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Comments
Please send comments or suggested edits for improvement to: sbsinfo@iastate.edu

Additional Resources
The Secure Beef Supply website has additional resources available at: www.securebeef.org
Information Manual for Enhanced Biosecurity for FMD Prevention:
Cattle on Pasture

Target Audience

This Information Manual and corresponding Self-Assessment Checklist apply to:

- Cattle operations, of all sizes and management types that raise cattle on pasture, including operations that raise cattle from multiple or single sources on grass or other forages (cornstalks, wheat stubble, etc.), with or without supplemental grain. This includes, but is not limited to, stockers, backgrounders, seedstock operations, cow/calf operations, and dairy cattle on pasture.
- Operations with other susceptible animals (e.g., cattle in confinement, pigs, sheep, goats) kept on the premises in addition to cattle on pasture.
- All individuals delivering to, servicing, or working on the cattle operation (family members and/or non-family employees working on or visiting the operation).
- Cattle operations that have never been infected with or vaccinated for foot and mouth disease (FMD).

Introduction

In the event of a foot and mouth disease (FMD) outbreak in the United States (U.S.), maintaining business continuity for the beef industry is critical to the agricultural economy, food security, as well as animal health and well-being. The goal of the Secure Beef Supply (SBS) Plan is to provide a workable business continuity plan for cattle producers that have cattle with no evidence of FMD infection and associated industries that is credible to Responsible Regulatory Officials (local, state, tribal, and federal officials, as appropriate). In an actual FMD outbreak, decisions will be made by the Responsible Regulatory Officials based on the unique characteristics of each outbreak.

During an FMD outbreak, it is the producer’s responsibility to keep their animals from becoming infected, focusing on what they can control on their operation. Biosecurity approaches are both structural and operational. Structural biosecurity is built into the physical construction and maintenance of a facility. Operational biosecurity involves management practices designed to prevent the introduction and spread of disease agents onto or off of the premises. FMD will test the effectiveness of operational biosecurity because the FMD virus is highly contagious. Successful implementation of the biosecurity practices depends on the awareness level and behavior of individuals on the operation. Implementing effective biosecurity measures to protect cattle raised on pasture from FMD can be expensive and inconvenient. However, a failure of biosecurity resulting in FMD infection of the herd can be devastating.

FMD is highly contagious and has a major impact on animal health and international trade; however, it does not pose a food safety or public health concern. Existing biosecurity plans may offer protection against endemic diseases but heightened precautions are needed for FMD. The enhanced biosecurity recommendations outlined in this document are based on the known exposure routes for FMD. Operations with susceptible species raised outdoors (on pasture, dry lots) may have more difficulty preventing FMD exposure depending on their proximity to infected premises and the presence of wildlife in the area. More information on strategies for a managed response to an FMD outbreak, including use of Control Areas, is available in the Secure Beef Supply Plan for Continuity of Business (www.securebeef.org).
This document emphasizes three concepts that all operations raising cattle on pasture should be ready to implement prior to an FMD outbreak in the U.S.:

1. A Biosecurity Manager,
2. A written operation-specific enhanced biosecurity plan, and
3. A Line of Separation.

This Manual is organized around the sections in the Self-Assessment Checklist for Enhanced Biosecurity: Cattle on Pasture (statements in outlined boxes). This Manual can be used to develop an operation-specific, written, enhanced biosecurity plan prior to an FMD outbreak. All operations should designate a Biosecurity Manager; this is item number 1 in the checklist. The Biosecurity Manager develops the biosecurity plan PRIOR TO an outbreak; the plan should address items 2-11 on this checklist. The biosecurity plan should describe the scope of the operation, contain forms for documentation of training and signatures, explanations of procedures and signage used on the operation, and protocols written and communicated effectively in languages that are fully understood by the individuals responsible for implementation.

Implementing the biosecurity plan, including training of individuals, before an FMD outbreak occurs provides the best chance to prevent animals on the operation from being exposed. Once the biosecurity plan is written, operation owners/managers may use the checklist in one of the following ways:

- **In the absence of FMD in the United States**, operation owners/managers should decide which items (#2-11) they will implement. The biosecurity plan should describe the strategy for how each item could be implemented (supplies needed, changes in management practice, etc.). These items may supplement or replace measures included in the operation’s everyday biosecurity plan.

- **If FMD is diagnosed anywhere in the U.S.**, operation owners/managers should implement ALL of the items in the checklist to minimize the risk of exposing their animals.

- **If the operation is located in an FMD Control Area**, Responsible Regulatory Officials may require that all of the items on the checklist, and possibly others, be implemented before animal movement is permitted.

**Scope of Biosecurity Plan**

Each location (premises) should have its own biosecurity plan. Generally, it is best to consider each operation that raises animals at non-adjacent locations or multiple locations that must be accessed via a public road as a separate premises, have a separate Premises Identification Number, and therefore, a separate biosecurity plan. Begin by defining your premises, clearly describing the animals (all species) and animal housing (buildings, pastures, and dry lots) associated with the operation. Additionally, other businesses operated from the same premises will need to be accounted for in the biosecurity plan (e.g., distribution or sales of feed, mineral, fertilizer, compost, seed, or equipment; livestock sales; hosting farm tours; etc.). Biosecurity plans for premises owned/managed similarly may have significant overlap. When a premises becomes infected, all locations with the same PIN number will be considered to be infected. Having a PIN may be required to request movement permits during an outbreak. A PIN includes a valid 911 address and a set of matching coordinates (latitude and longitude) reflecting the actual location of the animals on the premises. Request a PIN from the office of your State Animal Health Official.
1. Biosecurity Manager and Written Plan

A Biosecurity Manager is identified for the operation. This individual is responsible for developing the biosecurity plan with the assistance of a veterinarian (if they are not a veterinarian) and ensuring biosecurity training of, or communicating biosecurity measures with, all individuals who enter the operation. The Biosecurity Manager has the written authority to ensure compliance with biosecurity protocols and take corrective action as needed.

The designated Biosecurity Manager for the operation should be able to develop and implement biosecurity procedures effective in protecting the animals from FMD virus infection. The Biosecurity Manager should be familiar with the current structural and operational biosecurity of all locations, including pastures, affiliated with that premises where animals are housed as well as the health status of the animals. This individual can be an owner, manager, veterinarian, or employee. If the Biosecurity Manager is not a veterinarian, the individual should consult with an experienced veterinarian who is familiar with the operation layout, operating procedures, and health status of the animals when developing the biosecurity plan.

If the operation has animals at more than one location (premises) with movement of animals, people, equipment, or vehicles between them, each location should designate a manager who is responsible for ensuring that the biosecurity practices for that location are followed on a daily basis. It is important that the Biosecurity Manager, and their designees, have the authority to take corrective action if protocols are violated or need to be revised. The Biosecurity Manager should identify an alternate contact person for the premises in the event that the primary Biosecurity Manager is gone or unavailable. The Biosecurity Manager and their designee should have their contact information posted in an area where it can easily be found.

The roles of the Biosecurity Manager include:

- Developing and implementing an effective, operation-specific biosecurity plan,
- Overseeing and documenting that all essential personnel have been trained in biosecurity protocols, and
- Taking corrective action, as needed, when biosecurity protocols are violated.

An operation-specific, written, enhanced biosecurity plan has been developed by the Biosecurity Manager. The plan is reviewed at least annually and whenever the operation goes through a change that affects biosecurity (expands, adds a new aspect of the business, etc.). The biosecurity plan clearly defines the scope of the operation, and includes biosecurity for other susceptible species kept on the premises. The biosecurity plan includes a map of the operation indicating the Line of Separation (LOS), LOS Access Point(s), cleaning and disinfection (C&D) station(s), designated parking, and carcass disposal/pickup location. The map indicates vehicle movements (animal transport vehicles, deliveries, etc.) and carcass removal pathways. The Biosecurity Manager ensures that all individuals entering the operation frequently (weekly or more often) have access to a copy of the biosecurity plan. The Biosecurity Manager is capable of implementing the written plan if FMD is diagnosed in the U.S.

The biosecurity plan must address how the operation will implement the biosecurity protocols described in this document. The biosecurity plan must also include other susceptible livestock (cattle, pigs, sheep and goats) on the premises. For biosecurity guidance for feedlot cattle, dairy cattle, and pigs, see www.securebeef.org, www.securemilksupply.org and www.securepork.org.
The operation-specific biosecurity plan must include a premises map (satellite images are preferable) labeled with the following:

- Line of Separation (LOS)
- LOS Access Point(s) which serve as the designated entrance(s),
- Loading site,
- Cleaning and disinfection (C&D) station(s),
- Designated parking area outside the LOS, away from animal areas,
- Carcass disposal/pickup location and carcass removal pathways, and
- Vehicle movement pathways (animal transport vehicles, deliveries, etc.).

Additionally, if non-essential items will be delivered to the operation, the premises map should indicate the designated area for delivery of these items. If non-essential items are to be delivered to an off-site location (e.g., post office, residence), this should be clearly indicated in the biosecurity plan and signs posted at the LOS Access Point(s).

Instructions for creating a premises map for a biosecurity plan using Google Maps can be found in Appendix A.

The Biosecurity Manager must document that he/she reviews the plan at least annually, whenever the operation goes through a change (expands, adds a new aspect of the business, etc.), or whenever the “Self-Assessment Checklist for Enhanced Biosecurity: Cattle on Pasture” is updated/changed (visit www.securebeef.org). The Biosecurity Manager must continuously adapt the plan to address changing risks or recommendations. Due to the inherent variation between operations, biosecurity plans must be created specifically for every premises.

The biosecurity plan should be located where it can be accessed by individuals frequently entering the operation, Responsible Regulatory Officials, or the attending veterinarian upon request.

If all checklist items are not “in place” after completion of the written plan, the Biosecurity Manager must be capable of implementing each item if FMD is diagnosed in the U.S.

2. Training

The Biosecurity Manager and essential personnel are trained at least annually about the biosecurity measures necessary to keep FMD out of the herd; training is documented. The Biosecurity Manager informs individuals entering the operation of biosecurity measures they are to follow in a language they understand. Individuals are aware of the biosecurity concepts and procedures that apply to their specific areas of responsibility. The biosecurity plan describes training required before entering this operation.

Encouraging Compliance through Training

Achieving good compliance with biosecurity protocols by individuals working on the operation and visitors is an ongoing challenge for the operation. The biosecurity plan can only be effective if EVERYONE on the operation follows it, all of the time. Ideally, compliance with the biosecurity protocols should become part of the culture of the operation. Poor compliance is usually due to lack of knowledge or understanding of either the biosecurity protocols or the consequences if they do not comply.

The Biosecurity Manager(s), owners or general managers, and essential personnel should be trained at least annually to ensure their awareness of the biosecurity measures necessary to keep FMD out of the herd. There are many resources available on the Secure Beef Supply website (www.securebeef.org). The Biosecurity Manager(s) needs to inform individuals entering the operation of the biosecurity measures they are to follow in a language they understand. Individuals must be made aware of the biosecurity concepts and procedures that apply to their specific areas of responsibility.
All individuals entering must understand how to:

- Contact the Biosecurity Manager(s)
- Respect the Line of Separation (LOS)
- Cross the LOS, if required, following arrival and biosecure entry requirements
- Perform biosecurity measures for their specific job duties

Essential personnel must ALSO:

- Understand the importance of biosecurity;
- Review the entire biosecurity plan;
- Review the labeled premises map;
- Know who to report to if they see someone not complying or something preventing compliance; and
- Recognize the consequences for not complying with biosecurity protocols.

The Biosecurity Manager communicates with all drivers, delivery and service personnel, veterinarians, livestock transporters, cattle suppliers, cattle receivers, and visitors to promote awareness of biosecurity expectations and operation-specific biosecurity protocols prior to arrival at the operation. Communication of protocols may involve calling, emailing, texting, or faxing information to individuals prior to arrival or communicating with these individuals upon arrival, prior to entry.

Effective training can be done through one-on-one or group sessions, depending on the responsibilities of the individuals and their learning style. Document training sessions for essential personnel and all communication with other individuals arriving on the operation (an example Group Training Form can be found in Appendix B).

