) Was the breeding flock serologically tested for avian influenza? ☐ Yes ☐ No

13. Did any birds move off this farm and then return to the farm (e.g., markets, shows, farmers' market, fair) in the past 21 days? ☐ Yes ☐ No

    a) If Yes, please describe: _____

C. **Trace Back Information**

In the last 21 days, did the following movements **ONTO** the farm occur? If yes, please provide as much accurate information as possible for each unique source. You can add more rows by 'right clicking' in the box and selecting "Insert > Insert Rows Below".

14. Eggs (e.g., sideloading) ☐ Yes ☐ No ☐ Don't know

Source/name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Personnel entered chicken house? (Yes/No)	Entered in visitor log? (Yes/No)

Additional Comments: _____

_____

_____

Movements ONTO the farm (continued)

15. Live Birds (including replacement pullets or backfilling pullets) ☐ Yes ☐ No ☐ Don't know

Source/ name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Personnel enter bird housing? (Yes/No)	Entered in visitor log? (Yes/No)	Were the chickens RRT-PCR tested for avian influenza prior to moving onto your farm? (Yes/No)

Additional Comments: _____

_____

_____

16. Feed trucks ☐ Yes ☐ No ☐ Don't know

Source/name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Personnel enter bird housing? (Yes/No)	Entered in visitor log? (Yes/No)

Additional Comments: _____

_____

_____

17. Fresh litter/bedding ☐ Yes ☐ No ☐ Don't know

Source/name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Personnel enter bird housing/ (Yes/No)	Entered in visitor log? (Yes/No)

Additional Comments: _____

_____

_____

Movements ONTO the farm (continued)

18. Personnel or equipment used to handle/haul manure and/or used litter

☐ Yes ☐ No ☐ Don't know

Source/name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Personnel enter bird housing/ (Yes/No)	Entered in visitor log? (Yes/No)

Additional Comments: _____

_____

_____

19. Catch/vaccination/beak trim crews ☐ Yes ☐ No ☐ Don't know

Source/name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Entered in visitor log? (Yes/No)

Additional Comments: _____

_____

_____

20. Off-site Renderer ☐ Yes ☐ No ☐ Don't know

Source/name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Personnel enter bird housing? (Yes/No)	Entered in visitor log? (Yes/No)

a) Did the driver leave the vehicle while on this premises? ☐ Yes ☐ No ☐ Don't know

b) If Yes, what area of the premises did he or she enter? _____

c) Was driver required to wear outer clothes and foot wear provided by this premises? ☐ Yes ☐ No ☐ Don't know

Additional Comments: _____

_____

_____

Movements ONTO the farm (continued)

21. Company veterinarian/service technician ☐ Yes ☐ No ☐ Don't know

Source/name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Personnel enter bird housing? (Yes/No)	Entered in visitor log? (Yes/No)

Additional Comments: _____

_____

_____

22. Non-company veterinarian/consultant ☐ Yes ☐ No ☐ Don't know

Source/name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Personnel enter bird housing? (Yes/No)	Entered in visitor log? (Yes/No)

Additional Comments: _____

_____

_____

23. Service personnel (e.g., construction, gas, plumbing, pest control) ☐ Yes ☐ No ☐ Don't know

Source/name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Personnel enter bird housing? (Yes/No)	Entered in visitor log? (Yes/No)

Additional Comments: _____

_____

_____

Movements ONTO the farm (continued)

24. Customer/buyer/dealer ☐ Yes ☐ No ☐ Don't know

Source/name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Personnel enter bird housing? (Yes/No)	Entered in visitor log? (Yes/No)

Additional Comments: _____

_____

_____

25. Other poultry producer ☐ Yes ☐ No ☐ Don't know

Source/name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Personnel enter bird housing? (Yes/No)	Entered in visitor log? (Yes/No)

Additional Comments: _____

_____

_____

26. Any other visitor (friend/neighbor) ☐ Yes ☐ No ☐ Don't know

Source/name	Truck and equipment C&D before entering? (Yes/No)	Truck and equipment C&D when leaving? (Yes/No)	Personnel enter bird housing? (Yes/No)	Entered in visitor log? (Yes/No)

Additional Comments: _____

_____

_____

D. **Trace Forward Information**

In the last 21 days, did the following movements **OFF** the farm occur? If yes, please provide as much accurate information as possible for each unique off-farm location. You can add more rows by 'right clicking' in the box and selecting "Insert > Insert Rows Below".

27. Eggs ☐ Yes ☐ No ☐ Don't know

Destination/ name	Truck and equipment C&D when leaving? (Yes/No)	Truck and equipment C&D before returning? (Yes/No)	Personnel enter bird housing? (Yes/No)

Additional Comments: _____

_____

_____

28. Live Birds ☐ Yes ☐ No ☐ Don't know

Off-farm location/ name	Truck and equipment C&D when leaving? (Yes/No)	Truck and equipment C&D before returning? (Yes/No)

Additional Comments: _____

_____

_____

29. Feed trucks (that haul feed originating on your premises and deliver feed to off-farm locations. This question does not refer to feed trucks that bring feed onto your premises from other off-farm locations which was previously covered in question 15). ☐ Yes ☐ No ☐ Don't know

Off-farm location/ name	Truck and equipment C&D when leaving? (Yes/No)	Truck and equipment C&D before returning? (Yes/No)	Personnel enter your bird housing? (Yes/No)

Additional Comments: _____

_____

_____

Movements OFF the farm (continued)

30. Farm personnel or equipment used to haul manure/used litter to off-farm locations.

☐ Yes ☐ No ☐ Don't know

Off-farm location/ name	Truck and equipment C&D when leaving? (Yes/No)	Truck and equipment C&D before returning? (Yes/No)	Personnel enter your bird housing? (Yes/No)

Additional Comments: _____

_____

_____

31. Farm personnel or equipment used for catch/vaccination/beak trim at off-farm locations

☐ Yes ☐ No ☐ Don't know

Off-farm location/ name	Truck and equipment C&D when leaving? (Yes/No)	Truck and equipment C&D before returning? (Yes/No)

Additional Comments: _____

_____

_____

32. Farm personnel or equipment used for off-farm carcass disposal

☐ Yes ☐ No ☐ Don't know

Off-farm location/ name	Truck and equipment C&D when leaving? (Yes/No)	Truck and equipment C&D before returning? (Yes/No)	Personnel enter your bird housing? (Yes/No)

Additional Comments: _____

_____

_____

Attachment 5.C CSF Epidemiology Questionnaire

This attachment contains a sample epidemiological questionnaire that could be employed in the event of a CSF outbreak.

This epidemiological questionnaire is only an example template. Based on the epidemiological situation of the actual outbreak, it may be appropriate to add other questions regarding other risk factors which may play a role in transmission. Such decisions will be made by Incident Command during an outbreak.

Sample CSF Epidemiology Questionnaire

Date: _____

Business/farm name: _____

Primary contact: _____

Business address: _____

Business telephone number: _____

Cell telephone number: _____

Fax number: _____

Home telephone number: _____

E-mail address: _____

Secondary contact: _____

Business address: _____

Business telephone number: _____

Cell telephone number: _____

Fax number: _____

Home telephone number: _____

E-mail address: _____

Farm address (911 and Animal Location): _____

City: _____ Zip code: _____

County: _____ Township: _____

Range: _____ Section: _____

GPS coordinates (decimal degrees): _____

Premises identification number: _____

The purpose of this epidemiological questionnaire is to help the Incident Command determine premises designations: Contact Premises, At-Risk Premises, or Monitored Premises. Additional information will be considered (for example, diagnostic tests) for movement permits.

A. General Information

1. Species on premises: _____
2. Type of premises (commercial or non-commercial): _____
3. Have you observed feral swine or wild animals on or near the premises?

   ☐ Yes ☐ No ☐ Don't know
4. Are there backyard premises with susceptible swine nearby?

   ☐ Yes ☐ No ☐ Don't know
5. Do you have multiple, non-contiguous premises you travel and work between (yes/no)?

   ☐ Yes ☐ No
6. Are there contiguous premises with susceptible swine (not owned by you)?

   ☐ Yes ☐ No

B. Animal Population on Premises

7. a) Please identify the animals on the premises.

Species	Males > 1 year	Females > 1 year	< 1 year
Swine			

   b) Non-susceptible species (type and number): _____

   _____

C. Employee Risk Factors

8. Do any of your personnel work at other premises with swine or have they visited other premises, feedlots, processing plants, or swine slaughtering facilities within the past 28 days? ☐ Yes ☐ No

   a) If Yes, what premises? _____
9. Do any of your workers live with someone who works at another swine premises, feedlot, processing plant, slaughter facility or rendering plant? ☐ Yes ☐ No
10. Have you hired new personnel during the past 28 days? ☐ Yes ☐ No

    a) If Yes, did they work for another swine premises before you hired them? ☐ Yes ☐ No

    b) If Yes, where did they work prior to coming to your premises?

