New Mexico

Large Animal Mass Mortality Carcass Management Plan

Southwest Border Food Protection
and Emergency Preparedness Center

College of Agricultural, Consumer
and Environmental Sciences
New Mexico Department of Agriculture

New Mexico Department of Agriculture

Executive Summary

New Mexico, the fifth largest state in the union, has 25,044 operational farms and ranches, encompassing 40 million acres, in addition to tribal lands. New Mexico is home to 1.5 million beef cattle on 10,880 operations; 337,888 cows on 135 dairies; 105,896 sheep; 34,900 goats; and numerous farmed cervids (Census of Agriculture, 2017). The dairy industry is concentrated in six counties located near the international border with Mexico. Many New Mexico range cattle and horse herds are located along the border with fence contact to Mexican cattle and horses. Herds of wildlife are also near the border and migrate between the United States and Mexican territories. New Mexico has six public livestock auctions and two international ports of entry (Santa Teresa and Columbus). New Mexico Livestock Board (NMLB) estimates that approximately 606,000 head of cattle and 1,300 horses are imported into the United States through Santa Teresa annually, destined for as many as 15 states. An additional 35,000 Mexican cattle and 130 horses are imported annually through the port in Columbus. Hence intrastate, interstate, and international livestock movement is dynamic and of constant concern from a livestock disease perspective. Given the agricultural footprint in New Mexico, it is important to consider carcass disposal following a mass mortality incident.

Proper disposal of animal carcasses is of utmost importance in preventing the further spread of both domestic and transboundary animal diseases (TAD), protecting the environment, and safeguarding human health and safety. This plan is intended to facilitate the disposal of carcasses during such incidents or events that result in the mass mortality of any animal type and at any level of government – from local, single jurisdiction responses to multi-jurisdiction, state-level responses. It is written generically, focusing on basic response methodologies. This flexibility allows the plan to be scaled to address incidents impacting livestock, poultry, and wildlife in New Mexico. All operations and activities undertaken by New Mexico Department of Agriculture (NMDA) in response to mass mortality incidents or depopulation events will be conducted using the incident command, unified command, and National Incident Management Systems (NIMS), as needed and when appropriate.

Contents

Introduction

Purpose

This document serves as a plan and guide for carcass management activities following a variety of mass mortality incidents and depopulation events. This plan is designed with flexibility and adaptability in mind to ensure a robust response to any event resulting in mass animal mortalities. Mass animal mortalities can occur as the result of foreign and domestic animal disease outbreaks, catastrophic natural disasters, or failures in the production environment. The goal of this plan is to outline timely, bio-secure, aesthetically acceptable, and environmentally responsible carcass management methods. This plan is intended to support any response to a large animal mass mortality event, regardless of jurisdiction within New Mexico.

Scope

Because of the variety of potential situations for which this plan may be used, it is designed to be scalable – able to facilitate local, single jurisdiction responses to multi-jurisdiction, state-level responses with full Emergency Operation Center (EOC) activation. A general framework that addresses common issues and provides a list of standard operating procedures for differing disposal methodologies is also included. This plan is intended to be a living, dynamic document and will be updated periodically or as new knowledge becomes available –NMDA is the responsible entity for the maintenance of the plan.

This plan:

- Is activated when a large number of animals of a single species or multiple species in a defined geographical area die off, are at elevated risk of mass mortalities, or a population needs to be reduced (depopulation).
- Is activated for surveillance and detection, containment, control, or disposal of animals impacted by a mass mortality event.
- Describes available resources, roles, and responsibilities of those involved in mass mortality incidents or events.
- Is designed to work in concert with other state emergency plans, as needed or requested.

Audience

The intended audience for the carcass management plan includes New Mexico emergency management professionals; EOC personnel; Emergency Support Functions (ESFs), and ESF-assigned agencies; Nongovernment Organizations; private-sector organizations, or other organizations deemed appropriate.

Concept of Operations

Management of animal carcasses is the responsibility of the animal owner or property owner. However, in certain instances, it may be necessary to request local, state, or federal aid (see figure 1) in order to protect property, the environment, and human health and safety.

Responsibilities and functions performed during an emergency must be incident-specific; therefore, this plan is flexible in that individual elements of the plan or all elements of the plan may be activated based on the specific emergency/incident and the decisions of core-agency personnel.

The NIMS, Incident Command System (ICS) will be implemented when this plan is activated.

This plan contains disposal methods, information resources, and authorities needed for carcass management. However, other critical aspects such as depopulation are not sufficiently discussed. Disposal operations teams should be closely integrated with the team responsible for depopulation, if one exists.

Plan Activation and Responsibilities

Mass mortality events will generally fall into one of these categories: a TAD outbreak, endemic or domestic disease outbreak, natural disaster, toxicity exposure, or production system failure. Plan activation and agency responsibilities will differ depending on the underlying cause of the event. For example, mass mortality events resulting from natural disasters may be handled at the local level, while a TAD event may necessitate a national response under the authority of the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS). In a mass carcass management situation, close coordination with New Mexico Environment Department (NMED) is necessary to ensure compliance with state solid waste, air and water guidance, rules, and regulations. While no plan can predict all contingencies, and the natural environment and production processes can change over time, this plan is intended to address common issues and list methodologies to address them.

The plan may be used as a reference for site specific plans or activated upon notification from producers, local emergency managers, or core agency personnel under the following conditions:

- Localized Event – by the New Mexico Secretary of Agriculture or an appointed representative when:
    - Significant numbers of animals are impacted by a mass mortality event that would violate normal mortality disposal regulations or are beyond the capacity of a site's normal disposal methods.
    - Does not meet the requirements of other activation conditions.
- Disease Outbreak – by the New Mexico Secretary of Agriculture or an appointed representative in consultation with the State Veterinarian or designated representative when a significant number of animals are impacted or are potentially impacted by an animal disease.
    - In response to an animal health emergency declared in an adjacent state or at the federal level.
- Governor's Disaster Declaration – In response to a Governor's Disaster Declaration resulting from an animal disease outbreak or natural disaster impacting or potentially impacting large numbers of livestock or wildlife.
- Monitoring-indicated Event – Portions of this plan may also be activated when routine monitoring indicates one or more of the following:
    - One of the International Animal Health Code diseases, as designated by the World Organization for Animal Health is detected in the state or an adjacent state.
    - A highly contagious disease is detected in the state or a migration pathway that crosses the state.