- Example: After a training session, have all attendees sign and date a document after attending a training session and include a copy of the training agenda/content reviewed.
- Example: Keep a copy of the document sent to off-site individuals describing where and how to cross the LOS at an LOS Access Point and their tasks (remain in cab, exit wearing protective boots/gloves, etc.) and have them sign it upon first arrival.

The Biosecurity Manager should continually emphasize the importance of biosecurity protocols for disease prevention. Communication of biosecurity is vital to any operation to protect cattle health. Individuals should be encouraged to communicate with the Biosecurity Manager if they have questions or concerns.

3. Protecting the Operation

Line of Separation (LOS)

The biosecurity plan includes an LOS, which is established as an outer control boundary around, or within, the premises to limit movement of virus into areas where susceptible animals can be exposed. The LOS is clearly defined in the biosecurity plan and is clearly marked on the premises. Animals, vehicles, people or items only cross the LOS through clearly marked and controlled LOS Access Point(s), following appropriate biosecurity measures. Cattle are prevented from nose-to-nose contact with livestock on adjacent premises. Cattle do not have access to streams, waterways, or run-off water that may have come from other premises.

The Biosecurity Manager should identify a Line of Separation (LOS), which is a clearly identified boundary around, or within, the operation to separate off-site from on-site movements of vehicles, items, people and animals. The purpose of the LOS is to limit movement of virus into areas where susceptible animals can be exposed directly (animal contact) and indirectly (contaminated vehicles, footwear, equipment, run off). Access should only be allowed through a minimum number of clearly marked and controlled LOS Access Point(s) following appropriate biosecurity measures.
Once the LOS is established, it should not move unless areas which were outside of the LOS are cleaned and disinfected before being moved inside the LOS. A modified LOS may be needed during crop harvest when bringing in feedstuffs. This is further explained in Section 4 of this Manual (Vehicles and Equipment). It is important to establish a firm understanding of the LOS concept with all employees, visitors, and service personnel. The boundaries of the LOS need to be included on the premises map.

The LOS may be located along the property line or another boundary within the operation (for example, near the cattle loading/unloading area). When determining the best location for the LOS, the following should be considered:

- **Animal housing and holding areas**
  - Traffic on roadways outside the LOS could be carrying FMD virus in organic matter (mud, manure, and run-off); ensure the LOS is located some distance from animal housing (cattle raised by the operation and other susceptible species) and holding areas so off-site organic matter does not cross the LOS onto the operation.
  - The distance from the LOS to animal housing will depend on the drive path surface (farther from dirt/gravel than paved), weather extremes (farther if rain/snow will cause vehicle tires to kick up liquid/organic matter into animal housing) and what is known about the FMD virus and its infectivity. There is not a specified distance as it varies with the above conditions.

- **Animal movement patterns**

- **Water sources**
  - Cattle should not have access to water sources (ponds, streams, creeks, waterways, or run-off water) that may be shared or have come from another livestock premises.
  - This can also be accomplished by not using certain lots or pastures, providing temporary or portable water tanks, or installing a temporary electric fence around shared water sources.

- **Drive path slope and ground topography (paved, gravel, dirt)**
  - Consider volume and direction of runoff

- **Weather conditions (rain, snow, mud) effect on drive paths near LOS Access Point(s)**
  - This includes natural accumulation as well as plow routes and storage of snow and ice.

- **Traffic patterns on and off of the operation**
  - Minimize the need for individuals working on the operation and traffic to repeatedly cross the LOS for daily activities

- **Use of the premises by hunters**
  - During an FMD outbreak, hunters must observe the biosecurity requirements for crossing the LOS and should not move between premises without observing biosecurity protocols

- **Location of LOS Access Point(s) which serve as the designated entrances (minimize the number of access points needed)**

- **Use of scales**
  - Determine if scales are primarily for off-farm weights (incoming cattle, outgoing cattle) or for on-farm weights (mixed feed being offered, determining pen/lot weights, etc.)

- **Ease of access to residences, maintenance shops, or other non-animal business entities**
  - Exclude these from the LOS whenever possible

- **Non-essential deliveries**
  - Designate a delivery area outside the LOS or at another location

- **Location of living quarters on the premises**
  - Consider all the movements that need to occur for the household to operate (school bus, postal deliveries, non-farm employee vehicles, etc.)
  - For ease of access, locate households outside of the LOS whenever possible

- **Planned construction projects**

- **Adjacent premises**
  - Cattle should always be prevented from nose-to-nose contact with livestock on adjacent premises
Multiple options exist for operations with cattle on pasture to establish the LOS and they are highly dependent upon the layout of the operation, traffic patterns, inputs and outputs. A table to assist in identification of various inputs/outputs to the operation is available in Appendix C. This, along with the Biosecurity Manager’s operational knowledge of the operation can create a well-placed LOS. Examples of options for layouts of the LOS are shown in Appendix D.

The LOS boundaries should be clearly identified (road, posts, fences, flags, spray paint, ropes, etc.) and visible to individuals working on the operation, visitors, and service or delivery personnel so that no one crosses the LOS without following the proper biosecurity measures. Vehicles and individuals remaining within the LOS will avoid areas potentially contaminated with FMD virus.

**Maximize Distance between Susceptible Livestock on Adjacent Premises**

The distance is maximized between susceptible livestock on adjacent premises, and steps to do so have been coordinated with owners/operators of these premises.

During an FMD outbreak, the distance between susceptible livestock on adjacent premises should be maximized. This can be accomplished by alternating use of grazing land, penning cattle and bringing forage to them, coordinating pasture use with neighbors, or putting up supplemental fencing, such as a temporary electric fence, on your premises to create distance between shared fence lines.

**LOS Access Point(s)**

Entry to the operation is restricted to a limited number of controlled LOS Access Points. These LOS Access Points are protected with a suitable barrier (e.g., gate, cable, rope) to prevent unauthorized vehicles from entering. Each LOS Access Point is clearly marked with a sign in a language understood by all entering. Vehicles moving through an LOS Access Point are cleaned to remove visible contamination and then disinfected. People and items crossing through LOS Access Points follow appropriate specific biosecurity steps. The animal loading/unloading area does not serve as an entry point for people entering the operation. All movements (animals, vehicles, equipment, people) across the LOS are recorded and are available for review upon request. Deliveries not essential to the operation are made outside the LOS at a designated area indicated on the premises map.

Determine the LOS Access Point(s) based on current and expected traffic patterns and suitability for a cleaning and disinfection (C&D) station. The LOS Access Points should be limited in number; the more LOS Access Points, the harder it is to ensure biosecurity protocols are being followed. If there is a location that is currently used for the majority of vehicle and equipment traffic, or a pathway that individuals working on the operation use to enter it from a designated parking area, then that location would be a logical place for an LOS Access Point. The LOS Access Point should not be adjacent to animal housing or holding areas, unless the purpose of the LOS Access Point is to enter cattle areas, such as a pasture where cattle are grazing or a loading/unloading LOS Access Point for cattle.

The extensive land base and operation perimeter of many operations with cattle on pasture may require unique approaches that allow for an LOS that covers many acres, with multiple LOS Access Points; for example, a cattle LOS Access Point in each pasture’s load out facility.

All other unused driveways that are not LOS Access Points need to be protected with a suitable barrier (hay bales, semi-trucks, heavy equipment, etc.) to prevent unauthorized vehicles and people from entering.
Communicating the LOS Access Point

Each LOS Access Point should be clearly marked with signs, in a language understood by all entering, for all traffic entering the operation (e.g., vehicles, people, etc.). Signs should include instructions for biosecurity protocols regarding animals, people, vehicles, and items crossing the LOS, or should direct individuals to where they can access these protocols. This is especially important in remote areas, when the operation is not able to physically monitor the access points. These protocols should be communicated with visitors, personnel, etc. prior to arrival. Additional methods to mark the LOS Access Point may include physical and/or visual barriers and signage, including (but not limited to): gates, benches, spray paint, duct tape, etc.

The LOS Access Point(s) must be included in the premises map; communicate the location(s) of the LOS Access Point(s) to all authorized individuals crossing the LOS.

Movement of animals onto the operation could introduce FMD virus if biosecurity protocols are not followed. Incoming animals may require a movement permit if the origin or destination is within a Control Area. Biosecurity protocols for animals crossing the LOS are found in Section 6 of this Manual (Animal Movement). Movement of livestock transporters and vehicles through the LOS Access Point(s) requires following biosecurity measures as outlined in Section 5 (Personnel) and Section 4 (Vehicles and Equipment) of this Manual, respectively.

Movement of people through the LOS Access Point(s) requires following biosecurity measures as outlined in Section 5 of this Manual (Personnel). At a minimum, ensure individuals have a place to change their clothing and change or disinfect their footwear, etc.

Movement of personal items and food across the LOS is limited to that which is necessary to perform job duties and the items must be clean and not worn/used around susceptible species (hats, glasses, cell phones, lunch bags), or cleaned and disinfected before crossing. Food is consumed in designated areas and should not be brought into cattle areas. Signage with reminders or instructions should be posted at the LOS Access Points.

Deliveries that do not need to be made to the animal site (e.g., parcel deliveries) should be made to a designated area outside of the LOS. This designated area should be labeled on the premises map, or, if non-essential items are to be delivered to an off-site location (e.g., post office, residence), this should be clearly indicated in the biosecurity plan and signs posted at the operation entrances.

Movement of vehicles, equipment and supplies across the LOS requires an operational cleaning and disinfection (C&D) station at the LOS Access Point as outlined below. More information on C&D of vehicles and equipment can be found in Section 4 of this Manual (Vehicles and Equipment).

All records of animal, vehicle, and equipment movements by date and time onto the operation should be maintained on site and made available to Responsible Regulatory Officials in the event it is needed for a trace-back or trace-forward investigation. See Appendix E for sample Vehicle and Equipment Entry and Animal Movement logs.
Cleaning and Disinfection (C&D) Station

There is an operational, clearly marked, and equipped C&D station ready to be used in the event of an FMD outbreak. The C&D station has the means to remove visible contamination and then disinfect vehicles, equipment, and items needing to cross the LOS. The C&D station is operated by individuals who have received documented training in proper selection and use of personal protective equipment and the principles of C&D. Runoff from the C&D station is managed in a manner that prevents exposure of susceptible animals (either on or off the premises of origin) to disease agents and meets state, local, and Responsible Regulatory Officials’ regulations. Care should be taken to ensure it does not enter waterways, animal housing, or on-farm traffic areas. The biosecurity plan contains contingency plans for vehicle and equipment C&D in inclement weather.

All vehicles, equipment, and items crossing the LOS are free of visible contamination and disinfected prior to entry, which is best accomplished at a Cleaning and Disinfection (C&D) Station designated for the operation. At least one stationary or mobile C&D Station should be available near an LOS Access Point to clean and disinfect vehicles, equipment, and items prior to crossing. The C&D stations should be equipped with good lighting, adequate water, soap, and a disinfectant effective against FMD virus. As some locations where cattle are raised on pasture may be remote and lack access to water or electricity, portable power and water sources (generators, water tanks) should be available. Basic steps, supplies needed, and an example Standard Operating Procedure (SOP) for the C&D process can be found in Appendix H. See Appendix I for a list of disinfectants labeled for FMD virus.

FMD virus is stable in the environment and in organic material (mud, manure, feed and bedding). Virus stability increases at lower temperatures and with protection from sunlight. FMD virus is inactivated at pH below 6.0 or above 9. To kill the FMD virus, it is important to use an effective disinfectant appropriate to the surface and to allow for proper wet contact times and adequate drying.

Designated individuals operating the C&D station should be trained in proper selection and use of personal protective equipment (PPE), how to effectively clean and disinfect items so they do not introduce virus to the operation, and how to safely use approved disinfectants. The PPE necessary is dependent on the disinfectant used; consult the label for more information.