    _____
11. Has an employee from this premises visited a slaughter/rendering facility within the past 28 days? ☐ Yes ☐ No

    a) If Yes, what facility?_____

b) If yes, did the person clean and disinfect his vehicle? ☐ Yes ☐ No

c) If yes, did the person change outer clothes? ☐ Yes ☐ No

d) If yes, did the person disinfect footwear or change into footwear assigned to this premises upon return? ☐ Yes ☐ No

12. Have any of your employees been overseas? ☐ Yes ☐ No

    a) If Yes, where? _____

D. **Biosecurity Risk Factors**

13. Have wild or feral swine been seen on the property in the last 28 days? ☐ Yes ☐ No

14. Have rodents, dogs, or cats been observed in swine housing in the past 28 days? ☐ Yes ☐ No

15. Which of the following **best** describes this farm's usual carcass (normal mortality) disposal method?
    - ☐ Rendering
    - ☐ Composting on site
    - ☐ Burial on site
    - ☐ Incineration on site
    - ☐ Other (specify: _____)

16. Do you dispose of swine for other farms? ☐ Yes ☐ No

17. Have you maintained all requirements since your last regular biosecurity audit? ☐ Yes ☐ No
    If no, what requirements have not been met?

18. What additional biosecurity measures have been implemented? (For example, once the premises has been determined to be within a Control Area, all vehicles, including feed trucks, must now be cleaned and disinfected prior to entry to and exit from the premises.)

E. **Trace Back Information**

In the last 28 days, did the following movements **onto** the farm occur? If yes, please provide as much accurate information as possible for each unique source. You can add more rows by 'right clicking' in the box and selecting "Insert→Insert Rows Below".

19. **Susceptible Swine** ☐ Yes ☐ Don't know ☐ No

If yes,

a. How many animals? _____

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Animals tested for CSF prior to movement (Yes/No)	Entered in visitor log (Yes/No)

20. **Pork Products or By-Products** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Pork or product tested for CSF prior to movement (Yes/No)	Entered in visitor log (Yes/No)

21. **Feed trucks** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

22. **Fresh litter/bedding** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

23. **Manure** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

24. **Hoof Trimmers** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

25. **Mortality Pick Up/Renderer** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

26. **Did the driver leave the vehicle while on this premises?** ☐ Yes ☐ Don't know ☐ No

a) If Yes, what area of the premises did he enter? _____

i. Was driver required to wear outer clothes and foot wear provided by this premises? ☐ Yes ☐ Don't know ☐ No

27. **Company vet/service tech** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

28. **Non-company vet/consultant** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

29. **Construction or service person (e.g., gas, plumbing, pest control)** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

30. **Customer/buyer/dealer** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

31. **Other producer** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

32. **Non-business visitor (friend/neighbor)** ☐ Yes ☐ Don't know ☐ No

If yes,

Source/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

F. Trace Forward Information

In the last 28 days, did the following movements **off** the farm occur? If yes, please provide as much accurate information as possible for each unique source. You can add more rows by 'right clicking' in the box and selecting "Insert→Insert Rows Below".

33. **Susceptible Swine** ☐ Yes ☐ Don't know ☐ No

If yes,

a) How many animals? _____

Destination/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Animals tested for CSF prior to movement (Yes/No)	Entered in visitor log (Yes/No)

34. **Pork Products or By-Products** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Pork or product tested for CSF prior to movement (Yes/No)	Entered in visitor log (Yes/No)

35. **Feed trucks** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

36. **Fresh litter/bedding** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

37. **Manure** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

38. **Hoof Trimmers** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

39. **Mortality Pick Up/Renderer** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

a) Did the driver leave the vehicle while on this premises? ☐ Yes ☐ Don't know ☐ No

b) If Yes,
What area of the premises did he enter? _____

c) Was driver required to wear outer clothes and foot wear provided by this premises?
☐ Yes ☐ Don't know ☐ No

40. **Company vet/service tech** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

41. **Non-company vet/consultant** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

42. **Construction or service person (e.g., gas, plumbing, pest control)**
☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

43. **Customer/buyer/dealer** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

44. **Other producer** ☐ Yes ☐ Don't know ☐ No

If yes,

Destination/ name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

45. **Non-business visitor (friend/neighbor)** ☐ Yes ☐ Don't know ☐ No

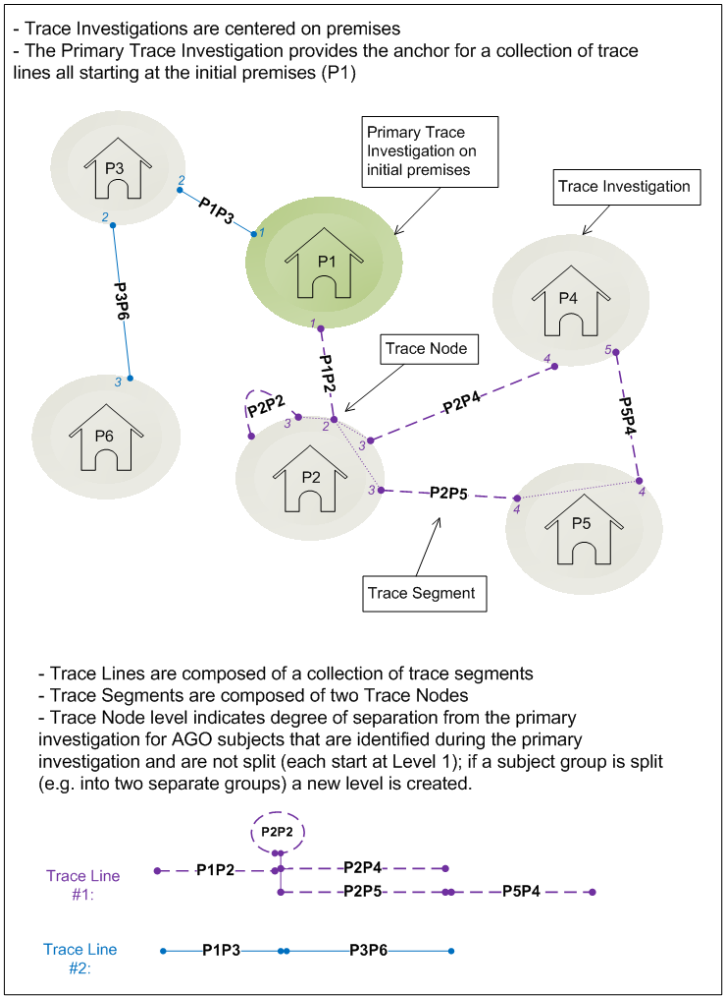
If yes,

Destination/name; date	Truck and equipment C&D before entering (Yes/No)	Truck and equipment C&D when leaving (Yes/No)	Personnel enter swine areas (Yes/No)	Entered in visitor log (Yes/No)

Attachment 5.D Trace Concepts and EMRS[1]

In EMRS, a trace is a series of linked trace records documenting the movement of the animal/group/object (AGO) and the assessment of exposure risk.

Trace Terminology



Tracing Activity Related Tasks

Trace activity related tasks for Index and Traced Premises are as follows:

1. Index Premises
    a. Confirm need to trace
    b. Start primary trace Investigation Record
    c. Visit Initial Premises

[1]Please note, while the principles in this Attachment still apply, this Attachment is in the process of being updated to reflect the new EMRS 2.0. PowerPoint Presentation, Fred Bourgeois, Mark Schoenbaum, and VS Business Model.

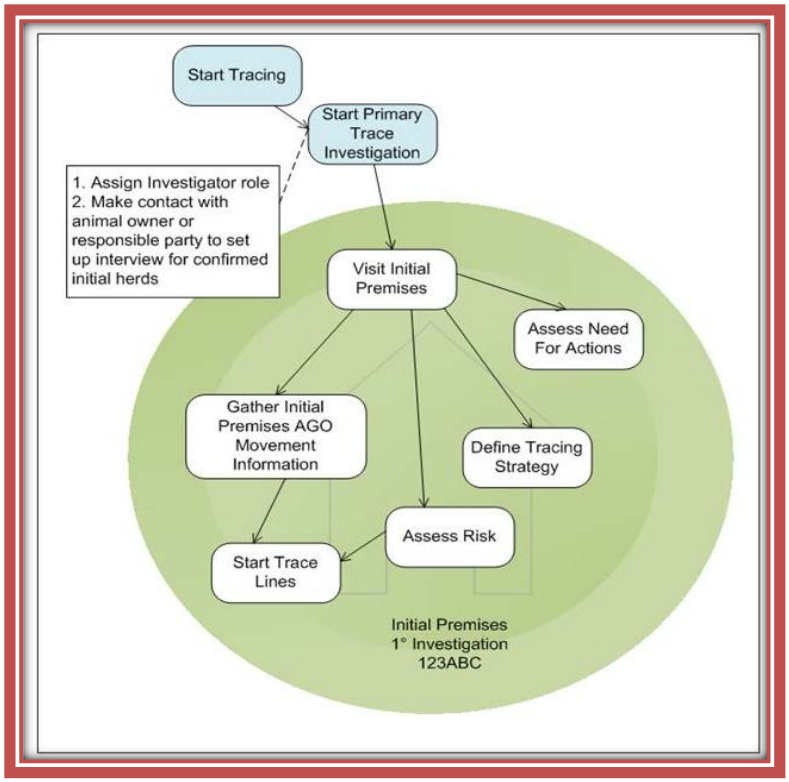
d. Gather initial premises AGO movement
e. Assess exposure
f. Assess need for actions
g. Define tracing strategy
h. Create index traces
i. Prepare trace segments for transfer
j. Notify trace segment recipient authorities
k. Document control efforts
l. Close index investigation.