Roles and Responsibilities

Transboundary Animal Disease Outbreak

USDA is the lead federal agency for responding to a TAD event affecting domestic livestock or poultry. A TAD is defined as a transboundary animal disease or pest not known to exist in the United States animal population. During a TAD response, authority is delegated under the Animal Health Protection Act[1] through the Secretary of Agriculture to APHIS VS. As such, USDA maintains the following responsibilities:

- Coordinates with state animal health officials, including the state and federal Incident Management Teams (IMT).
- Manages the national response, public messaging, and the measures taken to control and eradicate the disease.
- Acts as the primary interface between federal, state, tribal, and local partners; provides interagency coordination necessary to respond to and control a TAD event.
- Provides on-scene support and response capability in collaboration with state, tribal, and industry partners.

Endemic Disease Outbreak

NMDA is the Coordinating Agency for Emergency Support Function 11 (ESF-11), Agriculture and Natural Resources. However, the State Veterinarian through NMLB is the Lead State Official for incident management during an endemic incident affecting livestock or poultry. An endemic disease is defined as a disease known to be present in the United States animal population. As such, NMDA and NMLB maintain the following responsibilities:

- Coordinates with the state EOC and state IMTs.
- Manages incident response, public messaging, and the measures taken to control and eradicate the disease.
- Acts as the primary interface among federal, state, tribal, and local partners; provides interagency coordination necessary to respond to and control an endemic animal disease event.
- Provides on-scene support and response capability in collaboration with tribal and industry partners.
- Consults with federal partners – as needed and when appropriate.

Natural Disaster

State

During a state-led response to a natural event such as a flood, earthquake, hurricane, or similar natural disaster that causes great damage or loss of life, the state EOC may be activated to coordinate the response. ESF-11 (i.e., NMDA) will be responsible for the agriculture and natural resource response efforts in coordination with other state departments and agencies through the other ESFs. NMDA maintains the following responsibilities:

- Coordinates IMTs.

[1] 7 USC Ch. 109: Animal Health Protection

- Manages the state response, public messaging, and measures taken regarding carcass management.
- Acts as the primary interface among federal, state, tribal, and local partners; provides interagency coordination necessary to respond to carcass management operations.
- Provides on-scene support and response capability in collaboration with tribal and industry partners.

If the state EOC is not activated, communication between ESF-11 (i.e., NMDA) and the lead agency/local jurisdiction will be direct.

If the state EOC is activated, assigning tasks among agencies will be coordinated through direct communication at state EOC or through the state's virtual incident tracking tool, WebEOC. Any tasks assigned will be communicated to the appropriate ESF (e.g., ESF-1 for transportation requests or ESF-13 for assistance with security) that will assign it to the appropriate staff or program area. In some cases, tasks may be communicated peer to peer, but the state EOC liaison needs to be notified for proper coordination and tracking.

Public communications are coordinated with NMDA's public information officer (PIO) or another designated communication officer as needed.

Federal

If requested through the Federal Emergency Management Agency (FEMA) mission assignment, USDA APHIS may provide technical assistance on pet/animal and agriculture issues to support carcass management activities arising from a natural disaster. In rare instances, FEMA may issue USDA APHIS a mission assignment to manage carcass management in the field in response to a state request, if the request meets FEMA criteria such as cost estimates, location of need, requestor, statement of work, and period of performance.[2]

During a federally led regional or disease-related response, the state EOC may be activated, and a federal IMT will likely coordinate response activities. The IMT may be collocated at the state EOC. The IMT/state EOC will assign tasks for the ESF-11 liaison to coordinate. Communications with the public will be coordinated by the Joint Information Center. NMDA will provide communications staff as requested during the response.

Core Agencies

New Mexico Department of Agriculture
New Mexico Livestock Board
New Mexico Environment Department

Supporting Agencies

New Mexico Department of Homeland Security and Emergency Management
New Mexico Department of Transportation
New Mexico State Police

[2] For more information on FEMA Mission Assignments, see FEMA Policy #104-010-2. https://www.fema.gov/sites/default/files/2020-04/MA_Policy_aug172018.pdf

New Mexico State Forestry
New Mexico Department of Health
New Mexico Department of Game and Fish

Authority

State

New Mexico Livestock Board (77-3-1 through 77-3-19 NMSA 1978)
New Mexico Environment Department (Solid Waste Act, 74-9 NMSA 1978)
All Hazard Emergency Management Act (12-10-1 through 12-10-10 NMSA 1978)
Hazardous Materials Emergency Response Act (Sections 12-12-17 through 12-12-30 NMSA 1978)

Federal

United States Department of Agriculture (Animal Health Protection Act, 7 U.S.C 109)
Federal Emergency Management Agency (Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121)