When determining the location of the C&D Station, or where to accomplish cleaning and disinfection at each location in the case of mobile C&D Stations, consider the following:

- The wash pad at the C&D Station, or the area used to C&D, should be free of dirt/mud (ideally on a hard/solid/paved or well-drained gravel surface)
- The wash pad/C&D area and surrounding space should be sloped AWAY from animal housing, waterways, feed receiving or storage areas, and on-farm animal or vehicle traffic areas.
- All applicable state or local regulations regarding the management (capture/diversion) of the run-off/effluent should be followed. This may require building drainage ditches, berms, or other physical barriers to ensure susceptible animals are not exposed.

Contingency Plan for Inclement Weather

Effective C&D can be difficult in the winter in northern climates, remote locations, or during severe weather events unless conducted inside a building. Create a contingency plan for inclement weather and include this in the biosecurity plan. Below are a few suggestions.

- Contingency plans may include:
  - Creating a sheltered C&D station;
  - Using another structure on the premises (but outside of the LOS) as a temporary C&D station during inclement weather, or
Designating an off-site location, such as a truck wash, for washing all vehicles and equipment arriving on site during inclement weather.
- Vehicles or equipment cleaned and disinfected off-site must arrive free of visible contamination, and must not have been on any other premises with FMD-susceptible species after cleaning and disinfecting.
- Determining alternate delivery options or on-site drive paths.
  - See Section 4 of this Manual (Vehicles and Equipment) for options for feed delivery and livestock load out.
- Using a heated water source for C&D.

The C&D station(s) should be marked on the premises map.

### Designated Parking Area

| There is a clearly marked, designated parking area outside of the LOS, away from animal areas, for vehicles that will not enter the LOS and have not been cleaned and disinfected. |

Designated parking areas outside of the LOS for employee and visitor vehicles minimizes the need to clean and disinfect them upon arrival and reduces the chance of FMD virus on vehicles crossing to the cattle side of the LOS. Locate the parking area where individuals can conveniently walk to the nearest LOS Access Point to better ensure compliance.

Signs should be posted designating the parking area, to ensure vehicles remain away from the LOS and thus, animal areas, and the LOS Access Point(s). The designated parking area should be labeled on the premises map.

Designated vehicles that remain within the LOS should be available for individuals needing to haul equipment, supplies, or treatment materials to the animals since personal or company vehicles will be prohibited entry without C&D.

### 4. Vehicles and Equipment

All records of vehicle and equipment movements by date and time onto the operation should be maintained on-site and made available to Responsible Regulatory Officials in the event it is needed for a trace-back or trace-forward investigation. See Appendix E for an example Vehicle and Equipment Entry Log.

#### Vehicles and Equipment (non-animal transport)

| All vehicles and equipment (not containing live animals) are cleaned and effectively disinfected prior to crossing the LOS, otherwise entry is prohibited. |

Public roadways in the Control Area may be contaminated with FMD virus. Therefore, allowing only vehicles and equipment across the LOS which are free of visible contamination and effectively disinfected at the operation’s C&D Station is important to reduce the chance of introducing virus; see Section 3 of this Manual (Protecting the Operation: Cleaning and Disinfection Stations) for more information. Basic steps, supplies needed, and an example Standard Operating Procedure (SOP) for the C&D process can be found in Appendix H. See Appendix I for a list of disinfectants labeled for FMD virus. Whenever possible, operation-dedicated equipment should be used and should not be shared unless absolutely necessary.

Entry of feed wagons, farm trucks, 4-wheelers, utility vehicles, and any other vehicles or equipment (e.g., skid loaders, commodity feed trucks, service personnel vehicles,) that have exited the operation and are returning, or originate off-site, needs to be done in a biosecure manner. Vehicles and equipment remaining inside the LOS do not need to go through C&D procedures unless it exits and is returning across the LOS. In some cases, if vehicles and equipment are remaining on the operation but must drive on off-site roadways to
access pastures, it may be possible to C&D only the surfaces that have contacted potentially contaminated areas (e.g., tires, bottom surface of footwear). For examples, see Section 5 of this Manual (Biosecurity Entry/Exit Procedure). Vehicles and equipment that remain outside of the LOS do not need to be cleaned and disinfected.

Effective disinfection of vehicles and equipment requires thorough cleaning to remove visible contamination, application of a disinfectant labeled for FMD virus, then allowing time for the disinfectant to kill the virus. Alternatively, heat may be used to kill viruses after thorough cleaning.

**Harvest vehicles and equipment** (combines, auger carts, wagons, semi-trucks) used to haul crops (hay, silage, grain) may enter the operation frequently to deliver feedstuffs over a short period of time, a few times a year. These vehicles and equipment are difficult to effectively clean and disinfect and pose a risk of introducing virus from contaminated roadways. During crop harvest, the LOS may need to be temporarily modified to create a direct path to the feed storage area that does not overlap with vehicles used inside the LOS to feed or contact animals. Access to this area should be restricted to crop delivery vehicles and equipment ONLY during this time. If the drive path is near animals, consider temporarily moving those animals. During this modification of the LOS, this drive path should NOT be used by vehicles that are used inside the LOS to feed or contact animals. Alternative routes for getting feed out of this area daily need to be made that do not cross paths with the harvest vehicles.

It is still important to minimize the amount of organic material carried into this modified LOS area from roadways. Visible material on tires/undercarriage should still be removed prior to entering the premises, with every effort made to not spray the feedstuffs (hay, silage, grain) carried on the vehicle. Once visible material has been removed, the harvest vehicles/equipment should drive directly to the feed storage area. The vehicle disinfection step can be skipped – rather the drive path should be cleaned and disinfected after harvest/feed delivery is complete, ensuring run-off/effluent does not enter animal housing, waterways, or traffic areas within the LOS. Once the area is decontaminated, the LOS can be re-established as it was prior to harvest.

Further information on contingency plans for vehicle and equipment C&D in inclement weather can be found in Section 3 of this Manual (Protecting the Operation: Cleaning and Disinfection Stations).

**Livestock Trucks/Trailers (animal transport vehicles)**

All empty animal transport vehicles that cross the LOS are cleaned and effectively disinfected prior to arrival at the operation (outgoing loads) or before animals were loaded for delivery to the operation (incoming loads).

Livestock transporters originating from separate operations and their vehicle, even if cattle are under the same ownership and/or management, may introduce FMD virus to the operation unless proper biosecurity protocols are followed. Information specific to livestock transporters can be found under Section 5 of this Manual (Personnel) under Biosecure Entry/Exit Procedure.

Communicate with the source of incoming animals and with the transporter to ensure that all animal transport vehicles were cleaned and effectively disinfected prior to the loading of animals for delivery to the operation. Document all communication.

**Empty livestock trucks/trailers** must be free of all visible contamination (inside and out) and then disinfected before crossing the LOS at an LOS Access Point.

**Occupied livestock trucks/trailers** cannot be effectively C&D with animals on board and should not physically cross the LOS. They have the potential to introduce FMD virus on their truck tires, and the interior contents (manure, urine, bedding) can spill onto the operation. One way to avoid vehicle entry is to use internal vehicles to transport animals to the LOS Access Point. Animals can be transferred using a staged area like a transport chute onto the trailer parked outside of the LOS. Animals could be introduced to the operation in this same manner.
If this is not possible, the vehicle should take only the shortest, most direct drive path to the
loading/unloading site that is clean and minimizes passing close to susceptible animals. The area where the
off-site vehicle drove and parked should be considered contaminated and a possible source of FMD virus
introduction to the rest of the herd. In this situation, the drive path and loading site should be cleaned and
disinfectected. If it is a gravel or dirt path, this may be impossible and the risk cannot be mitigated. The
Biosecurity Manager should ensure that individuals are trained in proper use of personal protective
equipment (PPE), how to effectively C&D so virus is not introduced to the operation, and how to safely use
approved disinfectants.

5. Personnel

Prior to Arriving at the Operation

Access is limited to individuals who are essential to the management of the operation. Everyone
crossing the LOS on foot or exiting their vehicle inside the LOS arrives at the operation having
showered and wearing clean clothing and footwear since last contacting susceptible animals. All
individuals crossing the LOS have a signed agreement on file agreeing to follow these instructions.

Individuals arriving at the operation should not cross the LOS unless their job duties require doing so.
Individuals that are crossing the LOS in their vehicle should remain in the cab unless their job duties require
them to exit the vehicle. Biosecure entry procedures for individuals crossing the LOS but not contacting
animals may vary based on their job duties. The Biosecurity Manager is responsible for communicating these
requirements to all individuals.

Individuals and their clothing/footwear may become contaminated with FMD virus through a variety of
activities and contacts when they are off-site such as:

- Living with people who work at other livestock production sites;
- Working at or visiting other livestock production sites (pig, cattle, sheep or goat);
- Working at or visiting livestock sales or shows, auction markets, veterinary clinics, buying stations,
slaughter plants, or rendering facilities;
- Hunting or contact with feral swine, deer, etc.; and
- Stopping at a gas station which may have been previously visited by rendering truck drivers or
livestock haulers.

It is possible to reduce the potential for people to introduce FMD virus by taking certain precautions prior to
arrival at the operation. All individuals contacting animals should:

- Ensure that the inside of their vehicle is clean (free of all animal manure/excrement) and has not
become contaminated by soiled clothes, footwear, or other items.
- Ensure they have showered and changed into clean clothes and footwear prior to arrival on the
operation.
  - For individuals that work with the animals and live on-site, showering and changing into
    clean clothing/footwear before leaving their residence is necessary.
  - For individuals living off-site, after showering and changing into clean clothes and footwear,
do NOT contact animals, live or dead, or facilities where they are held prior to arrival at the
operation.
- Understand and be able to follow all procedures for crossing the LOS before arrival.
- Sign an agreement verifying they have been informed of these biosecurity protocols and will abide
by them (example agreement included in Appendix F).
Entry Logbook

Everyone crossing the LOS Access Point(s) completes the entry logbook, unless they are a scheduled worker. The entry logbook is monitored by an individual working on the operation to ensure accurate completion. The contact information and work schedule records for all workers are maintained.

Prior to crossing the LOS, all individuals (other than scheduled workers) granted entrance must sign the Entry Logbook maintained on site. Information recorded includes (at minimum): name, phone number, reason for entry, and if they had livestock (cattle, pigs, sheep, goats) contact in the last seven days, and describe where (auction, feedlot, packing plant, exhibition, home, etc. and City/State).

The Biosecurity Manager should ensure the entry logbook is maintained. Operations can use existing entry logbooks in any format, including electronic logs, if they contain the information described above or use the SBS People Entry Logbook form (see Appendix E). The entry logbook should be monitored by an individual working on the operation to ensure accurate completion. The entry logbook should be available for review and kept up-to-date.

Employee and family member contact information and work schedule records must be maintained and be accurate.

Biosecure Entry/Exit Procedure

All individuals who cross an LOS Access Point on foot or exit their vehicle inside the LOS ensure that visible contamination on their footwear, clothing or exposed skin does not enter or exit the operation, following the biosecure entry and exit procedure as specified in the biosecurity plan.

All individuals crossing the LOS on foot or exiting their vehicle should arrive at the operation having showered, wearing clean clothing and footwear. The inside of their vehicle should be clean and have no visible contamination (soiled clothes, footwear, or other items) that could transfer to their clean clothing, clean footwear, and exposed skin. Additional biosecure entry procedures may vary based on whether or not individuals will have contact with animals or their manure/excretions.

Biosecure entry procedures should be communicated in writing to individuals frequenting the operation, including custom caretaking services and trucking companies so they can be shared with the truck drivers. One way to accomplish this is through development of Standard Operating Procedures (SOPs).

Animal handlers or those who may be contacting animal areas or their excretions on the operation (employees, family members, livestock transporters, veterinarians, processing crews, etc.) should also, at a minimum:

- Wear operation-dedicated clothing and footwear, OR
- Wear clean coveralls/protective outerwear and disposable or disinfectable footwear; AND
- Ensure hands are clean
  - Wash hands and/or
  - Wear disposable or disinfectable gloves over clean hands

These procedures should occur at the designated LOS Access Point. Individuals crossing the LOS in a vehicle should ensure that their footwear is cleaned and disinfected prior to stepping into the cab of the vehicle (if farm-dedicated), or while exiting the cab (off-site vehicles). Individuals driving off-site vehicles are encouraged to carry a change of street clothes/extra coveralls/protective outerwear in the event their street clothes become soiled with animal manure/excretions. The goal is to not transfer manure/excretions on clothing to the vehicle cab or from the operation to another livestock operation.