2. Traced Premises
   a. Create trace Investigation Record
   b. Accept trace segment transfer
   c. Visit premises
   d. Gather AGO movement information
   e. Split group trace
   f. Extend trace
   g. Prepare trace segment for transfer
   h. Notify trace segment recipient authorities
   i. Close trace node
   j. Document mitigation efforts
   k. Close trace investigation record.

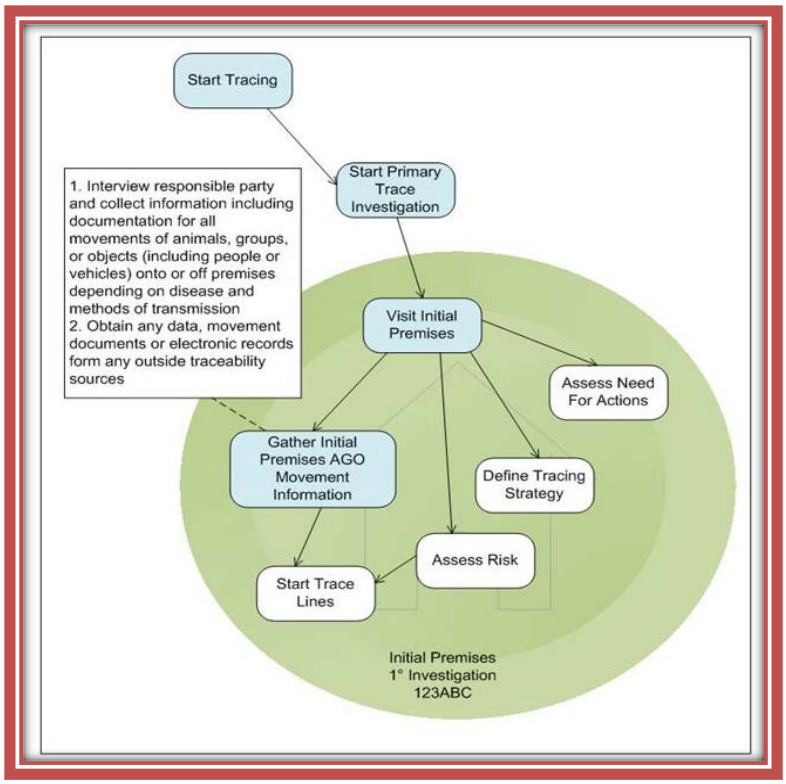
Tracing Work Flow Steps—Infected Premises

The following depicts the tracing work flow steps for IP:

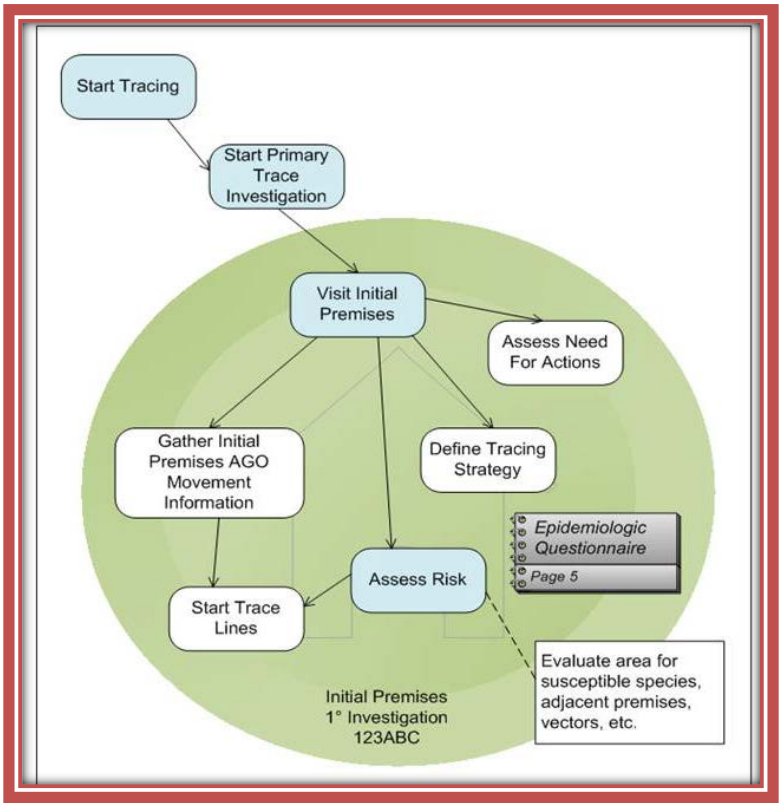
Step 1: Start Investigation



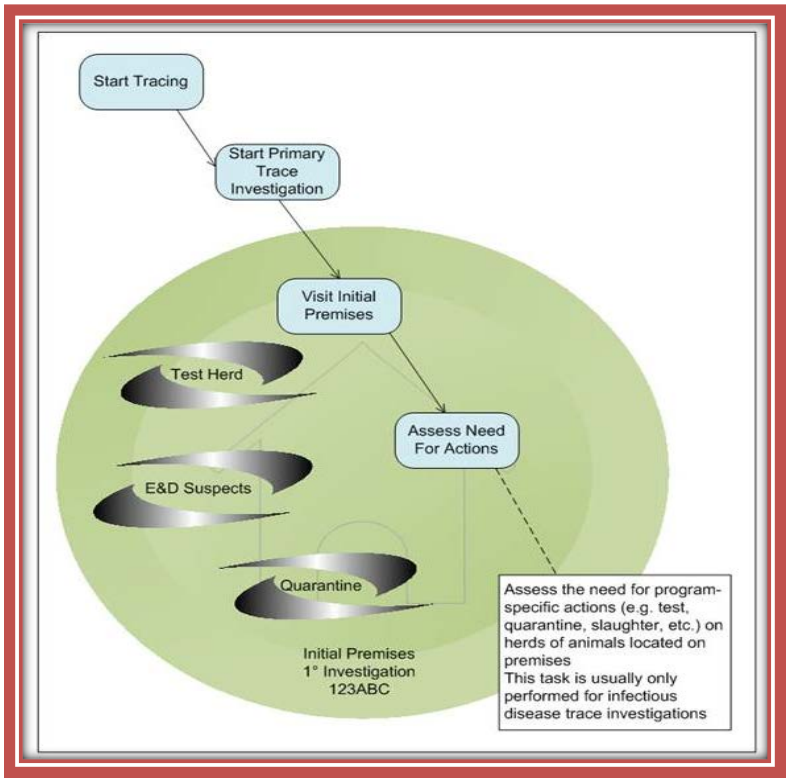
Step 2: Visit Premises/Gather AGO Movement Information