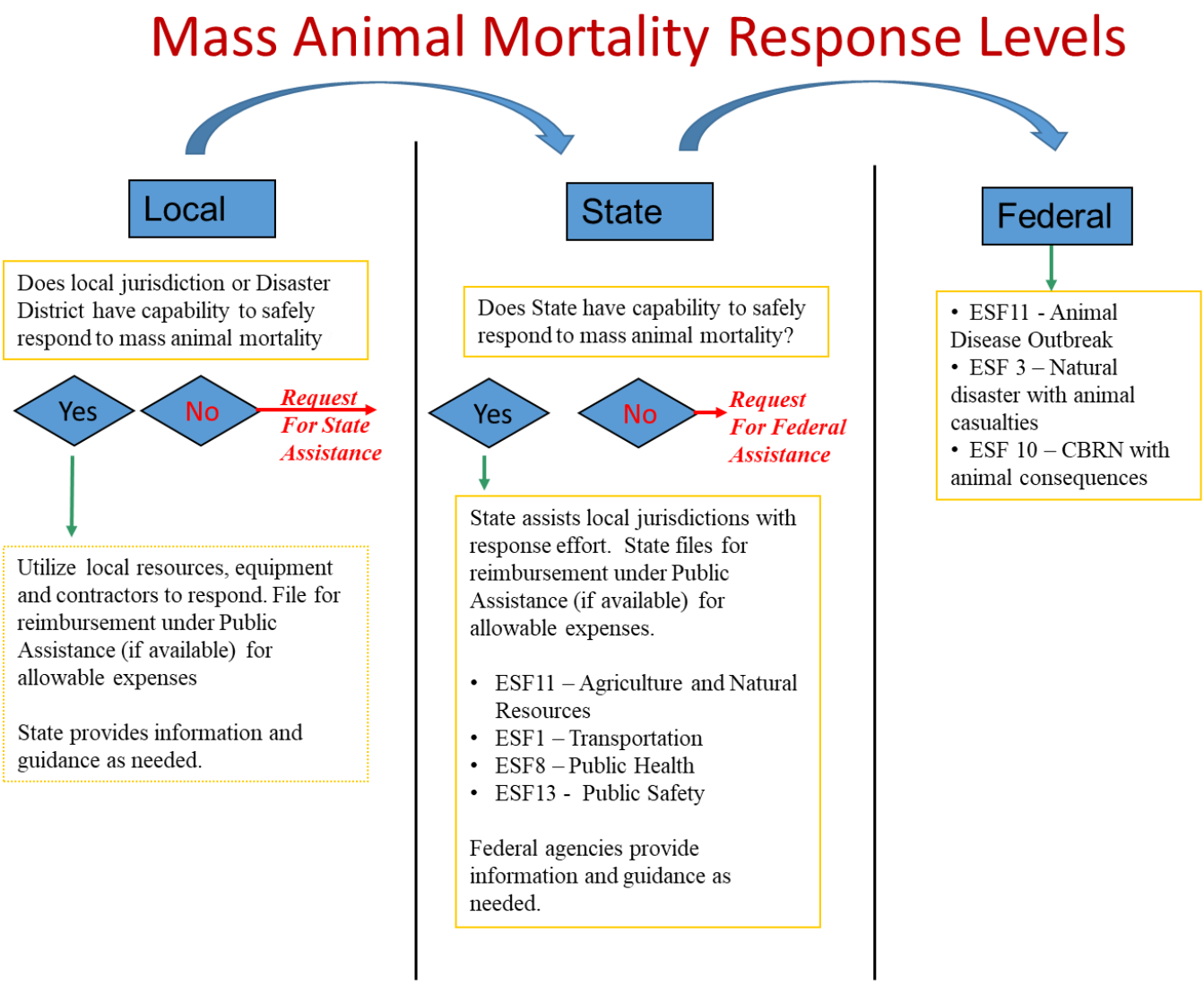

Figure 1- Mass Animal Mortality Response Levels

Planning Considerations

Planning Assumptions

Planning assumptions identify what the planning team assumes to be facts for planning purposes to make it possible to execute carcass management operations. This list should supplement planning efforts at a local or site-specific level. It does not represent an exhaustive list.

- The state EOC may be activated during a mass mortality event. Support may be requested from other agencies and depending on severity of events.
- Large quantities of specialty machinery, supplies, and materials may be required to respond to an animal disease outbreak. Responders may be working around physical, chemical, or biological hazards associated with carcass disposal and management.

- Biosecurity procedures can be extensive and will follow established guidelines based on the disease.
- An animal disease affecting livestock and wildlife will require containment actions. This may include depopulation and disposal. Local, state, and federal staff and resources may be required.
- Agriculture is large and varied across the state. NMDA works closely with other supporting organizations, particularly producer groups, for information dissemination and gathering.
- Public information and outreach will be necessary and may span organizational structures and tasks in the pre-event, response, and recovery phases. All public information requests and outreach shall be referred to the PIO at NMDA.
- Access to a site may not be possible until a natural disaster has ended. For example, flood waters may need to recede before carcasses can be safely accessed and disposed of.
- Resources during a natural disaster are often in short supply. For example, carbon source material may not be readily available for composting after an ice storm.
- Conditions during or immediately following a natural disaster may limit disposal options. For example, frozen ground can make burial difficult.

Training

Basic Courses

All NMDA staff are trained in basic ICS and NIMS courses (ICS 100 and 700). Additional training for leadership positions is required. New Mexico State University (NMSU) and NMLB staff are also encouraged to take ICS training. Recommended levels of ICS training are outlined in Table 1. Technical training and carcass management training resources are found in Appendix C.

Table 1- Recommended ICS Training

Trainee Type	ICS Couse					
	IS 100	IS 200	ICS 300	ICS 400	IS 700	IS 800
All Regular Staff						
Leadership						

Required Optional Encouraged

Operations

Biosecurity and Safety

Biosecurity is a set of preventative measures designed to reduce the risks of infectious disease transmission among livestock and people. Regardless of the cause of animal mortality, biosecurity practices should be followed. Response personnel should always adhere to the biosecurity requirements of the premises where disposal operations are taking place. On-site disposal methods are ideal to minimize biosecurity concerns, but may not be possible at every site. Each site-specific biosecurity plan should be distributed to *everyone* who has access to the facility.

For more information on site-specific biosecurity, visit healthyagriculture.org.

Work Zones and Security

Below is a list of work zone and security considerations. Security in this section refers to physical measures to prevent physical access. This list should supplement planning efforts at a local or site-specific level. It does not represent an exhaustive list.