Non-animal handlers and those remaining away from animal areas on the operation (feed or other product delivery personnel, equipment service personnel, visitors, employees) should also, at a minimum:
• Wear operation-dedicated footwear, OR
• Wear disposable or disinfectable footwear; AND
• Ensure hands are clean
  o Wash hands and/or
  o Wear disposable or disinfectable gloves over clean hands

These procedures should occur at the designated LOS Access Point. Individuals crossing the LOS in a vehicle should ensure that their footwear is cleaned and disinfected prior to stepping into the cab of the vehicle (if farm-dedicated), or while exiting the cab (off-site vehicles). If there is a possibility of direct contact with animals or animal manure/excretions, they should also wear operation-dedicated clothing or clean coveralls/protective outerwear.

Specific Biosecure Entry Procedures will vary depending on what is crossing the LOS at the LOS Access Point and on the layout of the operation. The goal is to protect the operation (including individual pastures, stubble fields, etc.) from virus that may be present on contaminated surfaces (roadways, equipment, or people). Several examples with visuals are provided below; an explanation follows the image.

In this example, consider someone who is entering a pasture on their tractor to deliver a round bale to cattle. The operation houses the tractor at the home farm, and public roads are driven on to access the pasture gate. The driver may use a portable sprayer to clean and then disinfect the tractor tires and their footwear (which have contacted potentially contaminated, off-farm surfaces) immediately before crossing the LOS Access Point at the pasture gate. Once the tractor and driver have crossed the LOS into the operation’s pasture, C&D of their footwear when getting in and out of the tractor (to cut bale netting, check cattle, open the gate to exit the pasture, etc.) is not necessary because the inside of the farm-dedicated vehicle and the pasture within the LOS are both considered part of the operation.
Alternatively, a Biosecure Entry Procedure for someone who is checking cattle by ATV may consist of backing up the vehicle and trailer transporting the ATV close to the LOS, then unloading the premises-dedicated ATV using clean ramps that straddle the LOS. If this Biosecure Entry Procedure is used, the person should C&D their footwear that has touched the ground outside of the LOS prior to stepping onto the farm-dedicated ATV. Once they are within the LOS, they do not need to C&D their footwear to open the gate or if they step off once they are in the pasture. The wheels of the ATV do not need to be C&D as they will not touch the ground outside of the LOS.

A person who is entering a small pasture on foot to check on newborn calves may also have a different approach; perhaps sitting on the tailgate of a pickup adjacent to the pasture gate to change footwear and put on coveralls/protective outerwear when crossing at an LOS Access Point. For another option to cross the LOS at an LOS Access Point if an indoor space is available, see the SBS Information Manual for Enhanced Biosecurity: Feedlots.
Keep on record all communications (written, oral, etc.) that occurred between the Biosecurity Manager and livestock transporters, delivery, or service personnel, including dates and times of said communication. For example, keep a copy of the information sent to the livestock transporter or feed company with a premises map showing where the livestock or feed trucks are to drive and what the drivers are supposed to wear (disposable footwear, disposable gloves, no hats, etc.).

**Biosecure Exit Procedure**

The goal is to prevent visible contamination on clothing, footwear, and exposed skin from leaving the operation and being transferred to other locations with susceptible species. Individuals should remove any protective outerwear and disposable footwear, clean and disinfect footwear, and remove gloves (and/or wash hands if soiled) before crossing the LOS. Soiled clothes should be enclosed in a garbage bag/tote and stored until they can be laundered/cleaned and disinfected. To facilitate this, individuals working on operations in this situation are encouraged to wear protective outerwear, such as coveralls, and footwear, such as overshoes or disposable boot covers, over their normal clothing, that can easily be removed upon crossing the LOS. Gloves and other disposable items should be enclosed in a garbage bag until able to be discarded, and hands should be cleaned with alcohol-based disinfecting wipes or hand sanitizers until access to warm water and soap is available.

### 6. Animal Movement

All animal movement into, out of, or through a Control Area requires a movement permit issued by Responsible Regulatory Officials. Permit movement criteria must be met before animal movement may occur in an effort to prevent spread of FMD virus between premises.

All records of animal movements onto the operation should be maintained on site and made available to Responsible Regulatory Officials in the event it is needed for a trace-back or trace-forward investigation. See Appendix E for an example Animal Movement Log that describes information that should be kept; alternatively, operations may use existing movement logbooks in any format, including electronic logs.

The Biosecurity Manager communicates all biosecurity procedures pertaining to animal movement with the source or destination of animals and/or with the transport companies. All communication is documented.

**Incoming Animals**

Animals come only from sources with documented enhanced biosecurity practices and no current or previous evidence of FMD infection.

It is not possible to prove that cattle are free of FMD virus; it is only possible to demonstrate lack of evidence of infection. A lack of evidence of infection means that, based on available surveillance tools, the cattle have no abnormal clinical signs and no visible lesions as documented by personnel on the operation; diagnostic test results may or may not be available. All incoming animals must come directly from a premises with no current or previous evidence of infection with FMD. Once infection occurs, spread within the herd is rapid (days). Prior to animal movement from a premises located within a Control Area, daily observation of all susceptible animals for at least 7 days is necessary to determine if there is evidence of infection with FMD. This process is called Active Observational Surveillance and is explained in the Secure Beef Supply Plan (www.securebeef.org).

If incoming cattle are raised on an off-site premises before arriving at the operation, ensure that the off-site premises’ biosecurity plan aligns with yours and their personnel are trained to look for signs of FMD.
Pre-movement Isolation Period

No animals from an FMD Control Area are introduced onto the operation for at least 7 days prior to moving animals to another production site with susceptible animals.

Animals from a Control Area are at a higher risk of being infected with FMD virus, but may be undetected clinically if in early stages of infection. Because of the increased risk any introduction of cattle from within a Control Area should be carefully considered. Restricting animal introduction onto the entire operation for a minimum of 7 days before any animals are moved off the operation to another production site will increase confidence that FMD virus was not introduced through animal movements. This does not apply if animals are being moved directly to slaughter, for instance in the case that slaughter plants begin accepting lighter weight cattle in the event of an outbreak. For example, if a stocker/backgrounder accepts calves from a cow/calf operation that is within a Control Area on the first of the month, no shipments of feeder calves that are raised on the stocker/backgrounder to a feedlot should occur until the following week, on the 8th, at the earliest. This minimum of a one-week restricted entry provides added assurance to those receiving the animals that no clinical signs were found in the animals on the premises of origin. If the stocker/backgrounder does not wish to send any shipments of outgoing feeder calves other than direct to slaughter, there is no restricted entry time between incoming loads of calves. Feeder calves moving off of the stocker/backgrounder directly to slaughter may do so at any point in time once movement requirements have been met and a permit issued. This concept is described in the figure.
The pre-movement isolation period puts a 7-day period between different types of movements (incoming or outgoing), no matter which movement comes first. Shipments of incoming animals could occur more frequently than once per 7 days (for example, several shipments of calves could arrive at the operation on the same day, or loads of calves could arrive two days apart from one another), as long as there are then no outgoing shipments for 7 days after the last incoming shipment. Likewise, if no animals have been brought in for the prior 7 days, multiple loads of feeder calves could move off-site to a feedlot on the same or different days. In other words, movements of one type (incoming or outgoing) could occur frequently, but once the operation wants to switch the type of movement (from incoming to outgoing or vice versa), there is a 7-day isolation period.

**Contingency Plan for Interrupted Animal Movement**

A plan exists to manage animals in a biosecure manner on-site in the event animal movement is stopped for several weeks.

Cattle operations should develop plans to manage animals on-site for several weeks that would otherwise be moved to a different operation in the event of a movement restriction. This may include, for example, developing plans to raise weaned calves or feeder calves that are ready to move to feedlots to an older age and heavier weight if necessary. The plan should include considerations for feeding, handling space restrictions as the animals continue to grow, treatment of sick animals, and communication with feedlots on ability to accept heavier weight feeder calves. The plan should include welfare considerations and the possibility of humane euthanasia. Likewise, premises that supply your operation with cattle may not be allowed to move animals due to prolonged movement restrictions and should be prepared to care for these animals.

Occasionally, stocker/backgrounder operations may be involved in rearing replacement heifers. In some cases, such as in prolonged stop movement restrictions or unintentional breeding, heifers may deliver calves while on the stocker/backgrounder operation. In this case, the operation needs to have a plan to care for these calves for up to several weeks in the event animal movement is stopped. Describe the plan to provide housing to ensure protection from the elements, feed (nursing, milk, milk replacer, starter) to meet nutrient needs, and personnel trained in their health care and husbandry needs. Inventory to purchase new animal care items and equipment may be limited during an outbreak. Introducing items from other livestock operations poses a biosecurity risk unless protocols are followed.

**Loading/Unloading Animals**

Animals leaving the operation only move in one direction across the LOS at an Access Point. The animal loading/unloading area is NOT a people entry point. Areas contaminated by personnel or animals after loading/unloading are effectively cleaned and disinfected according to the biosecurity plan.

Animal loading/unloading procedures should minimize cross-contamination by maintaining directional flow of animals. Animals which have crossed the LOS to the outside should not be allowed to cross back to the cattle side of the LOS. The LOS Access Point in the loading/unloading area must be marked in a way that is always visible to individuals moving animals, even during loadout (when the floor may be covered with manure and debris). The loading site should be indicated on the premises map. Methods to prevent animals from crossing back across the LOS to the cattle side during the loading process may include an extra person, gate, or panel. Moving young calves may require two people – one on the cattle side of the LOS and one that remains on the trailer to receive them.

The animal loading/unloading area must not act as a people entry point. If an individual crosses the LOS in the load-out area from the cattle side to the outside, the person must re-enter by crossing at an LOS Access Point and follow the biosecurity entry procedure.
Contamination of the loading/unloading area can occur due to human movement across the LOS, animals that cross back to the cattle side during loading, etc. Upon completion of the loading/unloading process, it is important that the loading area on the cattle side of the LOS is cleaned and effectively disinfected by trained individuals. Remove all visible contamination, then apply an approved disinfectant for the recommended wet contact time; consult the label and follow the application directions.

For more information on managing the livestock trailer, see Section 4 of this Manual (Vehicles and Equipment).

7. Animal Product Movement

Some operations raising cattle on pasture may need to bring in animal products such as semen or embryos, especially if they are involved with enterprises such as replacement heifer and seedstock development. Animal products transported on or off of these operations are potential sources for FMD virus spread.

Semen, Embryos

| Semen and embryos collected after FMD has been diagnosed in the United States come from sources with documented, enhanced biosecurity practices and no current or previous evidence of FMD infection. Semen and embryos are transported in containers whose exteriors can be cleaned and effectively disinfected to minimize the risk of virus contamination. |

FMD virus can be transmitted to cattle exposed through direct contact with, or from surfaces coming in contact with, contaminated semen and embryos. If semen and/or embryos arrive onto the operation, they must come from sources with documented biosecurity protocols and a historical and current lack of evidence of FMD infection (based on available surveillance tools, the cattle have no abnormal clinical signs and no visible lesions as documented by personnel at the operation; diagnostic test results may or may not be available).

Since semen can contain FMD virus before clinical signs are observed, it should be held, frozen, at the source herd for a minimum of 14 days after collection. If bulls do not show clinical signs today, the semen produced 14 days ago is very likely to be free from FMD infection. The risk of transmission of FMD in cattle via in vivo derived embryos has been shown to be negligible provided that the embryos are properly handled between collection and transfer in accordance with the IETS Manual. (See OIE Article 4.7.14, available at: http://www.oie.int/fileadmin/Home/eng/Health_standards/tahc/current/chapitre_coll_embryo_equid.pdf). Embryos collected from cows without clinical signs of FMD should be held, frozen, for a minimum of 14 days before placing into a recipient animal.