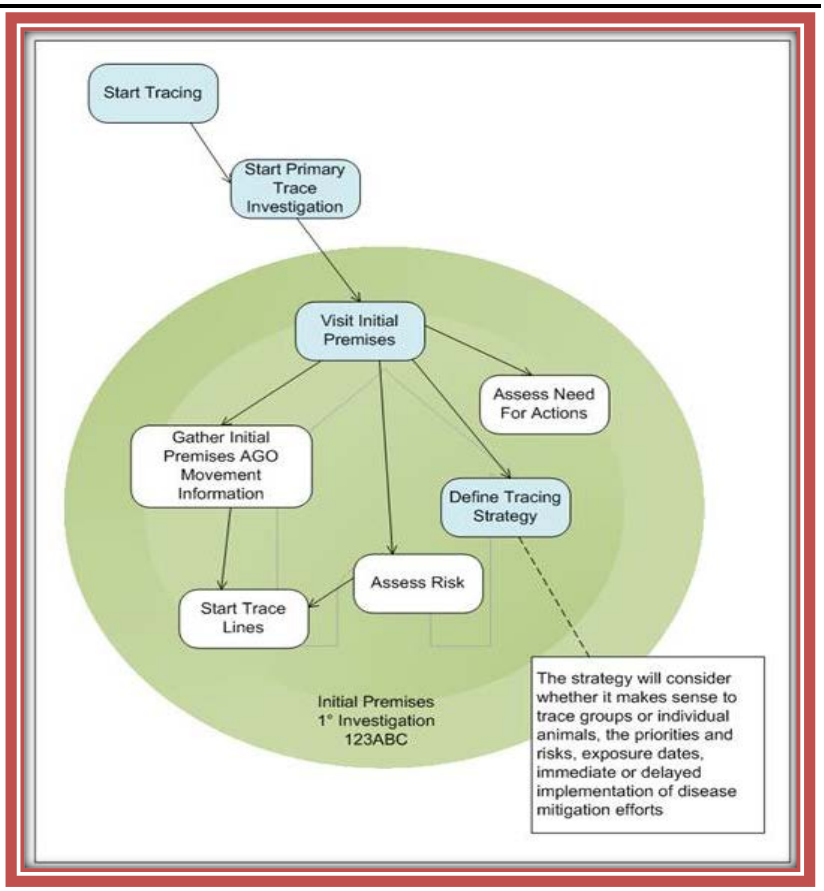
Step 3: Assess risk



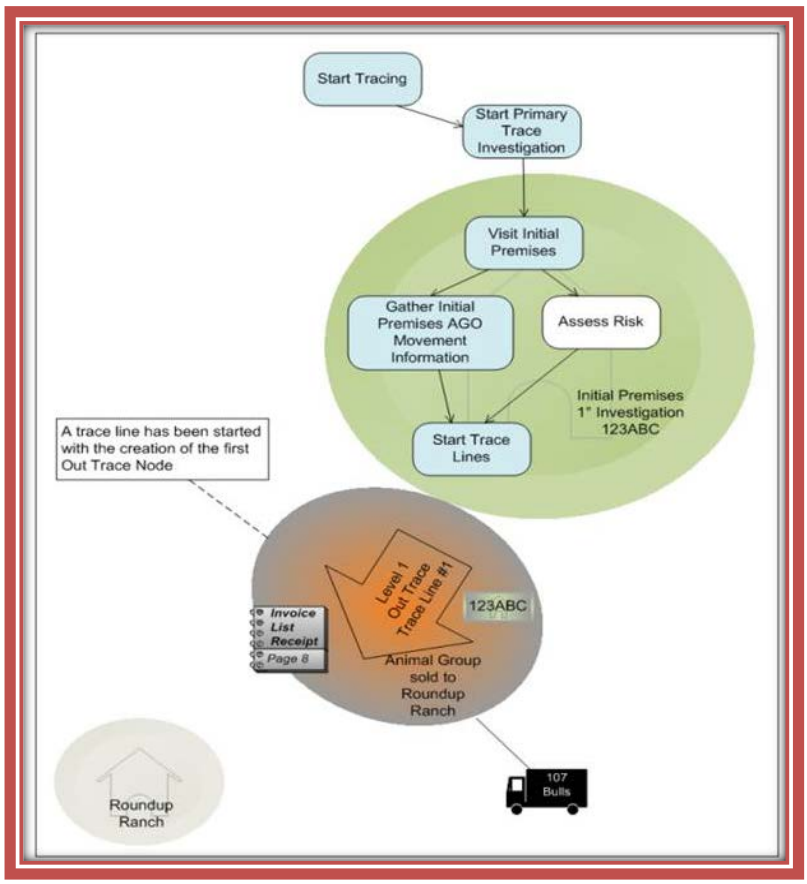
Step 3a: Assess Need for Mitigation Actions



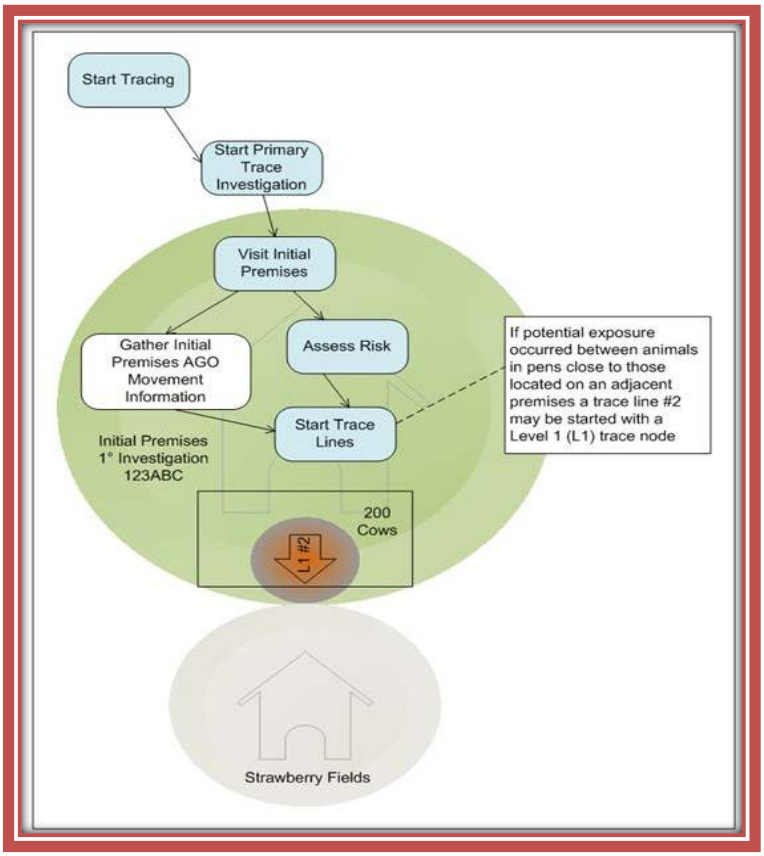
Step 4: Define a tracing strategy based on risk