- If a developed security plan is not being implemented by the premises owner/operator. Incident Command should set security requirements.
- Premises should have defined lines of separation between clean and dirty zones, in addition to maintaining clear entry and exit points.
- Physical security, such as fences or other barriers, may be necessary to limit unauthorized personnel or wildlife.
- Establish a decontamination corridor for equipment, personnel, and personal protective equipment (PPE).
- Analyze risk of aerosolization of active pathogens during the loading, unloading, and potential grinding of carcasses and mitigate risks if necessary.
- Personnel and equipment should not be used at more than one job site/premises without following proper cleaning and decontamination (C&D) protocols. (See C&D Section)
- All personnel should present documentation of verified credentials and evidence indicating they have received required briefings and trainings.

Personal Protective Equipment

Below is a list of PPE considerations. This list should supplement planning efforts at a local or site-specific level. It does not represent an exhaustive list.

- All PPE should be used in accordance with Occupational Safety and Health Administration (OSHA) regulations found at 29 CFR 1910 Subpart I (Personal Protective Equipment). Workers should receive training on and demonstrate an understanding of when to use PPE; what PPE is necessary; how to properly put on, use, take off, properly dispose of, and maintain PPE; and the limitations of PPE.
- The Safety officer should:
    - Develop a detailed job hazard assessment. Considerations should include occupational biological risks of carcass disposal and handling, environmental conditions, etc.
    - Recommend PPE requirements based on hazard assessments and provide PPE training to responders.

Cleaning and Disinfection (C&D)

Below is a list of C&D considerations. This list should supplement planning efforts at a local or site-specific level. It does not represent an exhaustive list.

- Will C&D of structures, holding pens, and equipment used in operations be required?
- Small-scale (personnel and small items) and large-scale (vehicles and heavy equipment) cleaning and disinfection stations should be set up at lines of separation.
- The Incident Commander/Incident Command shall determine the type and classification of disinfectants.
    - An extensive list of EPA - registered disinfectants compiled by USDA APHIS is available for reference here.
    - A full list of disinfectants can be found on the EPA's Website
- The C&D product must be registered by NMDA.
- Anyone using a C&D product that is labeled as a Restricted Use Pesticide must be licensed as a Certified Applicator by NMDA.
- Wastewater from C&D operations should be properly managed in strict accordance with the product label and state regulations.
    - Liquid waste generated during a response to a mass animal mortality event can be a contaminant. The waste may contain hazardous chemicals and disease and may be difficult to contain for proper disposal. NMDA and NMED can assist facility owners, first responders, and partner agencies in determining options for containment, collection, and disposal of response-generated liquids.

Other Resources

USDA APHIS standard operation procedures (SOPs): Biosecurity
EPA SOPs: Biosecurity

Carcass Management Methods

The following section describes commonly acceptable carcass management methods and includes aspects of each that should be considered during a response along with advantages and disadvantages of each. This is not a comprehensive list, but it is meant to convey quick information as well as offer additional informational resources.

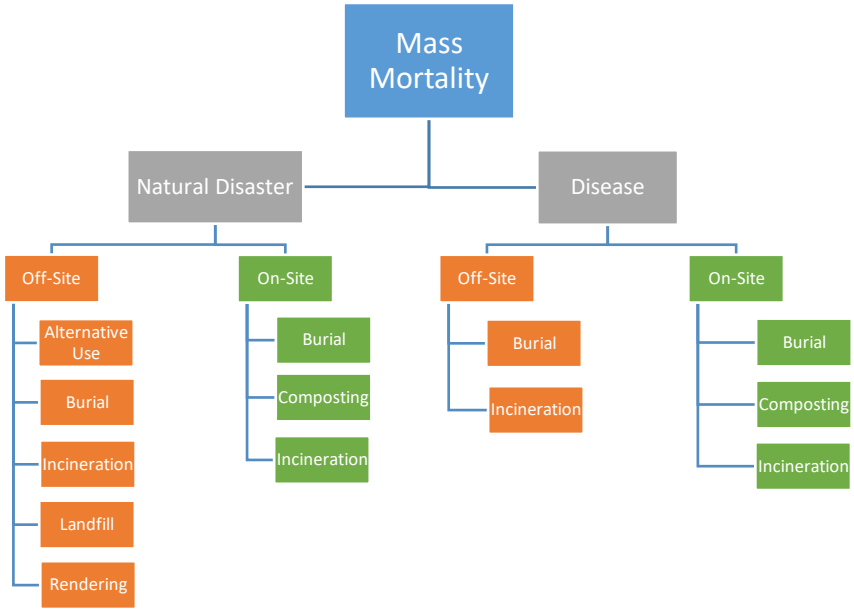

Figure 2 - Carcass Management Methods

Alternative Use

As a carcass management method, alternative use generally refers to the disposal of animals prior to or immediately after mortality, if conditions are acceptable. The primary distinction between alternative use and rendering is the use of the animal for human consumption. One example of an alternative use scenario is a herd of dairy cattle that suffered frostbite in a winter storm and are no longer able to fulfill their primary function of milking, but they are suitable to go to slaughter.

Important Considerations

- Distance and capacity of the next step in the supply chain (e.g., sale barn, feedlot, packer).
- Condition of animals.
- Cost of transport compared to estimated economic return.
- Public perception.

Advantages

- Allows for the greatest economic return to the affected producer.
- May be the easiest method to implement by using existing infrastructure.
- Will use fewer resources than other methods in terms of labor, equipment, or permitting.
- Minimizes environmental impacts.
- Extends the timeframe in which animals must be disposed of (i.e., keeping animals on feed until processing capacity becomes available).

Disadvantages

- Animals must be suitable to enter the supply chain (e.g., passes antemortem inspection at slaughter plant).
- Capacity at packing houses or feed yards may be limited.
- Cannot be used when animals are diseased or pose a toxicity hazard.