The source herd needs to document Active Observational Surveillance (as described in the SBS Plan) for at least 14 days prior to movement of product. Responsible Regulatory Officials may also require periodic inspection of donor animals by an Accredited Veterinarian and/or laboratory testing a sample from the donor animal(s) to demonstrate a lack of evidence of infection prior to issuing a movement permit for semen or embryos.

Semen and embryos should be transported in containers that can be cleaned and effectively disinfected on the exterior as they cross the LOS to minimize the risk of virus introduction. The collection, storage, and transport of embryos and semen must be closely monitored, and these movements recorded, and biosecurity protocols must be followed to prevent exposure of disease agents to susceptible animals. See Appendix E for an example Animal Movement Log that includes records needed for animal and animal product (semen, embryos) movement.
Feeding Dairy Products

Some operations may occasionally feed dairy products in cattle diets (e.g., waste milk to calves, whey to feeder calves on stocker/backgrounder operations). Raw milk is a source of virus transmission to susceptible animals so it is important to use only milk or milk products that are manufactured according to OIE recommendations for animal consumption. Normal high temperature – short time (HTST) pasteurization (72°C [161°F] for at least 15 seconds) does not completely inactivate all FMD virus in raw milk. FMD is not a public health or a food safety concern; it is an animal health disease. Additional treatment of raw milk or milk products is needed to prevent FMD virus transmission to susceptible animals (cattle, swine, sheep, and goats). This also applies to any waste milk fed to cattle. Waste milk may include expired grocery store products (pasteurized milk, yogurt, ice cream, cream, etc.) that may or may not undergo additional processing prior to being fed to cattle as part of their daily ration.


**Procedures for the inactivation of the FMD virus in milk for animal consumption**

For the inactivation of viruses present in milk for animal consumption, one of the following procedures should be used:

- The HTST process applied twice (HTST is high temperature – short time pasteurization with a minimum temperature of 72°C [161°F] for at least 15 seconds); or
- HTST combined with another physical treatment, e.g. maintaining a pH 6 for at least one hour or additional heating to at least 72°C [161°F] combined with dessication; or
- UHT combined with another physical treatment referred to in point 2 above (UHT is ultra-high temperature with a minimum temperature of 132°C [270°F] for at least one second).

8. Carcass Disposal

Develop a plan for carcass disposal of all deceased cattle. The plan should include the process for removing dead cattle from pastures, pens, lots, and buildings as well as storage and disposal of carcasses in methods compliant with state and federal laws. These regulations may change during an FMD outbreak. Options for disposal may include burial, incineration, composting, or rendering—check with local authorities for the state and federal laws pertaining to animal disposal. Guidance may also be provided by the regulatory officials managing the outbreak response. Landfills may not be a reliable option for disposal of carcasses in an FMD outbreak. Operations should develop a plan for carcass disposal of all deceased cattle using normal mortality numbers and a contingency plan for a large of mortalities unrelated to FMD infection (toxicity, etc.).

- Incineration or composting of carcasses from premises with no evidence of infection may be performed either on-site or off-site, inside the LOS or outside of the LOS (consider available land area and available equipment) as long as it is accomplished in a biosecure manner.
- Burial and composting must be accomplished in such a way that prevents wildlife, pets, and rodents from accessing the carcasses.
- Rendering trucks and other vehicles hauling dead animals to a common disposal site must not cross the LOS. The ideal location for a storage bin/area for rendering pickup is at the edge of the LOS, so that equipment used to move carcasses within the LOS does not need to exit the LOS and rendering trucks have access to the bin/area without the truck or personnel entering the LOS. Any site equipment exiting the LOS must go through C&D at an LOS Access Point before crossing the LOS back to the cattle side.

Carcass disposal options should be described in the biosecurity plan, including on-site and off-site possibilities, and carcass movement drawn on the premises map. For example, if rendering is used, the plan should describe how the animals are moved to the pickup location and demonstrate that the rendering truck never crosses the LOS. If the operation disposes of carcasses on-site, then the burial or compost location should be labeled on the premises map. The operation’s animal disposal plan needs to be reviewed and updated at least once a year. See Appendix D for some examples of deadstock removal pathways.

9. Manure Management

Manure is stored and removed in a manner that prevents exposure of susceptible animals (either on or off the premises of origin) to disease agents and meets state, local, and Responsible Regulatory Officials’ regulations.

Techniques for manure management vary with the type of production system, physical characteristics of the operation, and weather. Infected animals shed FMD virus in their manure. Therefore, the risk of introducing FMD virus increases when manure handling equipment is shared between operations and personnel do not follow effective biosecurity protocols, including cleaning and disinfection. For these reasons, it is very important for the Biosecurity Manager to develop operation-specific standard operating procedures (SOPs) for manure management.

All individuals hauling manure must have showered and changed into clean clothes and footwear prior to arriving at the production site.

Vehicles and equipment contaminated with manure from cattle or other susceptible species from other premises are a potential source of infection. Therefore, require that all manure hauling vehicles and equipment from other sites come onto or return to the premises empty of manure and are cleaned to remove all manure, then disinfected with either heat, or a chemical disinfectant followed by drying, before crossing the LOS. These protocols should be shared in writing with any contract companies, and signed and dated when read. Whenever possible, operation-specific dedicated equipment should be used (for example, site-specific skid loaders) and equipment should not be shared unless absolutely necessary.

If the equipment cannot be effectively C&D, one way to remove manure from the operation could be to temporarily modify the LOS near the manure storage area during manure removal. The manure hauling vehicle should take only the shortest, most direct drive path to the manure storage area that minimizes passing close to susceptible animals. The area where the off-site vehicle drove and parked should be considered contaminated and a possible source of FMD virus introduction to the rest of the herd. After manure removal is completed, the LOS should be re-established by cleaning and disinfecting the area accessed during manure removal. Another way to avoid vehicle entry is to use internal vehicles to transport manure to the perimeter of the operation. Vehicles crossing the LOS may also be minimized by transferring manure from on-site to off-site vehicles using a staging area or loader bucket.

Contingency planning for long-term manure storage may be necessary for prolonged outbreaks. Spreading or storing manure off-site may not be a permitted movement depending on the risk of FMD virus spread; all local state and Responsible Regulatory Official regulations will need to be met.
See Appendix H for additional information on cleaning and disinfection.

10. Wildlife, Rodent, and Other Animal Control

Control measures are in place to minimize interaction between cattle and other animals (deer, feral pigs, rodents, dogs, cats, etc.).

Free-roaming animals like wildlife, dogs, cats, rodents and birds can potentially spread FMD virus from infected to susceptible animals via contaminated fur, hooves, foot pads, feet/claws, or feathers. Complete exclusion of wildlife like deer, feral pigs, rodents and birds can be difficult, but every effort should be made to minimize interaction with cattle. Some operations may be unable to prevent interaction between cattle and wildlife, rodents, or other animals on certain operations, such as those operations in remote areas with cattle that graze on significant numbers of acres. It may be impossible to mitigate the risk in this case.

For operations where this is feasible, biosecurity measures that address wildlife, dogs, cats, rodents and birds fall into three categories: clean, exclude, and control.

**Clean:** General operation maintenance, weed/grass control around pens, lots, and buildings, pasture management/stewardship, sanitation and drainage are important because they reduce attraction of wildlife and rodents. Trash should be regularly removed and feed spills cleaned up immediately. Dead animals should be disposed of/removed promptly.

**Exclude:** Outdoor raised animals are at risk of wildlife contact. Sturdy, double fencing or fencing at a height that accounts for jumping deer (e.g. 8 feet) and aggressive feral pigs surrounding dry lots, pastures, and buildings housing cattle is one option that could be implemented. Complete exclusion of wildlife may not be possible.

**Control:** Bird control should follow local or state regulations. Access to cattle and feed areas by dogs and cats should be prevented during an outbreak. Ask neighbors to do the same to prevent roaming. Rodent control options could include:

- Operation designates a rodent control monitor for the operation who effectively implements a written rodent control plan. The Biosecurity Manager may also serve as the rodent control monitor.
  - Keep records current and ensure that they contain, at minimum, monthly entries. An example is included in Appendix G.
- Operation uses a professional rodent control company.
  - Movement of pest control operators occurs through the LOS Access Point(s) and requires following biosecurity measures as outlined in Section 5 of this Manual (Personnel).
  - Keep records (e.g., invoices or other documentation) provided by a licensed pest control operator describing rodent control measures for the operation.

State and local regulations for controlling wildlife, birds, insects, and rodents must be followed. Use of chemical control methods must follow all label directions and regulations to avoid contamination of cattle. While complete control may not be achieved, it should be attempted.

11. Feed

Feedstuffs are delivered, stored, mixed, and fed in a manner that minimizes contamination, and feed spills are cleaned up promptly to avoid attracting wildlife.

Feed delivery trucks that cross the LOS must be cleaned and disinfected before crossing. Alternatively, certain feedstuffs could be augered across the LOS into an on-site feed wagon or other vehicle/equipment to prevent entry of the feed delivery truck. Feedstuffs can be contaminated if exposed to wildlife carrying FMD
virus. Therefore, feed ingredients should be stored in such a way that limits bird, rodent and other wildlife or domestic animal access. If using bagged feed, it should be elevated off the floor and proper rodent control procedures should be implemented in feed ingredient storage areas. All feed spills or feed ingredient spills should be cleaned up as soon as possible to minimize attraction of wildlife and rodents.

- Grain and feed should be stored and handled so that it cannot be contaminated or be treated to eliminate contamination.
- Grain and feed commodity delivery trailers should be covered during transport so that the contents cannot be contaminated.
- If possible, store finished feed and feed ingredients in closed bins or buildings which decrease the potential for contamination with disease agents.
- Follow good bunk and feed management practices. Dispose of feed refusals if not eaten in order to minimize moldy or spoiled material in bunks or feeders, which could attract bird, rodent, and other wildlife or domestic animals.

It is important to consider the entry and movement of feed delivery vehicles and the feed they carry when determining the best location for the LOS and Access Points.
Appendix A: Creating a Premises Map for a Biosecurity Plan

The first step is to get an aerial map of your operation (steps described below). It can then be labeled by hand or using a computer (also described below).

Getting an Aerial View from Google Maps*

*Google Maps is one example of aerial images provided free of charge online. There are others such as www.bing.com/maps and https://zoom.earth; use what works best for your operation. The steps below pertain to Google Maps.

1. Open an internet browser. Type in the URL: https://www.google.com/maps
2. Type in the address of the production site (address where the buildings are located, not home address—if different).
3. Click on the small box in the lower left that says “Satellite”
4. Zoom in so that you can visualize all pens and accessory structures once you see the satellite view. The entire site should still fit within the screen.
5. Find the site location on the map where the animals are located and click. A gray “pushpin” icon will appear. At the bottom of the screen, you will see the GPS coordinates in light gray below the location’s address. Copy this information to include in your premises map.
6. Go to your biosecurity plan in Microsoft Word, but keep the internet browser in Google Maps open behind Word. Click on “Insert” in the toolbar; click “screenshot;” click “screen clipping.” The browser will move to the front and be frosted. You can now use the mouse to select the appropriate area to copy into the word document.
7. Label the map with the following items and include a legend:

- Public road
- Line of Separation (LOS)
- LOS Access Point (through the LOS)
- Vehicle cleaning and disinfection (C&D) station(s)
- Designated parking area
- Carcass disposal/pickup location
- Carcass removal pathways
- Designated delivery area (if on-site)
- Loading site
Labeling Map by Hand

Use color pencils or pens to draw the lines, arrows, and shapes listed above on your map.

Here is an example of a completed map with legend:

Labeling Map Using Computer

If using Microsoft Word
1. Use the **Insert:Shapes** from the control panel to place the various shapes and lines

“Freeform” shape – to outline a building
2. Use the “Line” tool to make the LOS surrounding the farm. This allows for editing individual areas if the LOS was to change in the future. The “Freeform” tool is helpful to use in smaller, more complicated areas of the LOS (example on right), but will make it difficult to edit later and should only be used in stationary areas of your LOS.