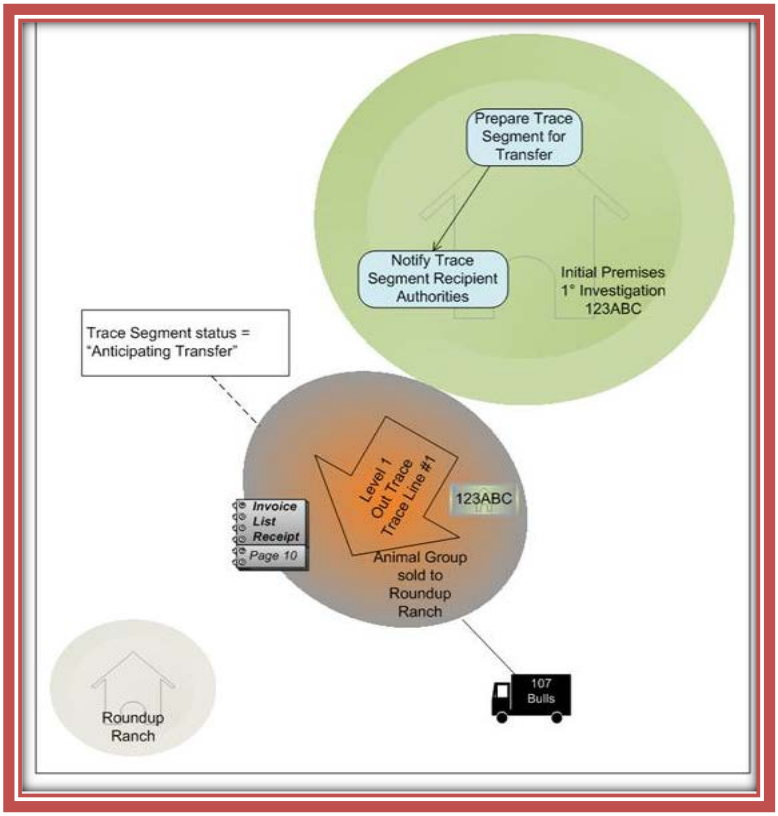
Step 5: Create index I/O traces



Step 5a: Create index adjacent traces

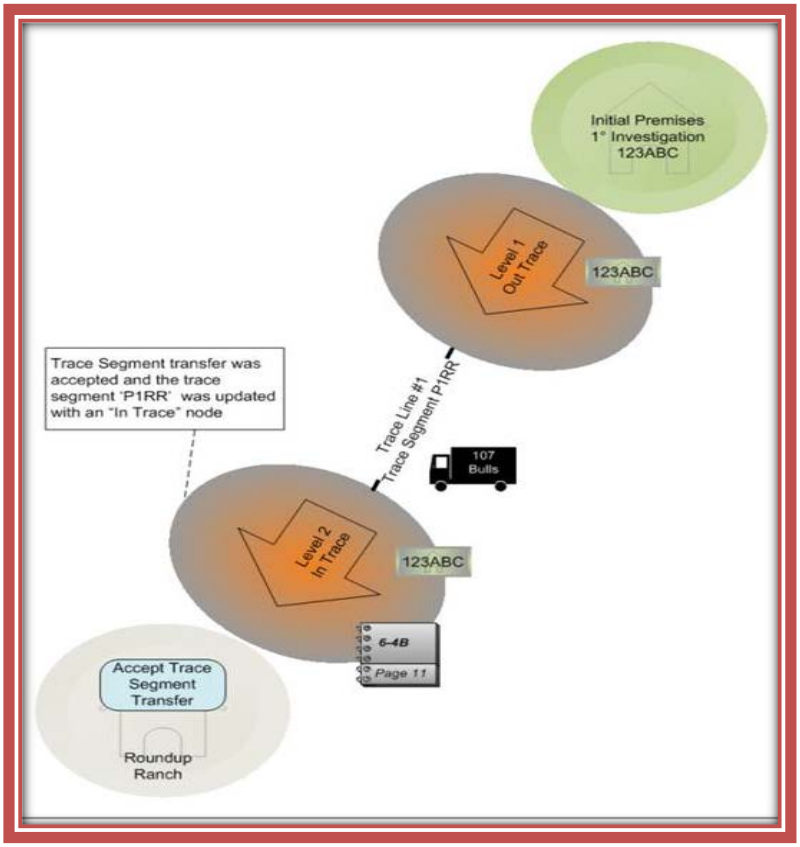


Step 6: Prepare for transfer

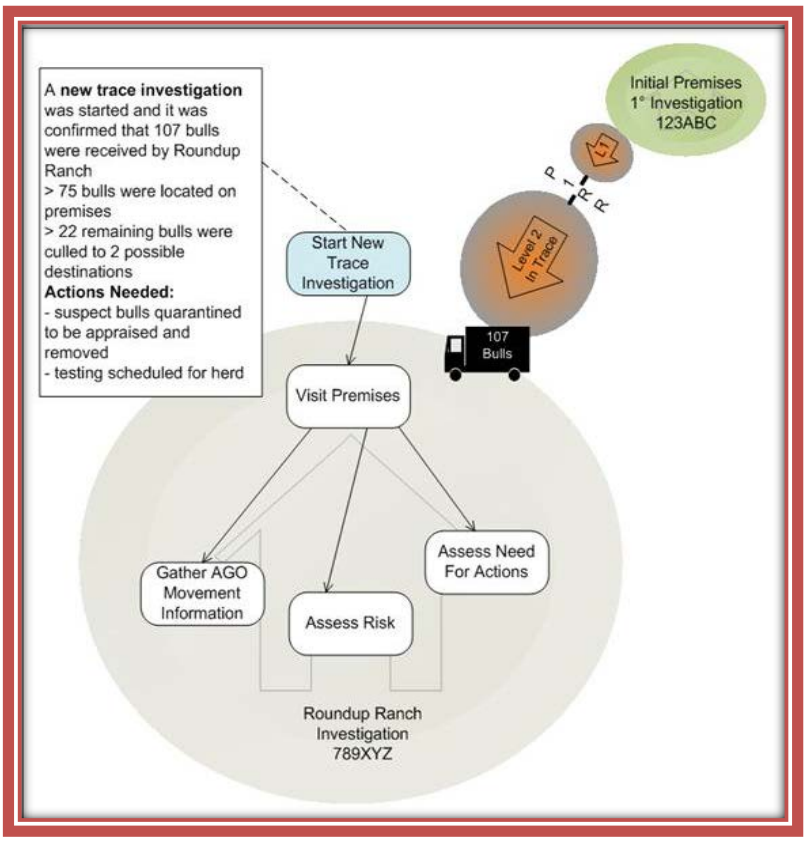


Trace Premises

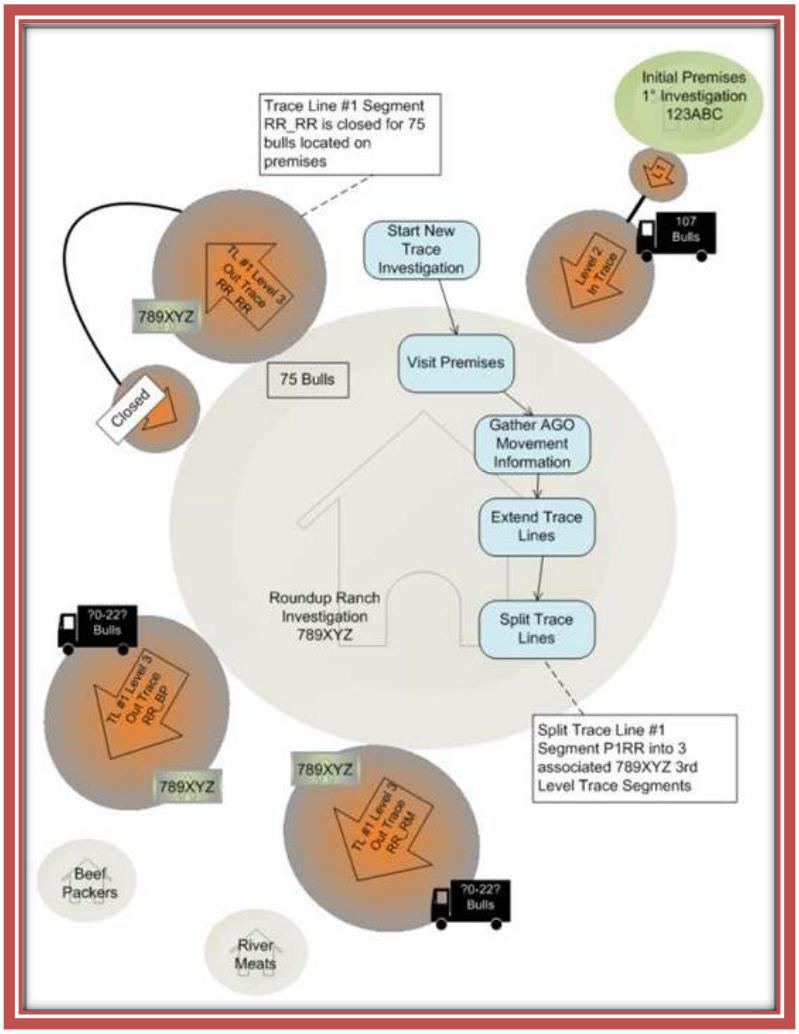
Step 1: Start investigation/accept transfer