Summary

Alternative use as a carcass management method is preferable to other methods because it provides for beneficial use and utilizes existing infrastructure. However, alternative use may not be applicable during incidents involving a disease or toxicity hazard; further, local capacity to handle a mass mortality incident may be limited.

Rendering

Rendering is defined as "an off-site process that uses heat to convert animal carcasses into safe, pathogen-free feed protein and other valuable end products while reducing the negative effects of the carcasses on people and the environment."[3] Currently, County Services, located in Hereford Texas, is the only provider for rendering services for New Mexico. County Services picks up in Roswell, Portales, and Clovis, which limits its use as a method for mass mortality carcass management to eastern New Mexico.

Important Considerations

- Distance from the carcass site to the rendering facility.
- County Services estimates it can accept 20 loads of 40,000 lbs. per day. (Includes normal operating capacity).
- Condition of the carcasses and ease of loading for transportation.
    - Cold conditions may extend the length of time carcasses can be held before being sent to the rendering facility.
- Presence of animal disease may preclude rendering facilities from taking carcasses.
    - It is unlikely that rendering facilities will be willing to stop normal operations to render infected carcasses.
- Number of carcasses and available capacity of the rendering facility.

Advantages

- Environmental impacts are minimized. Rendering facilities have procedures in place to mitigate the by-products associated with air emissions and wastewater.
- The rendering process produces usable products.
- County Services operates its own transportation network, which includes leak-resistant vessels.
- The rendering process has been shown to inactivate viruses and bacteria.

Disadvantages

- Rendering facilities may already operate at capacity and may refuse carcasses from a mass mortality incident.
- Carcasses must be processed within 48 hours of death unless refrigerated or environmental conditions are sufficiently cold.

[3] https://www.aphis.usda.gov/animal_health/carcass/docs/training/7-rendering.pdf

- Cost of transport may be high.
- The rendering facility may not accept carcasses depending on type, volume, or presence of disease.

Summary

Although rendering is a safe and efficient method of carcass management, several limiting factors complicate its use as a method of response to a mass mortality event. These limitations include capacity considerations, distance to transport, and increased biosecurity concerns with infected carcasses.

Other Resources

USDA APHIS SOPs: Rendering

Burial

Burial involves excavating a large hole or trench, placing carcasses into it, and then covering the carcasses with the excavated material. Burial is often used for routine mortality management; but for mass mortality incidents, burial sites typically must be constructed at the time of the emergency. There are three burial techniques: deep burial, above ground burial, and mass burial. Much of this section addresses deep burial and above ground burial.

- Deep burial involves a hole or trench that is at least eight feet in depth and excavated material is used to backfill on top of carcasses.
- Above ground burial is a hybrid of deep burial and composting. This method uses a shallow trench in conjunction with carbon material and excavated material.
- Mass burial's defining factor is that carcasses from different premises are transported to a central burial site. It may be preferable to utilize existing landfills rather than design and build a new one. However, mass burial may be appropriate if no permitted landfill in the disaster area can or will accept carcasses. See the landfill section for more information.

Important Considerations

- Consult with the property owner to ensure there is ample space. See the Options, Time & Cost Calculator developed by USDA APHIS for cost and space estimates.
- Verify that site soils are suitable for burial. See the Web Soil Survey from the National Resource Conservation Service (NRCS) for more information.
- If the operation is a dairy facility, verify the following parameters[4] for surface and ground water protection can be met.[5]
    - Only mortalities originating at the dairy facility may be disposed of at the dairy facility.
    - Mortalities shall not be stored or buried within 200 feet (measured as horizontal map distance) from private or public wells or any watercourse.
    - Mortalities shall not be stored or buried within 100 feet (measured as horizontal map distance) from the 100-year flood zone of any watercourse, as defined by the most recent FEMA map.
    - Storm water run-on to disposal areas shall be prevented by use of berms or other physical barriers.

[4] Adapted from 20.6.6.20(w) NMAC
[5] Similar parameters shall also be considered for nondairy facilities.

    - Mortalities disposed of by burial shall be placed in a pit(s) where the vertical distance between the seasonal high ground water level and the floor of the pit(s) is greater than 30 feet as documented through the most recent ground water data obtained from an on-site test boring(s) or monitoring well(s).
    - Notification of intent to bury should be given to NMED pursuant to existing groundwater discharge permits that the dairy facility may have.
- If no suitable monitoring wells are present at the site, use the State Engineer's PODs (Points of Diversion) Locator Map or the National Water Information System as an approximation of distance to water for planning purposes.
- Verify the site is accessible to trucks and heavy equipment.
- Ensure that individuals who are operating the disposal site are properly certified in heavy equipment operation.
- Ensure that PPE, safety, and biosecurity measures are followed.
- Cleaning and disinfection of equipment and supplies prior to and after burial is critical; particularly for equipment that originates off site (See C&D Section).
- Carcasses should be vented or opened to prevent buildup of gasses within the carcass. Alternatively, the carcasses can be placed in the excavation, covered with a foot of soil for a week, then completely backfilled after off-gassing has occurred.
- If mortalities are the result of a toxicity and the agent is already found on the premises, then carcasses may be disposed of on-site.
- Burial is most effectively accomplished under dry, warm conditions. Wet, muddy, or frozen ground may require special equipment or extra care.

Facilities must consider the location of residences and environmentally sensitive areas when selecting a site for carcass management. See Table 2 for the recommended separation distances of the carcass management site. See additional siting requirements according to specific disposal option.