3. After you insert your first line, click the “Format” tab at the top of the page. Click the expander button in the “Shape Styles” section to expand your formatting pane to the right side of the page.
   - Use the “Format Shape” panel on the right to adjust the color and line width of your lines, arrows, and shapes.

4. Copy the formatted line by selecting it and hitting “Ctrl + C” on your keyboard. Paste a new line (“Ctrl + V”), already formatted, next to the first one you created. Drag the ends of the lines to connect them at the appropriate locations.

5. If you have a hard time seeing where to connect the separate lines, zoom in on your map using the zoom option at the bottom right of the word document.

Here is an example of a completed map with legend:
Appendix B: Group Training Form

Trainer Name: _________________________  Phone: ____________ Email: _____________
Trainees Place of Employment (Name): ________________________________
Premises ID __________________________  Training Date: _______________

<table>
<thead>
<tr>
<th>Trainee First and Last Name</th>
<th>Training Topic</th>
<th>Trainee Signature Upon Completion of Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>20</td>
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</tbody>
</table>
Appendix C: Operation Inputs/Outputs & Contingency Planning

C&D of vehicles crossing the LOS is time and resource intense. Carefully planning the location of the LOS based on the types, drive path, frequency, and necessity of inputs/outputs can help focus resources to minimize FMD virus entry. Decide if some movements could be modified. For example, move your garbage bin to the edge of the LOS so the garbage truck can pick it up without crossing the LOS or auger grain across the LOS into a farm wagon that remains inside the LOS. Below are some input/outputs that may apply to your operation. Evaluating the frequency and travel path can be used to help determine LOS placement. Include the completed chart in your biosecurity plan.

The last column helps with a contingency plan. If movements are limited, determine how long you can go without certain inputs, and if some movements can be less frequent. Some movements may be seasonal; in this case, indicate frequency and lengths of time based on the busiest time of year.

<table>
<thead>
<tr>
<th>Inputs/Outputs</th>
<th>Frequency of input/output</th>
<th>Path traveled by:</th>
<th>How long could you go without this movement?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Onsite vehicles</td>
<td>One day?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Equipment</td>
<td>Few days (2-6 days)?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>People</td>
<td>Week?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Animals</td>
<td>Month?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>None</td>
<td>Year?</td>
</tr>
<tr>
<td>Incoming cattle</td>
<td>Daily</td>
<td></td>
<td></td>
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<td></td>
<td>Weekly</td>
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<td>Monthly</td>
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<td></td>
<td>Annually</td>
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<td></td>
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<tr>
<td>Outgoing cattle</td>
<td>Daily</td>
<td></td>
<td>One day?</td>
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<tr>
<td></td>
<td>Weekly</td>
<td></td>
<td>Few days (2-6 days)?</td>
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<tr>
<td></td>
<td>Monthly</td>
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<td>Week?</td>
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<tr>
<td></td>
<td>Annually</td>
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<td>Month?</td>
</tr>
<tr>
<td>Checking herds via horse, ATV, etc.</td>
<td>More than once/day</td>
<td></td>
<td>One day?</td>
</tr>
<tr>
<td></td>
<td>Daily</td>
<td></td>
<td>Few days (2-6 days)?</td>
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<tr>
<td></td>
<td>Every other day</td>
<td></td>
<td>Week?</td>
</tr>
<tr>
<td>Feed commodity delivery (bulk</td>
<td>More than once/day</td>
<td></td>
<td>One day?</td>
</tr>
<tr>
<td>ingredients, bagged feed, liquid feed)</td>
<td>Daily</td>
<td></td>
<td>Few days (2-6 days)?</td>
</tr>
<tr>
<td></td>
<td>Every other day</td>
<td></td>
<td>Week?</td>
</tr>
<tr>
<td>Ration (mixed feed) delivery to cattle onsite</td>
<td>More than once/day</td>
<td></td>
<td>One day?</td>
</tr>
<tr>
<td></td>
<td>Daily</td>
<td></td>
<td>Few days (2-6 days)?</td>
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<tr>
<td></td>
<td>Every other day</td>
<td></td>
<td>Week?</td>
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<tr>
<td>Ration (mixed feed) delivery to animals off-site</td>
<td>More than once/day</td>
<td></td>
<td>One day?</td>
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<td></td>
<td>Daily</td>
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<td>Few days (2-6 days)?</td>
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<td></td>
<td>Every other day</td>
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<td>Week?</td>
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<tr>
<td>Water delivery to animals</td>
<td>More than once/day</td>
<td></td>
<td>One day?</td>
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<tr>
<td></td>
<td>Daily</td>
<td></td>
<td>Few days (2-6 days)?</td>
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<tr>
<td></td>
<td>Every other day</td>
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<td>Week?</td>
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<tr>
<td></td>
<td>Weekly</td>
<td></td>
<td>Two weeks?</td>
</tr>
<tr>
<td>Inputs/Outputs</td>
<td>Frequency of input/output</td>
<td>Path traveled by:</td>
<td>How long could you go without this movement?</td>
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<td>--------------------------------------------</td>
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<td>--------------------------------------------</td>
</tr>
<tr>
<td>Moving cattle to new pasture</td>
<td>Weekly</td>
<td>Onsite vehicles</td>
<td>Few days (2-6 days)?</td>
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<tr>
<td></td>
<td>Every other week</td>
<td>Equipment</td>
<td>Week?</td>
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<td></td>
<td>Monthly</td>
<td>People</td>
<td>Few weeks?</td>
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<td>Animals</td>
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<tr>
<td>Working cattle</td>
<td>Monthly</td>
<td>Onsite vehicles</td>
<td>Weeks?</td>
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<td></td>
<td>Biannually</td>
<td>Equipment</td>
<td>Months?</td>
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<tr>
<td>Working calves (tagging, branding, etc.)</td>
<td>Biannually</td>
<td>Onsite vehicles</td>
<td>Weeks?</td>
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<td>Annually</td>
<td>Equipment</td>
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<tr>
<td>Treating cattle</td>
<td>More than once/day</td>
<td>Onsite vehicles</td>
<td>One day?</td>
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<td>Daily</td>
<td>Equipment</td>
<td>Few days (2-6 days)?</td>
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<td>People</td>
<td>Week?</td>
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<td>Animals</td>
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<tr>
<td>Feed harvest (silage, hay, grain)</td>
<td>Monthly</td>
<td>Onsite vehicles</td>
<td>Week?</td>
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<td>Annually</td>
<td>Equipment</td>
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<td>Bedding inputs</td>
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<td>Onsite vehicles</td>
<td>One day?</td>
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<td>Equipment</td>
<td>Few days (2-6 days)?</td>
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<td>Animals</td>
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<td>Fuel delivery</td>
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<td>Onsite vehicles</td>
<td>One day?</td>
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<td></td>
<td>Equipment</td>
<td>Few days (2-6 days)?</td>
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<td>People</td>
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<tr>
<td>Propane delivery</td>
<td>Daily</td>
<td>Onsite vehicles</td>
<td>One day?</td>
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<td>Equipment</td>
<td>Few days (2-6 days)?</td>
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<tr>
<td>Veterinary/animal care personnel (custom caretaking services, consulting veterinarian,)</td>
<td>Daily</td>
<td>Onsite vehicles</td>
<td>One day?</td>
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<td></td>
<td></td>
<td>Equipment</td>
<td>Few days (2-6 days)?</td>
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<td>People</td>
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<td>Animals</td>
<td>Month?</td>
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<td>None</td>
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<tr>
<td>Inputs/Outputs</td>
<td>Frequency of input/output</td>
<td>Path traveled by:</td>
<td>How long could you go without this movement?</td>
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<td>---------------------------------------------------</td>
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<tr>
<td>nutritionist, AI technicians, etc.)</td>
<td></td>
<td>□ None</td>
<td>□ Year?</td>
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<tr>
<td>Pharmaceutical deliveries</td>
<td>Daily</td>
<td>□ Onsite vehicles</td>
<td>□ One day?</td>
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<td>Weekly</td>
<td>□ Equipment</td>
<td>□ Few days (2-6 days)?</td>
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<td>Monthly</td>
<td>□ People</td>
<td>□ Week?</td>
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<td>□ None</td>
<td>□ Year?</td>
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<tr>
<td>Mail/package deliveries</td>
<td>Daily</td>
<td>□ Onsite vehicles</td>
<td>□ One day?</td>
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<td>Weekly</td>
<td>□ Equipment</td>
<td>□ Few days (2-6 days)?</td>
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<td>Monthly</td>
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<td>□ None</td>
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<tr>
<td>Garbage removal</td>
<td>Daily</td>
<td>□ Onsite vehicles</td>
<td>□ One day?</td>
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<td>Weekly</td>
<td>□ Equipment</td>
<td>□ Few days (2-6 days)?</td>
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<td>Monthly</td>
<td>□ People</td>
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<td>Annually</td>
<td>□ Animals</td>
<td>□ Year?</td>
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<td></td>
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<td>□ None</td>
<td></td>
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<tr>
<td>Dead animal removal</td>
<td>Daily</td>
<td>□ Onsite vehicles</td>
<td>□ One day?</td>
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<tr>
<td></td>
<td>Weekly</td>
<td>□ Equipment</td>
<td>□ Few days (2-6 days)?</td>
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<td>Monthly</td>
<td>□ People</td>
<td>□ Week?</td>
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<td>Annually</td>
<td>□ Animals</td>
<td>□ Month?</td>
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<td>□ None</td>
<td>□ Year?</td>
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<tr>
<td>Manure removal</td>
<td>Daily</td>
<td>□ Onsite vehicles</td>
<td>□ One day?</td>
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<td>Weekly</td>
<td>□ Equipment</td>
<td>□ Few days (2-6 days)?</td>
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<td>Monthly</td>
<td>□ People</td>
<td>□ Week?</td>
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<td>Annually</td>
<td>□ Animals</td>
<td>□ Month?</td>
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<td></td>
<td></td>
<td>□ None</td>
<td>□ Year?</td>
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<tr>
<td>Hunting in pastures shared with cattle</td>
<td>Monthly</td>
<td>□ Onsite vehicles</td>
<td>□ Weeks?</td>
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<tr>
<td></td>
<td>Biannually</td>
<td>□ Equipment</td>
<td>□ Months?</td>
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<tr>
<td></td>
<td>Annually</td>
<td>□ People</td>
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<td>□ Animals</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>□ None</td>
<td></td>
</tr>
<tr>
<td>Other (ex. access to break room, maintenance shop,</td>
<td>Daily</td>
<td>□ Onsite vehicles</td>
<td>□ One day?</td>
</tr>
<tr>
<td>residence, etc.)</td>
<td>Weekly</td>
<td>□ Equipment</td>
<td>□ Few days (2-6 days)?</td>
</tr>
<tr>
<td></td>
<td>Monthly</td>
<td>□ People</td>
<td>□ Week?</td>
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<td></td>
<td>Annually</td>
<td>□ Animals</td>
<td>□ Month?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ None</td>
<td>□ Year?</td>
</tr>
</tbody>
</table>
Appendix D: Line of Separation Examples

Figure 1: Illustration of an LOS around an Operation with Cattle on Pasture

This example demonstrates the concepts of the LOS. In this example, the LOS is around the perimeter of a stocker/backgrounder operation with two LOS Access Points, each with a C&D station. There is a separate LOS Access Point for people to enter.
This example small stocker/backgrounder operation shows two possible examples for a loading site. Depending on the layout and flow of the operation, premises may use one or multiple options in different locations.

1. The subset depicted in the **bottom left-most corner** of the graphic contains an example of a loading site within the LOS. Because on-farm traffic movements between the feed area in the bottom left of the operation and the cattle in other areas of the operation are frequent and pass in front of the loading area, this area is contained within the LOS. When a livestock truck must enter the operation to load or unload cattle at this site, the truck and trailer are required to undergo C&D at the LOS Access Point before crossing the LOS to limit FMD virus entry.

Truck/trailer, commodity truck, and transporter/driver, cross the LOS Access Point onto the cattle side of the LOS to load/unload cattle or commodities.