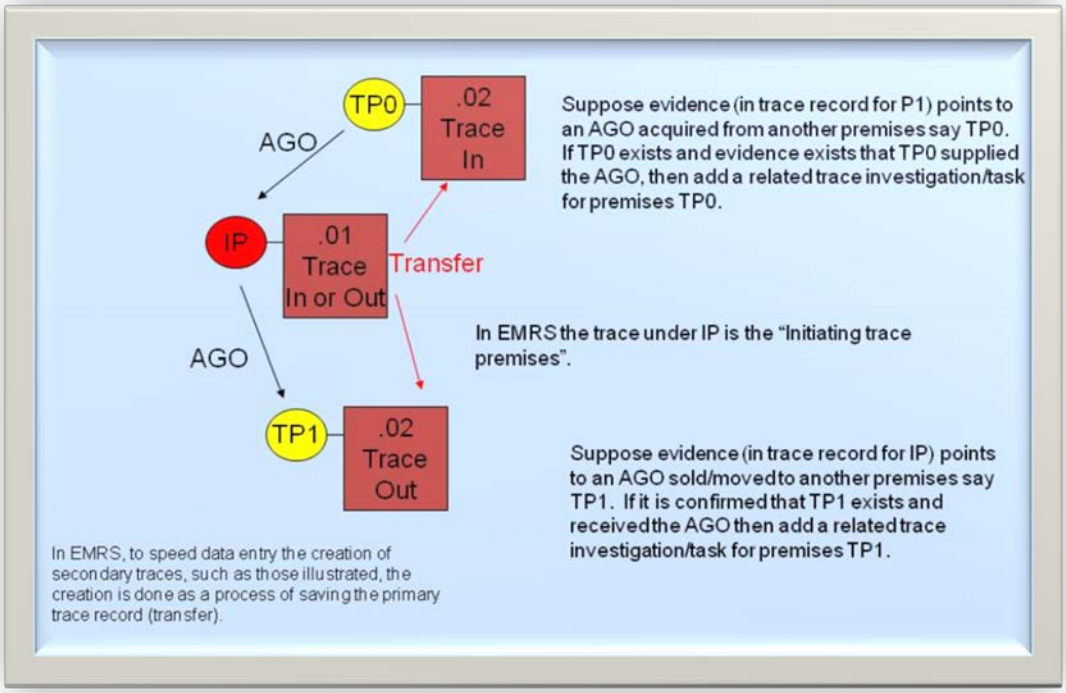
Step 2: Visit premises



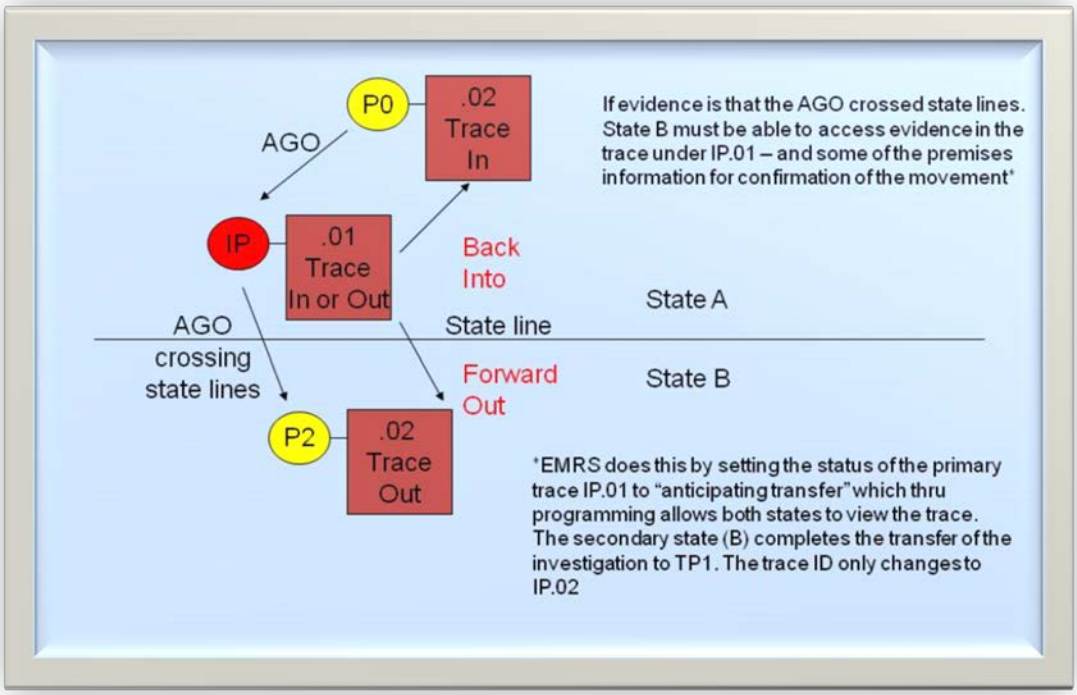
Steps 3-6: Tracing work flow and steps



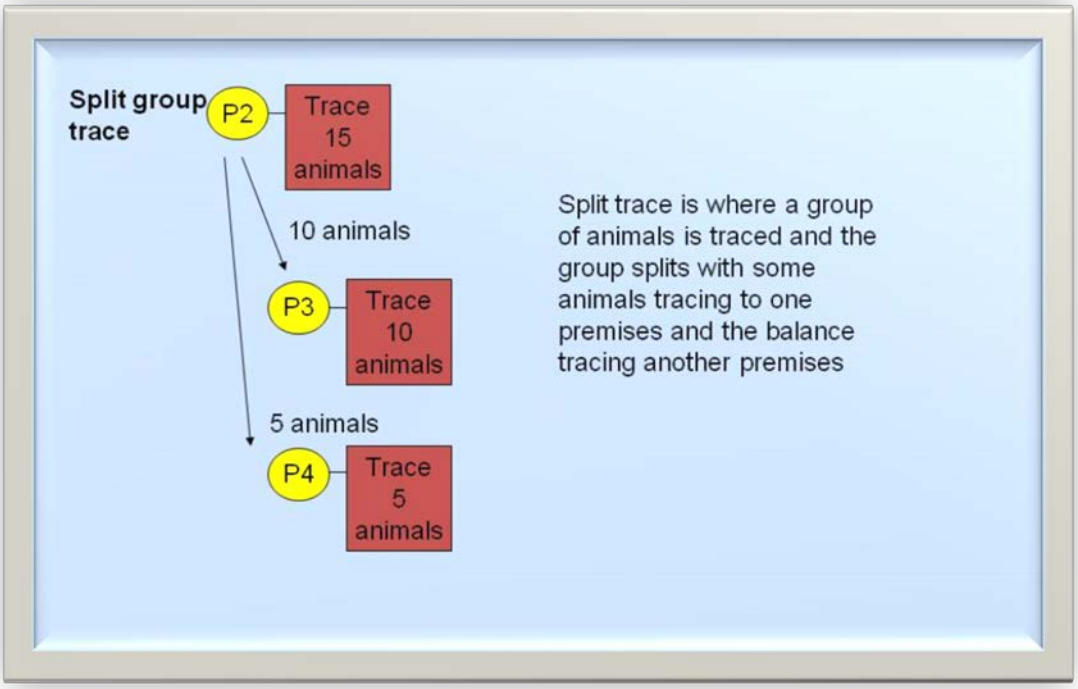
Tracing–ins and outs: Intrastate traces



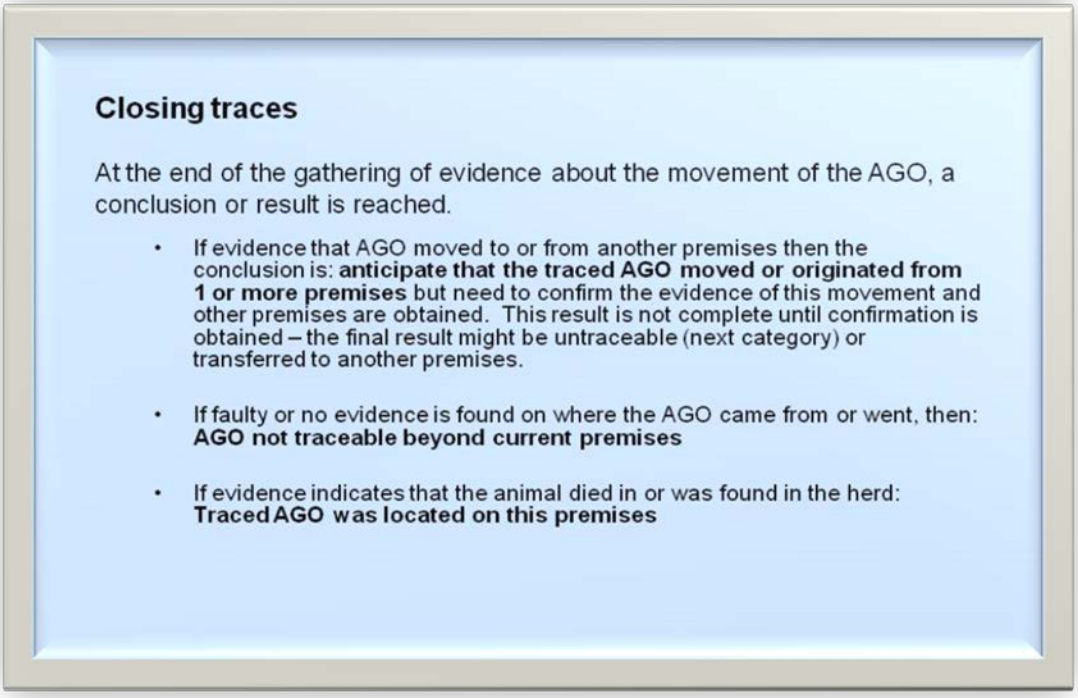
Tracing–ins and outs: Interstate traces



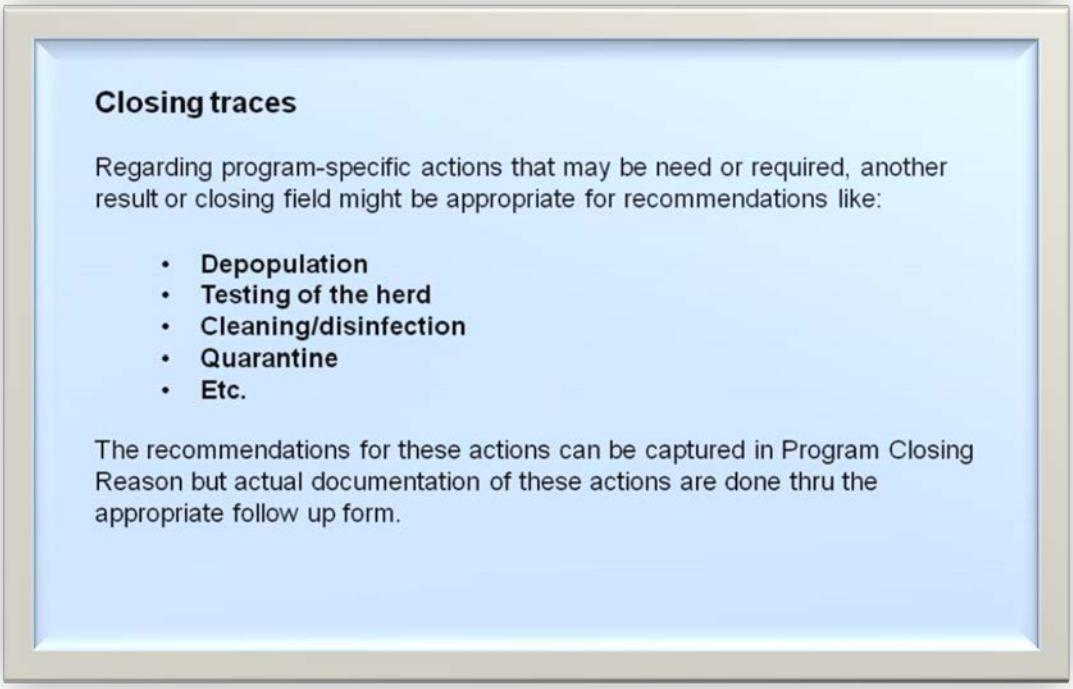
Tracing–ins and outs: Variation, split-trace node



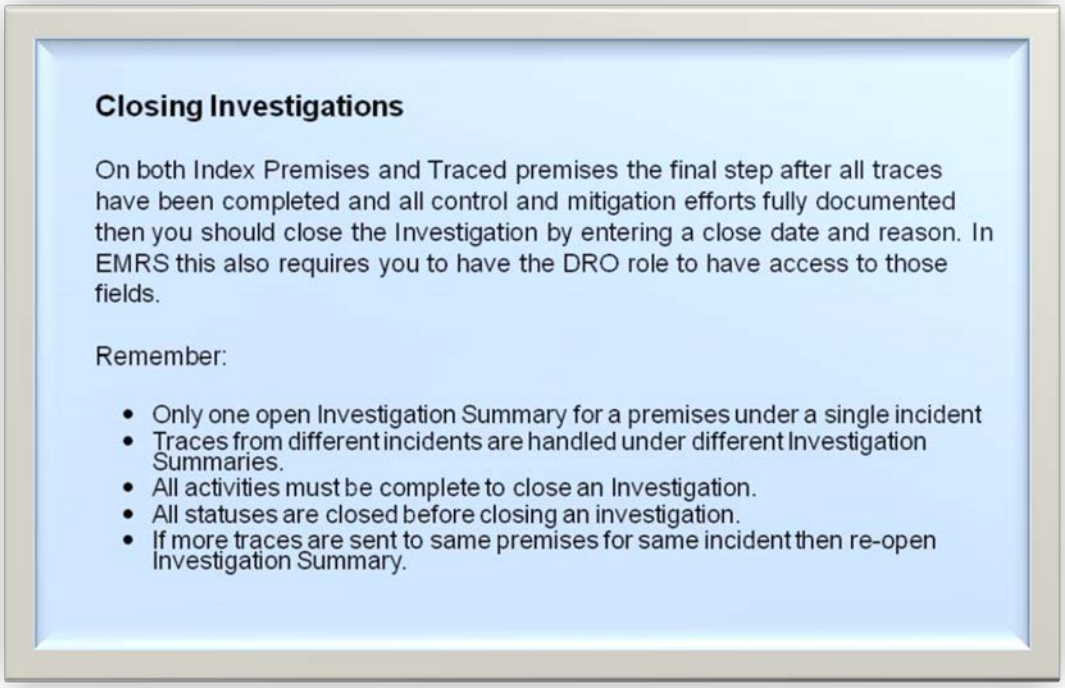
Step 7: Tracing work flow



Step 7: Tracing work flow (continued)



Step 7: Tracing work flow (continued)



Attachment 5.E Sample Epidemiological Report

This attachment provides a sample epidemiology report.