Object Requiring Separating Distance	**Minimum Distance Required from Compost Windrows or Burial Sites (feet)**
Existing inhabited residences (except site owner or operator's residence)	**300**
Public wells*	**200**
Private wells*	**200**
Adjacent property lines	**200**
Flowing or intermittent streams, lakes, or ponds	**200**
Seasonal high ground water level	**30 (vertical)**
Floodplain (100 year) wetlands, shoreline	**100**
***denotes a requirement of 20.6.20 (w) NMAC**	

Table 2 Setback Recommendations

Advantages

- Most livestock operations are already familiar with burial as a carcass management method.
- Can take place on site, eliminating the need for off-site transport.
- On-site burial has proven effective at preventing spread of infectious diseases.
- May be quickly implemented.
- Is relatively low cost carcass management option.
- Needed equipment is generally available. (e.g., excavators and backhoes).

Disadvantages

- Ground water contamination can result if proper procedures are not followed.
- Burial may not inactivate pathogens.
- Land used for burial may not be available for other productive purposes for several years or may be subject to deed restrictions.

Summary

Burial has commonly been used and is familiar to the agriculture community. There are logistical and economic advantages to burial relative to other disposal methods. However, concerns about potential environmental effects as well as public health impacts should be carefully considered prior to initiation of burial operations.

Other Resources

USDA APHIS SOPs: Unlined Burial and Above Ground Burial

Landfill

Using a landfill for carcass management involves depositing carcasses into an engineered facility designed to prevent environmental contamination by including measures such as an impermeable liner, leachate collection, and gas control systems. Landfilling as a disposal method differs from burial in that the infrastructure already exists, and disposal takes place off-site of the premises. Landfills provide a vital public service and may not have the capacity, ability, or willingness to accept carcasses at the expense of a disruption to their normal services.

Important considerations

- If mortalities are a result of disease, they may be classified as infectious waste according to New Mexico Solid Waste Rules.[6] Infectious waste **cannot** be disposed of in a landfill unless it has been rendered noninfectious.
    - Infectious waste determinations should be made in consultation with NMDA, NMLB, New Mexico Department of Health (NMDOH), NMED, and USDA.
    - Transportation of infectious waste requires a hauler registered with NMED. (See Transportation Section).
    - An application for approval of an alternate method for rendering infectious waste noninfectious may be granted by NMED if required conditions are met. Consult with NMED for more information.

[6] 20.9.2(I)(5) NMAC

- Mortalities are considered agricultural waste and excluded from the New Mexico Solid Waste Rules if they are to be managed on site at the agricultural facility.[7]
- Consult with NMDA, NMLB, NMDOH, NMED, and USDA regarding mortalities containing toxic agents.
- Consult with the landfill operator to ensure they will accept carcasses.
- Proximity of landfills to depopulation site should be considered to minimize transportation distance.
- Carcasses should be transported in leak-resistant vessels (See Transportation Section).
- Does the landfill have means to establish weight/volume of materials being delivered, such as truck scales?
- Is there space to set up cleaning and disinfecting vehicle prior to leaving the site?

Advantages

- Infrastructure is already in place and includes environmental and certain public health considerations.
- Can be immediately implemented assuming permission from the landfill is obtained.
- Some landfills routinely accept small numbers of routine mortalities.

Disadvantages.

- Landfills may not accept any carcasses for a variety of reasons including:
    - Lack of surge capacity.
    - Lack of appropriate equipment, staff, and other operational concerns related to managing large quantities of high moisture content or bulky waste.
    - Permitting restrictions.
    - Public relations concerns.
- Carcasses known to be exposed to zoonotic infectious agents, nonzoonotic human pathogens, or certain other emerging infectious diseases cannot be disposed of at a landfill unless they are first rendered noninfectious.

Summary

Landfills provide a rapid, convenient, and safe method for carcass management during a mass mortality event. However, there are many factors that can create operational and planning concerns, such as the landfill operator's ability and willingness to accept carcasses. It is critical to reach out to facilities prior to a mass mortality incident for planning and communication.

Additional Resources

USDA APHIS SOPs: Landfilling

Composting

Composting is defined as "the process by which biological decomposition of organic material is carried out under controlled conditions and the process stabilizes the organic fraction into a material that can be easily and safely stored, handled and used in an environmentally acceptable

[7] 20.9.2.11 NMAC

manner."[8] The process of composting involves constructing a base layer of carbon material, layering carcasses on top of the base, and capping the pile or windrow with additional carbon material. Composting also inactivates many pathogens due to the heat generated during decomposition. According to NMED, compost and compostable materials used as feedstock in the production of compost are not considered as solid waste under the New Mexico Solid Waste Rules. If composting the material will not result in a usable compost product, however, the compostable material is required to be managed as solid waste or agricultural waste.

Materials needed for effective composting

- Carbon Source Material – corn silage, ground hay/straw, saw dust, ground corn stalks, corn stover, mulch, wood chips, manure.
- Plan on roughly 1.5 lbs. of carbon/cover material per 1 lb. of carcass.

Important Considerations

- Registration through NMED as a compost facility is required. See NMED's permitting and registration program for additional guidance. Required information includes facility operator and location; site plan; feedstock description, source, and quantity; processing methods; composting methods; C:N ratio; disposition of finished compost product; means for nuisance and hazard prevention; and other information.
- If mortalities contain a toxic agent or are a result of an infectious disease, composting could be used as a step in a multistep process to achieve mass reduction or infectious disease inactivation.
    - The decision to compost carcasses that are diseased or contain toxic agents should be made in consultation with the NMDA, NMLB, NMDOH, and NMED.
    - Transportation of infectious waste requires a hauler be registered with NMED (See Transportation Section).
    - Remember that the product of the composting process may not be suitable for use as compost (e.g., carcasses that contain toxic waste may be composted for carcass management, but the resulting compost may not be suitable for land application.
- If mortalities are a result of disease, turning of compost piles may increase the risk of spreading an infectious agent. However, some pathogens become inactive after a suitable amount of time at a specific temperature (e.g. 10 days). Consult a qualified subject matter expert when determining if piles should be turned.
- Consult with the property owner to ensure there is ample space and carbon material available. See the Options, Time & Cost Calculator developed by USDA APHIS for cost and space estimates.
- Grinding large carcasses may speed up the decomposition process.
    - If grinding is utilized, special care should be taken to prevent dispersion of pathogens if the carcasses are infected.
- It is highly recommended that a subject matter expert be present during the initial phases of the composting process.
- Large amounts of carbon material are necessary for composting.