- C&D of vehicle required
- Biosecurity measures for driver exiting the cab where the layout and direct route to the loading site would allow the livestock truck to load or unload cattle without crossing the LOS. In this situation, less resources would be needed because exterior vehicle C&D would not be needed every time those vehicles came to the operation.

2. The subset depicted in the **bottom middle** of the graphic contains an example where the layout and direct route to the loading site would allow the livestock truck to load or unload cattle without crossing the LOS. In this situation, less resources would be needed because exterior vehicle C&D would not be needed every time those vehicles come to the operation.
Operations need to maintain the loading site as an LOS Access Point for cattle movement and have protocols that prevent FMD virus introduction. The LOS Access Point could be established at a variety of places within the loading area depending on truck style, loading site design, and preferences of the operation and livestock transporter.

Unless they remain in the cab, the transporter would perform all cattle loading activities from the truck/trailer side of the LOS and individuals working on the operation would perform all other activities within the LOS. If the same loading site will be used for incoming cattle, individuals working on the operation are responsible for cleaning and disinfecting the LOS Access Point at the loading site once the transporter and livestock truck/trailer leaves.

Here is a brief checklist to determine if an operation can utilize this option and minimize introduction of FMD virus from the livestock truck and driver:

- Loading site is adjacent to a public road and livestock truck does not enter operation to load cattle – OR –
- Drive path leading to the loading site does not pass close to susceptible animals
- Loading area does not slope towards animal housing or holding areas
- The driver is trained in proper protective gear donning, doffing and disposal
- The loading site can be established as a LOS Access Point (for cattle only) with signage, proper biosecurity steps posted, and all supplies required to meet the biosecurity steps
- Individuals working on the operation are trained in proper cleaning and disinfection protocols for the loading site
- Individuals working on the operation are trained in proper protective gear donning, doffing and disposal

If this option is used it is important that:

- The off-site vehicle does not need to undergo exterior C&D because it is not crossing the LOS
- On-site vehicles are excluded from area where off-site vehicles park to load/unload
- Susceptible animals should not walk through this area unless loading out to leave the operation
- Individuals working on the operation should not walk through this area
- If individuals working on the operation cross the LOS here, or at another location, they must re-cross the LOS to the cattle side at an LOS Access Point in a biosecure manner.

Note that the stocker/backgrounder operation depicted in this example is adjacent to a livestock market, which can be seen in the bottom right and right edges of the graphic. In cases such as this, when determining an appropriate location for the LOS, be sure to consider potential routes of exposure between animals on the operation and those on the adjoining premises. In this example, most areas of the operation are separated from the livestock market by a line of trees, preventing direct animal contact between premises as well as providing a buffer from liquids or organic matter that may be kicked up or splashed from the livestock market onto the operation. Additional considerations may include traffic on the adjacent premises which should be considered potentially contaminated, drive path surfaces and the ability of organic matter from these surfaces to spread onto the operation under various conditions, water sources (should not be shared between premises) and ground topography and slopes between premises. If additional separation is needed, this could be accomplished through pasture rotation, coordinating pasture use with the adjacent premises, or using temporary electric fencing to further increase the distance between premises boundaries.
## Appendix E: Movement Logs

### Vehicle and Equipment Entry Log

Operation Name: __________________________________

Operation PremID (PIN): __________   Address: ___________________   Contact Name: ________________   Phone: ________________

<table>
<thead>
<tr>
<th>Date</th>
<th>License Plate # &amp; State</th>
<th>Driver Name</th>
<th>Driver Phone #</th>
<th>Vehicle Description</th>
<th>Reason for Entry</th>
<th>C&amp;D on site?</th>
<th>Initials of Person Supervising Entry</th>
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<tbody>
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</table>
### People Entry Log

Operation Name: __________________________

Operation PremID (PIN): ___________  Address: _______________  Contact Name: ___________  Phone: ___________

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Contact Phone</th>
<th>Reason for Entry</th>
<th>Have you had livestock contact in the last 7 days?</th>
<th>Where was this Last Contact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM-DD-YY</td>
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<td></td>
<td>Yes    No</td>
<td>(Packing plant, farm, auction, exhibition, etc. AND City/State)</td>
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</table>
### Animal Movement Log

**Operation Name:** ____________________________

**Operation PremID (PIN):** ___________  **Address:** ____________________________  **Contact Name:** ________________  **Phone:** ________________

<table>
<thead>
<tr>
<th>Date</th>
<th>Animal /Group ID</th>
<th># Head in Shipment</th>
<th>Origin Address (PIN)</th>
<th>Destination Address (PIN)</th>
<th>Reason for Entry/Exit</th>
<th>Transporter Contact Information (Company, Driver name, Phone)</th>
<th>Initials of Movement Supervisor</th>
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Appendix F: Employee and Visitor Arrival Agreement

If I cross the Line of Separation, at a minimum I agree to the following biosecurity measures:

- Shower and change into clean clothes and footwear prior to my arrival at the premises
- After showering and changing into clean clothing and footwear offsite, I will not have any contact with animals or facilities where livestock or deadstock are held (e.g., my home, other premises, auction market, buying station, slaughter plant, rendering plant) prior to my arrival onsite.
- I will maintain a clean vehicle interior, free from contamination of soiled clothes, footwear, or other items.

I agree to follow additional biosecurity measures once on the premises based on my job duties that reduce the risk of introducing disease to the animals.

If I observe or perform a breach of biosecurity (accidental or intentional), I will promptly inform the Biosecurity Manager of the date, time, and nature of the incident.

Apéndice F: Acuerdo de entrada de empleados y visitantes

Si cruzo la línea de separación, como mínimo estoy de acuerdo con las siguientes medidas de bioseguridad:

- Ducharme y ponerme ropa y calzado limpio antes de mi llegada a las instalaciones
- Después de ducharme y cambiarme con ropa y calzado limpio fuera del establecimiento, no tendré ningún contacto con animales o instalaciones donde se alojan ganado vivo o muerto (por ejemplo, mi casa, otros establecimientos, mercados de subastas, estación de compra, mataderos, planta de procesamiento) antes de mi llegada al establecimiento.
- Mantendré el interior de mi vehículo limpio, libre de contaminación de ropa, calzado y otros artículos sucios.

Estoy de acuerdo en seguir con medidas de bioseguridad adicionales una vez dentro del establecimiento, basado en mis funciones de trabajo que reducen el riesgo de introducir enfermedades a los animales.

Si observo o realizo una violación de la bioseguridad (accidental o intencional), informaré lo antes posible al Encargado de Bioseguridad sobre la fecha, hora y naturaleza del incidente.
Appendix G: Record of Checking Rodent Bait Stations

Rodent bait stations must be checked weekly and contents replaced when low.

<table>
<thead>
<tr>
<th>Date</th>
<th>Signature</th>
<th>Comments</th>
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</table>
Appendix H: Setting up and Operating a Cleaning and Disinfection (C&D) Station

Effective disinfection of equipment and vehicles requires thorough cleaning, application of an effective disinfectant, and time for the disinfectant to work (consult disinfectant labels to determine the contact time necessary for virus elimination/inactivation).

When setting up a C&D station, consider the following:

- The C&D station should be free of dirt/mud. A hard or solid surface is recommended, but a well-drained gravel surface is acceptable. It is important to prepare the wash pad of a C&D station of a material that is easy to clean and does not hold onto disease agents.
- Choose the location of the C&D pad carefully. Consider the location of the LOS Access Point(s), the direction of the slope of the lane, the farm topography around potential wash pad sites, and how the land next to the wash pad is used. If the C&D pad is not directly adjacent to the LOS Access Point, locate the C&D wash pad such that cross-traffic between newly disinfected vehicles and dirty vehicles not entering the LOS is prevented.
- It is preferable to choose a location for the C&D pad that drains away from the LOS, high-traffic areas, and animal housing. It is very important that contaminated water not flow into the animal housing.
  - Wastewater from the C&D station should be managed following state, local, and municipality regulations. Review the appropriate laws for specifics on wastewater/effluent regulations. Many areas have specific rules concerning wastewater runoff, to ensure that it does not enter waterways, streams, or other waters of the state.
  - You may need to build a berm, channels, or a retention pond around the C&D pad to ensure wastewater runoff is collected.
- Adequate lighting should be provided to conduct vehicle C&D in non-daylight hours.
- Ensure protective gear is available. Individuals need to wear protective gear that protects their street clothes/footwear, eyes, and face from environmental contamination, washing procedures, and disinfectant sprays. All protective gear and equipment should be stored at or near the disinfection station.
- Provide a container to store protective gear until it is disposed of. FMD virus is not a public health concern, but contaminated clothing and footwear can carry the virus, potentially exposing susceptible animals.

Cleaning and disinfection procedures for vehicles crossing the LOS should be similar to the following:

- **Soak** the most visibly contaminated areas to aid in washing removing organic materials on tires, wheel wells, undercarriage, mud flaps, splash guards, and steps.
- **Wash**, wipe, spray or scrub the areas with excess organic matter starting with the dirtiest and working towards the cleaner areas.
  - Pressure washers can enhance organic matter removal.
  - Ensure that the spray and wash water run-off from the vehicle does not reach animal holding/housing areas as FMD virus in organic matter could result in animal exposure.
- **Rinse** and remove all detergent/soap residues by applying a low pressure water rinse on all surfaces, starting with the top of the vehicle and working down.
- **Read** the product label on the disinfectant and handle the solution correctly to ensure safety of the handler and effectiveness of the disinfectant. Personal protective equipment may be needed to mix up solutions.
Note the recommended dilutions, water temperature, environmental temperature, and the need for ventilation when using the product.

- **Disinfect** by applying the product to the cleaned areas of the vehicle, starting with the tires to maximize contact time before moving.
  
  - The vehicle can be slowly rolled forward to allow the disinfectant to contact all parts of the tires.
  - Ensure that the product has adequate wet contact time (per label directions) with all surfaces to inactivate the virus. Solution must remain ‘wet’ to actively work; reapplication may be necessary.

An example SOP is below for wearing protective gear, inspecting, cleaning and disinfecting vehicles. Modify to meet your specific operation needs.

**Establish the C&D Station**

**Setting up C&D Station**

1. Set up C&D station outside or adjacent to LOS. Maintain C&D station free of dirt, manure and other contaminants. Fence animals away from C&D station.
2. Provide and properly maintain vegetative filter area around C&D station for wash water runoff. Manage runoff so that it does not enter animal housing, drive paths, flowing streams, ditches or other avenues that leave the operation. Follow state or local regulations regarding management of effluent.
3. Make sure the following supplies are available and can last four days minimum, stored out of the elements, and refilled when low
   a. Rubber gloves (2 pair for each person, each washing)
   b. Waterproof outerwear covering street clothing, skin, head, neck (2 sets in sizes …)
   c. Safety glasses or goggles (2 pairs)
   d. Protective footwear (in sizes: _____________) that remain at the C&D station
   e. Plastic garbage bags for disposal of gloves
   f. NAME OF DISINFECTANT: _______________________________
   g. Water (60 gallons per vehicle)
   h. Pressure washer
   i. Fuel or power source for pressure washer
   j. Long handle brush (2)
   k. Timer for disinfectant contact times
   l. Vehicle log sheet with pens
4. Maintain a supply inventory log and written plan for restocking supplies, including names, addresses and other contact information for suppliers and the means by which supplies will be delivered to the company or transporter/driver in a timely manner
5. Mix the (NAME OF DISINFECTANT: _______________________________) solution fresh daily. (Citric acid disinfectant 3% solution is 13 pounds of 99% food grade anhydrous powder to 50 gallons of water). Mix thoroughly.
   a. Wear protective gear when mixing up solution. Read label.
   b. Do NOT mix or use with bleach or chlorinated products
6. Maintain a Vehicle C&D log for the operation. Log shall be available for review by the State Veterinarian’s office and maintained for duration of the event.