November 15, 2013

United States Department of Agriculture

Animal and Plant Health Inspection Service

Veterinary Services

Surveillance, Preparedness and Response Services

National Preparedness and Incident Coordination Center

4700 River Road
Riverdale, MD 20737
Unit 41

(301) 851-3595
(301) 734-7817 fax

TO: State Animal Health Officials, VS Assistant District Directors

FROM: APHIS Incident Coordination Group

SUBJECT: Livestock Disease Outbreak Epidemiological Report; Includes Data Reported Through 9:00 p.m. EST, November 14, 2013

A. Current Situation Status Report

Commercial Premises	State A		
	Premises Affected *	Swine on Premises	Cattle on Premises
Total #	422	10,537	32,011
# Depopulated	383	9,923	31,371
# In Process	39	614	640
% Depopulated	90.8%	94.2%	98.0%

Non-Commercial Premises	State A		State B	
	Premises Affected *	Livestock on Premises	Premises Affected *	Livestock on Premises
Total #	89		14	
# Depopulated	84	1,861	14	301
% Depopulated	94.4%		100%	

Counties Currently Affected, by State:

- State A — County A1, County A3, County A4, County A5, County A7
- State B — County B2

New Counties: None

Critical Information: Since yesterday, diagnostic results have confirmed one new infected commercial premises in County A4, State A.

* Affected premises include both Infected Premises and Contact Premises.

B. Detailed Report

Officials with the State A Department of Agriculture, the State B Department of Agriculture, and the United States Department of Agriculture (USDA) are conducting a campaign to control and eradicate a livestock disease outbreak from State A and State B. The disease was confirmed on September 3, 2013. The latest figures follow.

	State A	State B	Total	
Total # of Livestock Depopulated:	43,155	301	43,456	
Total # of Premises Quarantined:	662	23	685	
Total # of Premises Released:	104	7	111	
Total # of Premises Affected:	511	14	525	(increase of 1)
• # of Infected Premises:	279	3	282	
# of Non-Commercial Herds:	58	3	61	
# of Commercial Herds:	221	0	221	
• # of Contact Premises:	232	11	243	
# of Non-Commercial Herds:	31	11	42	
# of Commercial Herds:	201	0	201	
Total # of Premises Depopulated:	467	14	481	
Total # of Premises to be Depopulated:	44	0	44	(increase of 1)

Commercial Premises Affected, by County:
County A1 - 41 IPs, 32 CPs
County A3 - 76 IPs, 72 CPs
County A4 - 104 IPs, 97 CPs

C. Counties Affected By State

(Reflects total # of Infected Premises and Contact Premises in each county)

State A:		State B:	
County A1	96	County B2	14
County A3	201		
County A4	208		
County A5	2		
County A7	4		

D. Additional Notes

- Epidemiological investigations are ongoing. Entities that sell livestock continue to be monitored in affected areas. If a herd tests positive, officials will quarantine the premises immediately and order the destruction of the herd as soon as it is logistically possible.

- Currently, a net total of 685 premises have been quarantined in State A and State B.

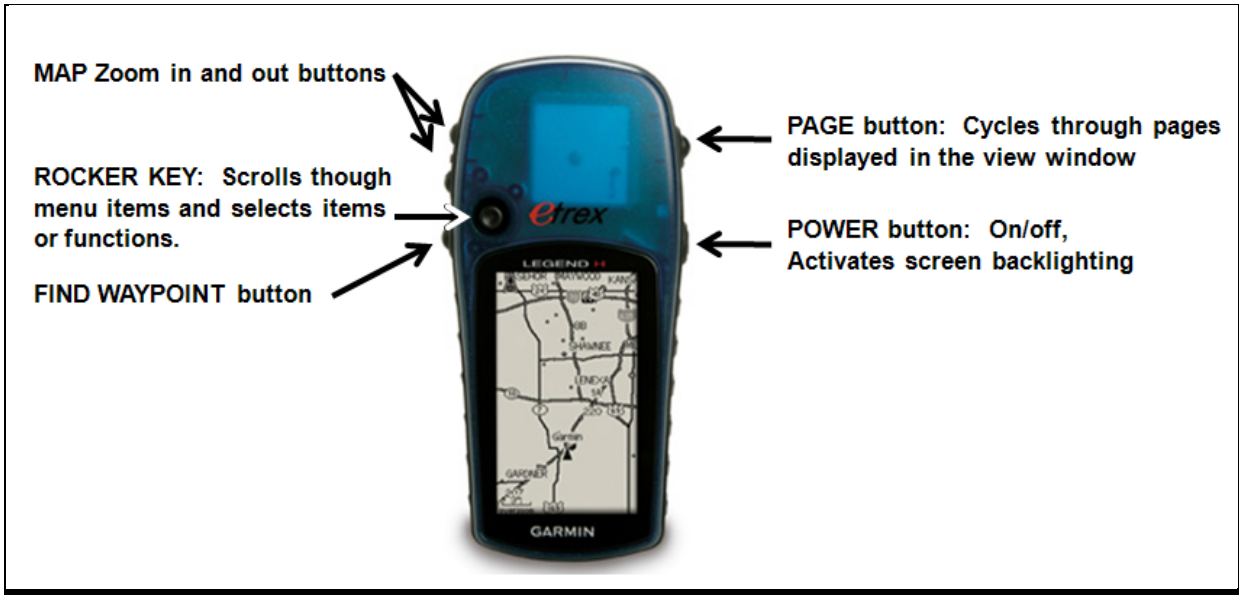
Attachment 5.F Use of a Standard GPS Receiver

The Garmin eTrex Legend H is currently the standard GPS receiver recommended for use by APHIS and partner organizations. The attached information describes how to use this GPS receiver. The Garmin eTrex Legend model H receiver replaces an earlier model, the Garmin eTrex Legend, as the GPS receiver recommended for Veterinary Services field staff for all types of investigations. The eTrex Legend H uses a USB cable to connect to a computer; whereas, the older eTrex Legend model required a serial port cable. Serial ports are no longer found on most laptop computers. In addition, the Model H has improved response times, greater sensitivity under a tree canopy, and increased accuracy.

Obtaining Geographic Coordinates (Lat/Lon) for a Location Using Garmin eTrex Legend H GPS Receiver

The following instructions are based established field protocols for the Garmin eTrex Legend H GPS receiver (Figure 5.D-1). The techniques will differ depending on the GPS receiver model being used.

Figure 5.D-1. Garmin eTrex Legend H GPS Receiver



Initial Setup

Always setup your GPS receiver, before using it for the first time, by following steps 1 – 12 shown below. If the preferences or setup options are inadvertently changed, it is important to rerun the initial setup procedure.

1. Turn on the GPS receiver by pressing and holding down the **POWER** button for 2 seconds (lower button on right side of the unit).
2. When the **Satellite** page appears on the screen, press the **Page** button on upper right side of the receiver several times to scroll through pages until you reach the **Main Menu** page.

3. The rocker key or toggle button on the front of the receiver can be used to move up, down, left, and right on the screen. When an item is highlighted, pushing down on the rocker key (that is, towards the bottom of the receiver) will select a highlighted item and make it available for further action. On the **Main Menu** page, use the rocker key to highlight and select the **Setup** option. This will open the **Setup Menu** page.
4. Highlight the **Time** icon and select it to open the **Time** page. Check that the correct time zone is selected. If not, highlight this option select it. A drop-down menu will appear. Use the rocker key to highlight and select the correct time zone. Change **Daylight Saving Time** to **Auto,** if this option is appropriate for your location. No other changes need to be made on this page.
5. Press the **Page** button (upper right side of unit) to return to the **Setup Menu** page.
6. Highlight the **Units** icon and select each option with the rocker key. This will open the **Units** page. Highlight and set the following preferences:
    a. Position format—hddd.ddddd
    b. Map datum—WGS 84
    c. Distance/speed—Statute
    d. Elevation/Vertical Speed —Feet (feet/min)
    e. Depth—Feet
7. Press the **Page** button (upper right side of unit) to go back to the **Setup Menu** page.
8. Highlight and select the **System** icon to open the **System** page.
9. The **GPS** option should be set to **Normal.**
10. Scroll down to **WAAS/EGNOS** (Wide Area Augmentation System/ European Geostationary Navigation Overlay Service) option and select **Enabled**. EGNOS is a system similar to WAAS, but covers Europe and neighboring areas.
11. While in either the **Setup Menu** or the **Main Menu** pages, check the battery power icon located in the upper right corner of the either menu page to make sure that battery power is at the full level (that is, four bars shaded in the battery icon).
12. Press the **Page** button (upper right side of unit) to exit the **Setup Menu** and then again to exit the **Main Menu**. If necessary, continue to press the **Page** button until you return to the **Satellite** page.