[8] 74-13-3 NMSA 1978

- Registered composting facilities may not have the capacity to assist in a large-scale incident. However, they may be a valuable resource for carbon material sourcing or other logistical aid. For a list of registered composting facilities, see Appendix B.
- Adequate water supply to ensure moisture content of the compost is needed.

- Contact landfills about the possibility of utilizing nonpermitted landfill space as an offsite management option (e.g., land that is owned by the landfill but permitted for waste disposal).

Object Requiring Separating Distance	Minimum Distance Required from Compost Windrows or Burial Sites (feet)
Existing inhabited residences (except site owner or operator's residence)	300
Public wells*	200
Private wells*	200
Adjacent property lines	200
Flowing or intermittent streams, lakes, or ponds	200
Seasonal high ground water level*	30 (vertical)
Floodplain (100-year) wetlands, shoreline*	100
*denotes a requirement of 20.6.6.20(w) NMAC	

Table 3 - Setback Recommendations

Facilities must consider the location of residences and environmentally sensitive areas when selecting a site for carcass management. See Table 3 for the recommended separation distances of the carcass management site. See additional siting requirements according to specific disposal option.

Advantages

- Many producers, especially dairies, use composting for normal mortality management and are familiar with the procedures.
- Equipment needed for composting such as tractors, skid steers, water trucks, and feed grinders (to reduce the size of carbon material) are commonly available.
- Can be accomplished on site if sufficient land is available, eliminating the need for off-site transportation.
- Results in a usable, nutrient-rich product. Determine ownership of finished compost prior to initiating operations.
- Inactivates many pathogens when internal temperatures of the pile reach or exceed 131°F for 72 consecutive hours.
- When performed properly, composting is environmentally stable due to the ability to return land to previous uses.

Disadvantages

- Potential for nuisance complaints or lawsuits in urban settings.
- Additional carbon material may need to be hauled in if there is not an adequate supply on the premises.

- Additional water may be needed to ensure moisture content.
- Requires ongoing management and monitoring.

Summary

Composting is an attractive method for carcass management provided ample space and carbon material is available. Pathogen inactivation, environmental stability, and familiarity with the composting process make this method suitable for managing mass mortalities.

Additional Resources

USDA APHIS SOPs: Composting

Incineration

There are three basic categories of incineration for animal mortalities:

- Open air burning – involves piling mortalities on top of combustible material in "pyres."
- Air curtain incineration – operates by forcing a curtain of air through a manifold into a burn pit which accelerates the incineration process.
- Fixed facility incineration – an off-site method where mortalities are managed through waste incineration plants or crematoria.

Although fixed facility incineration should be noted as a possible method of carcass management, lack of capacity and its inability to process whole large animals limits consideration during a mass mortality event.

NMLB possesses a 40-foot CP4000HD air curtain incinerator. However, the incinerator has not been tested and capacity remains unknown for carcass management.

New Mexico Department of Game and Fish (NMDGF) possesses a fixed unit batch burner. The unit is capable of processing 1,200 pounds every six hours.

Important Considerations

- Emergency burning is allowed according to 20.2.60.114 NMAC provided the following conditions are met:
    - "No other practical and lawful method of abatement or disposal is available"
    - "An emergency response specialist has determined that the situation requires immediate and expeditious action"
    - "The burning is in compliance with all other applicable state laws and regulations"
    - "Notice is provided to the department [NMED] as soon as practical, but at least within two weeks after the burn."
- Consultation with NMDA, NMLB, NMDOH, and NMED are necessary prior to beginning operations. USDA should also be consulted for a TAD response.
- Incinerator units must be registered with NMED.
- Disposal of ash or other by-products may present additional challenges. Incinerator ash may require handling as a hazardous waste or as a special waste under the New Mexico Solid Waste Rules, depending on its characteristics.

- Incineration poses a fire risk; local fire departments should be notified of intent to burn carcasses.
- Care should be taken to place a burn site at least 2 miles from urban areas to mitigate negative public perception.
- Incineration is dependent on favorable weather conditions.
- Ensure adequate fuel (wood, feedstuff, diesel, etc.) is available.

Advantages

- Incineration inactivates pathogens in most circumstances.
- Potentially eliminates the need for off-site transportation.

Disadvantages

- May require intensive labor and solid fuel.
- Favorable weather conditions are necessary.
- Large animals are composed of large amounts of water making incineration difficult.
- Generation of air pollutants including smoke and odor.
- May require ash removal and site remediation.
- Air curtain incinerators have limited capacity.
- May pose risk of wildfires.

Summary

Generally, open-air incineration is considered a method of last resort due to negative public perception, risk associated with fire, and weather conditions. Other methodologies such as air curtain incineration do show promise, but limited capacity and throughput could hinder responses to a mass mortality incident.

Additional Resources

USDA APHIS SOPs: Open Burning and Incineration

Approval Process for Other Methods

As science and technology continue to advance, NMDA may be asked to evaluate disposal options and methodologies to best respond to an event. NMDA will consult other local, state, and federal agencies, as appropriate, prior to accepting a new disposal method. The criteria used for evaluating methodologies will also evolve over time but will include the following:

- Effective elimination of carcass tissues.
- Effective inactivation of subject disease or the prevention of spreading disease.
- Protection of air, soil, and water resources from introduction of potential contamination or pollutants from the methodology, the carcasses, or the effects of the methodology on the carcass.
- Methodologies must not violate local, state, or federal regulations unless those regulations are waived as part of a normal response to a disaster event.