**Putting on (Donning) Protective Gear at C&D Station**

1. Inspect all protective gear for damage or contamination; do not use unless intact, clean
2. Put on waterproof outerwear making sure it completely covers all street clothes and exposed skin, including neck and head
3. Put on gloves
a. Cover wrist opening with protective outerwear or
b. Seal with tape to prevent water, disinfectant running inside
4. Put on protective footwear
   a. Cover top of footwear with protective outerwear or
   b. Seal with tape to prevent water, disinfectant running down the pant leg inside the footwear
5. Put on the face shield over the hooded outerwear

Inspecting and Cleaning Vehicles
1. Wash down the wash pad surface to remove mud/manure before vehicle enters
   a. Monitor wash effluent to ensure it enters the grassy area and not does not cross the pavement
   b. If crosses, build a berm to hold it within the wash area
2. Guide vehicle to wash pad
3. Driver remains in vehicle
4. Record vehicle entry details on log sheet
   a. Origin of vehicle, driver name, contact number, vehicle identification, previous and next stop (name and location)
5. Walk around and visually inspect the exterior of vehicle for contamination, focusing on the tires, wheel wells, undercarriage, mud flaps, splash guards and steps
6. If exterior is visibly contaminated, soak the dirty areas with water and soap
   a. Have driver move vehicle forward slightly to ensure tire contact surface is cleaned
   b. Scrub heavily soiled areas
7. Pressure wash off the soap and visible contamination
8. Rinse with low pressure water working from the top of the contaminated area down

Disinfecting Vehicles
1. Apply the (NAME OF DISINFECTANT: _______________________________) to the cleaned areas of the vehicle, starting with the tires to maximize contact time before moving
   a. Have driver move vehicle forward slightly to ensure disinfectant contact with the entire tire surface
2. Allow the (NAME OF DISINFECTANT: _______________________________) to contact the surfaces for _____ minutes (start time upon first application) to inactivate the virus
   a. Solution must remain ‘wet’ to actively work; reapplication may be necessary
3. Wash down drive path area where wash water/run off traveled
4. Apply (NAME OF DISINFECTANT: _______________________________) solution to drive path where wash water/run off traveled and allow _____ minutes of wet contact time
5. Allow vehicle to enter premises; ensuring gate is closed behind them

Removing (Doffing) Protective Gear at C&D Station
1. Water rinse off protective gear from top to bottom to remove any potential contamination from outerwear, gloves, and footwear
2. Remove face shield and store in a protected location
3. Remove gloves
   a. If reusable, store in a protected location or
   b. Dispose of in garbage bag
4. Remove protective outerwear, protective footwear
   a. Store in a protected location near the C&D station to be worn upon next vehicle C&D
5. Put on protective footwear that can be worn around animals before leaving C&D station
6. Remove all disposable PPE and dispose of properly
**Vehicles Exiting Operation**

1. Proceed to exit, wait for individuals working on the operation to open gate, and leave operation
2. Individuals working on the operation will close gate upon vehicle exit and record departure information on Vehicle, Equipment Entry Log

**C&D Station Supply Inventory Log**

Minimum 4 day supply, maintain in good condition, inventory every 6 months

Operation PremID: __________________ Address: ________________________________
Contact Name: ___________________ Phone: ________________________________

<table>
<thead>
<tr>
<th>Supplies</th>
<th>Inventory Date</th>
<th>Current Amount/ Sizes</th>
<th>Supply Order Invoice #</th>
<th>Purchased From</th>
<th>Additional Info (make, model#)</th>
<th>Initials</th>
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<tbody>
<tr>
<td>Rubber Gloves</td>
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<tr>
<td>Waterproof outerwear</td>
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<td>Safety glasses/ goggles/ face shields</td>
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<td>Protective footwear</td>
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<td>Water storage</td>
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Appendix I: Approved Disinfectants for FMD Virus

Source: http://www.cfsph.iastate.edu/pdf-library/FMD-Resources/DisinfectantsForFMDVirus.pdf

**Introduction**
In the U.S., the Environmental Protection Agency (EPA) regulates disinfectants (referred to as antimicrobial pesticides by the EPA) under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). This law requires that all label use directions and safety precautions be followed. The labeling for each EPA-registered disinfectant lists the disease agents it effectively inactivates. In the case of the foot and mouth disease (FMD) virus, there are only a few labeled products and only one is registered as a sanitizer on food contact surfaces. In emergencies, when EPA registered products may not be available, EPA may grant exemptions for unregistered uses of registered pesticides, or uses of unregistered pesticides, to USDA-APHIS personnel, State Departments of Agriculture personnel, or possibly farmers or individuals to use a specific pesticide for a limited time by designated personnel. USDA-APHIS has exemptions in place for the use of citric acid and sodium hypochlorite (bleach), against the FMD virus in the event that registered pesticides are not available during an outbreak.

**Safety**
Follow all safety precautions and use directions listed on the product label during the handling and mixing of disinfectant solutions. Wear eye and respiratory protection when mixing or spraying disinfectants. Wear gloves to avoid skin contact with caustic materials. Immediately wash off any disinfectant that contacts bare skin.

**Contact Time**
Before disinfecting, all surfaces must be cleaned (see section 7). Disinfectants will not be effective unless the surface they are applied to remains visibly wet for the required period of time. Read label directions for this contact time. Disinfectants mixed with water are susceptible to evaporation in hot or windy conditions and in direct sunlight and thus will not be completely effective unless reapplied. Curved surfaces that cause disinfectants to runoff (like milk trucks/tankers) may require reapplication to keep the surface wet for the required contact time. Since disinfectants, climates, and environmental regulations vary, work with the animal health authority for specific recommendations. Dairy equipment can be damaged by inappropriate uses of disinfectants, so proper use is critical to destroying the virus while maintaining the equipment.

**Proprietary Products**
EPA registered products with a label claim to inactivate FMD virus are listed in Table 1. Any of these products may be selected and used according to their labels. For more detailed information about available products, refer to the official label currently filed by the EPA by searching (product name or registration number) on the U.S. EPA Pesticide Product Label Search website at http://iaspub.epa.gov/apex/pesticides/?p=PPLS:1:1719419566286576.
<table>
<thead>
<tr>
<th>EPA Reg. No.</th>
<th>Product Name</th>
<th>Company</th>
<th>Active ingredient(s)</th>
<th>Use sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1677-129</td>
<td>Oxonia Active</td>
<td>Ecolab, Inc.</td>
<td>Hydrogen peroxide Peroxyacetic acid</td>
<td>Foot and mouth disease virus in/on livestock barns, livestock premises, animal quarters, animal cages, animal feeding/watering equipment, milking equipment, dairy equipment, and agricultural premises</td>
</tr>
<tr>
<td>6836-86</td>
<td>Lonza DC 101</td>
<td>Lonza, Inc.</td>
<td>Alkyl dimethyl benzyl ammonium chloride Didecyl dimethyl ammonium chloride Octyl decyl dimethyl ammonium chloride Dioctyl dimethyl ammonium chloride</td>
<td>Foot and mouth disease virus in/on livestock premises, livestock feeding and watering equipment, and livestock equipment</td>
</tr>
<tr>
<td>10324-67</td>
<td>Maquat MQ615-AS</td>
<td>Mason Chemical Company</td>
<td>Alkyl dimethyl benzyl ammonium chloride Didecyl Dimethyl Ammonium Chloride Octyl Decyl Dimethyl Ammonium Chloride Dioctyl Dimethyl Ammonium Chloride Alkyl</td>
<td>Foot and mouth disease virus in/on livestock premises, livestock feeding and watering equipment, livestock equipment, livestock transportation vehicles, hog farrowing houses, hog barns/houses/parlors/pens, farrowing equipment, animal feeding and watering equipment, animal equipment, animal transportation vehicles, and shoe baths</td>
</tr>
<tr>
<td>70060-19</td>
<td>Aseptrol S10-TAB</td>
<td>BASF Catalysts, LLC</td>
<td>Sodium chlorite Sodium dichloroisocyanurate dihydrate</td>
<td>Foot and mouth disease virus in/on animal cages, animal stables, animal feeding/watering equipment, animal equipment, and animal transportation vehicle</td>
</tr>
<tr>
<td>70060-30</td>
<td>Aseptrol FC-TAB</td>
<td>BASF Catalysts, LLC</td>
<td>Sodium chlorite Sodium dichloroisocyanurate dihydrate</td>
<td>Foot and mouth disease virus in/on livestock premises, livestock feeding equipment, livestock watering equipment, livestock equipment, livestock transportation equipment, animal quarters, animal cages, animal feeding and watering equipment, animal equipment, animal transportation vehicles, and shoe baths.</td>
</tr>
<tr>
<td>71654-6</td>
<td>Virkon S</td>
<td>The Chemours Company FC, LLC</td>
<td>Sodium chloride Potassium peroxymonosulfate</td>
<td>Foot and mouth disease virus in/on animal feed equipment, livestock barns, livestock pens, livestock stalls, livestock stables, livestock</td>
</tr>
</tbody>
</table>
Exemptions for Use of Registered Products

USDA-APHIS has an exemption in place for the use of citric acid and sodium hypochlorite (bleach) against FMD virus in the event the proprietary products are not available. As with all disinfectants, all label use directions and safety precautions must be followed. For more information, see: https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/emergency-management/ct_disinfectants.

Citric acid (99% food grade anhydrous granular or powder)

A 3% solution is made by adding 4 ounces of citric acid powder to 1 gallon of water (or 30 grams to 1 liter of water). For larger batches (50 gallons), add 13 pounds of citric acid powder to 48.5 gallons of water. Mix thoroughly.

- **Recommended wet contact time**
  - 30 minutes for porous surfaces (wood, asphalt, and pervious concrete)
  - 15 minutes for non-porous surfaces (metal, plastic, glass and any painted or sealed material)
- The solution must be mixed fresh daily and is corrosive.
- The solution must not be mixed or used with bleach, chlorinated products, or mildew stain removers.
- Citric acid solution can be used on food and nonfood contact surfaces.
  - USDA-APHIS has an exemption for use of citric acid against FMD virus by USDA APHIS personnel, any State Departments of Agriculture personnel, farmers, and any other individuals who need to use this disinfectant on surfaces potentially exposed to FMD (EPA Quarantine Exemption issued to USDA, February 2016).
• A 3% solution is VERY corrosive and causes irreversible eye damage. Avoid contact with eyes, exposed skin, and clothing. Personal protective equipment is recommended to protect from dermal and inhalation exposure. Read and follow all label recommendations.

• The citric acid section 18 exemption label contains additional information for personal protection, first aid, and proper disposal and can be found at: https://www.aphis.usda.gov/animal_health/emergency_management/downloads/CitricAcidexemptionlabel.pdf

**Sodium hypochlorite 5.25%, 8.25% or 12% (concentrated household bleach)**

To make a 0.3% sodium hypochlorite solution (3,000 ppm available chlorine), add:

- 1 part 5.25% sodium hypochlorite product to 16.5 parts water
- 1 part 8.25% sodium hypochlorite product to 26.5 parts water
- 1 part 12.0% sodium hypochlorite product to 39 parts water
  - NEVER add water to sodium hypochlorite
  - USDA-APHIS has an exemption for use of sodium hypochlorite against FMD virus by USDA APHIS personnel, any State Departments of Agriculture personnel, farmers, and any other individuals who need to use this disinfectant on surfaces potentially exposed to FMD (EPA Quarantine Exemption issued to USDA, September 2015, Amended June 2017).

Recommended wet contact time:

- 30 minutes for porous surfaces (wood, asphalt, and pervious concrete), reapplying solution when necessary. Rewet with a minimum of two applications with at least 15 minutes between the first and last application.
- 15 minutes for non-porous surfaces (metal, plastic, glass and any painted or sealed material), reapplying solution when necessary.

The solution must be mixed fresh and is corrosive.

No treatments are permitted on food or feed items or where food or feed are present.

A 0.3% solution is VERY corrosive and may cause severe damage to exposed skin and eyes. Personal protective equipment is recommended to protect from dermal and inhalation exposure. Read and follow all label recommendations.

The sodium hypochlorite section 18 exemption label contains additional information for personal protection, first aid, and proper disposal and can be found at: https://www.aphis.usda.gov/animal_health/emergency_management/downloads/SodHypo_FMDvASFvC SFv_LABEL.pdf