Setting Up an Accuracy Check Point (ACP)

The purpose of an Accuracy Check Point (ACP) is to ensure that setup options for a GPS receiver have been set correctly to the VS standardized format (see *Initial Setup*) and to confirm that a receiver is in a satisfactory working condition. The ACP should be located near your office, or home base, and should be in a location that is convenient for you to check your GPS receiver before going to field sites. The steps in establishing an ACP are:

1. Choose a specific location that is away from trees, buildings, or other objects that may block a clear view of the sky. Do <u>not</u> choose a light pole, telephone pole, flag pole or

other tall objects. An ACP should be a stationary, flat surface that is easily recognized and one on which you can place your GPS receiver for a few minutes while a unit locates satellites and determines the receiver's location.

2. In establishing an ACP it is best to either a) use at least two or more GPS receivers to compare coordinates or b) make three or more observations with one receiver at different times during the day. Acceptable accuracy is when geographic coordinates for an ACP match three places to the right of the decimal. The last two decimal degree numbers displayed are more variable and represent differences of only a few feet.
3. As a reference to help confirm that a GPS receiver is performing properly, it is best to display (for example, laminated card) ACP geographic coordinates on or near the ACP location.

Daily Confirmation of Receiver Accuracy

Check the accuracy of your GPS receiver daily *before* going into the field to ensure it is setup and working correctly:

1. At your ACP location, power-on your receiver and wait until the estimated accuracy is 25 or fewer feet. Then obtain ACP coordinate observations and compare these values with the numbers on your ACP reference card.
2. If the accuracy the values do not agree for the first three numbers after the decimal, return to *Setup Menu* and confirm that the setup options have been set correctly.

Reporting Geographic Coordinate Data Acquired with a GPS Receiver

1. When standing at a specific location for collecting geographic coordinates (for example, premises front gate/driveway entrance, or other locations according to VS standards), press the rocker key downward (vertically) and hold the key until the **Mark Waypoint** page opens.
2. Record the waypoint number, or change the name of the waypoint so that it is easily recognizable.
3. With the rocker key, scroll to the bottom of the waypoint page and select **Avg** to average a series of waypoints that are being collected automatically. After collecting and averaging 20 or more waypoint values, select **Save** to store the averaged waypoint value and select **OK** to exit the Waypoint page.
4. To view the latitude and longitude results of a geographic location, go to the **Main Menu** page and select **Find** and then select **Waypoints.** Locate the waypoint number or name in the list of waypoints stored. Select the waypoint you wish to view and select it with the rocker key. Record the geographic coordinates shown in the Location box on this page. On your data form, always record all six decimal places as in the Location box.
5. It is always a good practice to transfer latitude and longitude coordinates from a GPS receiver to a personal computer for inclusion in reports, using a data cable and transfer software such as the open source application DNR Garmin (http://www.dnr.state.mn.us/mis/gis/tools/arcview/extensions/DNRGarmin/DNRGarmin.html). Transcription of coordinates directly from a receiver's waypoint page to a data

form increases the likelihood of errors. Errors in geographic coordinate data can have significant negative consequences. Errors, even small ones, must be avoided.

6. **Do not record** geographic coordinate data from the Satellite page. The numbers shown in the Satellite page are highly variable and are likely to be less accurate than those from the Waypoint page, especially ones that have been averaged.

Standards for Geodata

The following are the standards for geodata:

1. Coordinate data
    a. Longitude (X) and latitude (Y) coordinates
    b. Decimal degree (hddd.ddddd) format
    c. Minimum of five decimal places to be reported on data forms
    d. Minus sign (–) to indicate west longitude
    e. Datum to use is World Geodetic System 1984 (that is, WGS 84)
    f. No projection (geographic data on data forms should always be unprojected with a datum of WGS-84)
2. Tabular (database) data
    a. Database file (DBF IV)
    b. MS Access Database
    c. Comma-delimited text file (CSV, TXT)
3. Vector data format
    a. Environmental Systems Research Institute (ESRI) ArcView shapefile (SHP)
    b. ESRI ArcInfo coverage
4. Image (raster) data format
    a. Georeferenced JPG, or JPG2000
    b. ESRI ArcGrid
    c. American Standard Code for Information Interchange
    d. GeoTIFF
    e. Multiresolution seamless image database (MrSID)
    f. Non-georeferenced
        i. Tagged interchange file format (TIFF)
        ii. JPEG
5. GIS data file compression
    a. WINZip

b. MrSID

6. Locations for collecting coordinate data of confined populations
    a. Premises—front gate, defined as the driveway entrance where you leave public access (Note: This location is essential for data forms. An animal's location should not be used as a substitute for premises locations.
    b. Animal location depends on species or commodity
        i. Gate entrance to a pen or facility where the animals to be mapped are located
        ii. Dairy—milk parlor entrance
        iii. Poultry or swine—feed mixing area
        iv. Pasture—gate entrance to the pasture
7. Locations for collecting coordinate data of free ranging populations, including wildlife
    a. Daytime—estimated home range based on landscape factors
    b. Nighttime—if not on range, the pen or corral where the animals are held at night.

Note: In the United States, north latitude is positive and west longitude is negative and a minus sign must be added to the longitude coordinates when they are being reported.

Attachment 5.G Training Courses

This attachment selected relevant training for epidemiology and tracing offered on the AgLearn website (http://www.aglearn.usda.gov). Additional courses may be available.

Class title	Description	Delivery method
EMRS-specific training		
EMRS for VS	This course provides a brief overview of all aspects of EMRS and demonstrates the methods used in recent incidents to manage disease tracing and control activities as well as resource management. Participants receive instruction on basic EMRS functionality.	Online
EMRS Advanced Training	This course covers advanced training in using EMRS for workflow management techniques used during an emergency response, including using combinations of zone statuses and premises visit forms. Advanced data management, data extraction and manipulation, forecasting, report generation, and mapping are covered.	Instructor-led
EMRS Incident Management Teams (IMT) Training	This 3-day course is designed for IMTs. The first day is devoted to a complete overview of EMRS and practice exercises on data entry and reporting from EMRS. The second and third days consist of a scenario-based exercise using EMRS to manage a new outbreak while practicing ICS principles (including the planning cycle and situation reporting using data from EMRS). Team building is encouraged during each day's exercises, and the team is encouraged to develop its own evening team-building exercises as well.	Instructor-led
VS Information Systems Training Support Network for EMRS	This course was developed to maximize training resources and provide local support for end users of EMRS. This course provides technical and training delivery instruction for network associations.	Instructor-led
Epidemiology training		
Program Diseases Field Epidemiology Training Course	This course provides problem-solving skills related to diseases for which VS has a control, eradication, or surveillance programs. It is for Federal and State Veterinary Medical Officer (VMOs) who visit herds and owners to gather disease-specific information for the Area Epidemiologists, including Designated Epidemiologists who are not AEOs.	Instructor-led
Area and State Epidemiology Officer Course	This course gives Area Epidemiology Officers (AEOs) the tools to effectively manage and direct surveillance programs, particularly those pertaining to program diseases. It is for Federal AEOs and equivalent State Epidemiology Officers who are, or will be, actively involved in the planning, development, and operation of the epidemiologic delivery system, including animal health monitoring disease surveillance, risk assessment, and response to emerging issues along with possible training of Designated Epidemiologists. Note: This training fills the classroom training portion of the "Designated Epidemiologist" requirements.	Instructor-led
GPS Training		
Basic Global	Introduces the concepts of GPS positioning, navigation, and	Instructor-led

Class title	Description	Delivery method
Positioning Systems	timing. Students will develop an understanding of GPS technology, types of devices, measurements of positional accuracy, and the integration of GPS data with GIS.	and online

Attachment 5.H Abbreviations

ACP	Accuracy Check Point
AGO	animal/group/object
AHT	Animal Health Technician
APHIS	Animal and Plant Health Inspection Service
ARP	At-Risk Premises
BZ	Buffer Zone
C&D	cleaning and disinfection
CA	Control Area
CP	Contact Premises
CSF	classical swine fever
DRO	Disease Reporting Officer
EGNOS	European Geostationary Navigation Overlay Service
EMRS	Emergency Management Response System
ESRI	Environmental Systems Research Institute
FA	Free Area
FAD	foreign animal disease
FAD PReP	Foreign Animal Disease Preparedness and Response Plan
FMD	foot-and-mouth disease
FP	Free Premises
GIS	geographic information system
GPS	global positioning system
HPAI	highly pathogenic avian influenza
ICS	Incident Command System
ID	identification
IP	Infected Premises
IZ	Infected Zone
JPEG	Joint Photographic Experts Group
MP	Monitored Premises
MrSID	multiresolution seamless image database
NAHEMS	National Animal Health Emergency Management System

OIE	World Organization for Animal Health
P0	Premises 0
P1	Premises 1
SOP	standard operating procedure
SP	Suspect Premises
SZ	Surveillance Zone
TDD	telecommunications device for the deaf
TP0	Trace Premises 0
TP1	Trace Premises 1
USDA	U.S. Department of Agriculture
VMO	Veterinary Medical Officer
VP	Vaccinated Premises
VS	Veterinary Services
VZ	Vaccination Zone
WAAS	Wide Area Augmentation System