Transportation

Off-site carcass management methods require significant planning and preparations to securely transport carcasses while preventing disease spread and safeguarding responder and public health. Generally, on-site carcass management is preferable to avoid the additional biosecurity protocols associated with transportation. However, mass mortality incidents may quickly overcome on-site carcass management options making transportation to an off-site location necessary.

Important Considerations

- If mortalities are a result of disease or chemical contamination, carcasses must be transported in accordance with USDOT, USDA, and Center for Disease Control regulations and may require a permit.
    - Ensure that vehicles are marked with the appropriate identifier and in accordance with 49 CFR 172.323 and 49 CFR 172.432, if the vehicle will travel under USDOT authority on public access roads or otherwise enter commerce.
    - USDOT has ruled that infected carcasses are classified as agricultural waste and do not have to be placarded as hazardous materials (infectious) when transported.[9]
- Vehicles should be disinfected prior to departure for disposal site and after unloading (See C&D section).
- Prearranged routes should be identified and strictly followed to minimize risk of spreading pathogens.
    - Routes should be carefully planned to avoid other animal agriculture facilities, heavily trafficked roads, and to make minimal stops.
- In coordination with the disposal team and safety officer, consider nighttime operations to take advantage of reduced traffic and public visibility considerations.
- Consider public relations from the standpoint of not allowing carcasses to be visible from containers. Load at least a foot below top of container to account for bloat and load shifting.
    - A cover tarp over the top of the container is necessary regardless of reason of mortality.
- Carcasses should be transported in a closed, leak-resistant container.
    - Recent studies have shown that the use of Bio-Zip™ bags, or similar double liners, along with a well secured tarp covering are effective at reducing the risk of leakage and aerosolization of pathogens.
- Consult with NMED on requirements of registration for waste haulers pursuant to 20.9.3.31 NMAC.
    - A list of commercial and special waste haulers can be found on NMED's website.
- Drivers should remain in their vehicle with windows and doors closed while on infected premises.
- Consider preprocessing of carcasses prior to transport for final disposal. Examples of preprocessing might include composting or grinding.
    - Preprocessing can reduce the volume of biomass and potentially inactivate pathogens of concern.
- Ensure the receiving facility (i.e., landfill) is prepared to receive carcasses, including training on biosecurity and safety.

[9] 49 CFR 173.134 (b)(13)(iv)

- Make sure NMDOT, New Mexico State Police, and Customs and Border Protection are notified of transportation operations and have the ability to provide input.

Additional Resources

USDA APHIS SOPs: Secure Transport

Wildlife Considerations

This plan may also be used during incidents involving wildlife that pose a danger to human health, property, or the environment. Additionally, vector control is another consideration during carcass management operations. NMDGF should be integrated into any IMT for subject matter expertise during site-specific planning.

Carcass Handling and Staging

It is preferable that carcasses are disposed of immediately after depopulation or mortality; disposal teams should coordinate closely with depopulation teams to ensure that depopulation does not exceed disposal capacity. However, if mortalities exceed disposal capabilities, staging of carcasses may be necessary.

Important Considerations

- Mortalities should be staged at an appropriate distance from livestock markets, dairies, feedlots, or other agricultural operations.
    - Consult USDA (if TAD response) APHIS, NMDA, NMED, and NMDOH for appropriate buffer zones.
- Mortalities shall not be staged within 200 feet (measured as horizontal map distance) from private or public wells or any watercourse.
- Mortalities shall not be staged within 100 feet (measured as horizontal map distance) from the 100-year flood zone of any watercourse, as defined by the most recent FEMA map.
- Storm water run-off, run-on, and ponding to staging areas shall be prevented by use of berms or other physical barriers.
- Below freezing temperatures may offer operational flexibility for storage operations.
- Consider the availability of roll-off, leak-resistant containers with liners for short duration storage options.
- Line staging areas with absorbent material such as sawdust, animal bedding, straw, or hay.
- Secure the staging area from unauthorized access and wildlife.
- Cover carcasses for vector control.
    - Possible coverings include woodchips, mulch, sawdust, and hydrated lime.

Public Assistance

In general, depopulation and carcass management are the responsibility of the livestock or poultry owner/operator. However, assistance may be available to eligible owner/operator depending on the nature and scope of the mortalities:

Foreign Animal Disease

- USDA APHIS can exercise its authority under the Animal Health Protection Act to indemnify livestock destroyed in order to contain a disease.

Natural Disaster

- USDA NRCS may be able to assist under the Emergency Watershed Protection Program or Environmental Quality Incentives Program.
- USDA Farm Service Agency may be able to provide indemnity assistance through the Livestock Indemnity Program or disposal assistance through the Emergency Conservation Program.

Presidential Emergency Declaration

- FEMA, under certain circumstances, may provide aid in carcass management during a Presidentially declared major disaster, Fire Management Assistance Grant declared fire, or emergency declaration pursuant to the Robert. T. Stafford Disaster Relief and Emergency Assistance Act. Carcass management must be necessary to reduce a threat to life, protect public health and safety, or to protect improved property.

Operators should consult with the appropriate agencies to verify eligibility and inquire about potential assistance.

Resource Mobilization

- Resource mobilization starts locally and progresses sequentially to the county; state; and, if required, national level.
- Upon request from the local jurisdiction, the state EOC will coordinate and support resource mobilization for mass mortality incidents (e.g., requesting loaders, excavators, or dump trucks through NMDOT, lodging and personnel support for IMTs, etc.).
- During an emergency, the ESF-11 coordinator may also push requests to the ESF-11 group for any emergent needs.

Suggested resources:

- Carbon Material –
    - For suitable carbon materials, see this job aid from USDA APHIS.
    - Check with registered composting facilities (Appendix B) or wood and forestry material processors.
    - Feedstock, bedding, or other suitable carbon sources already on the premises may also be used for composting.
- Large equipment – NMDOT or forestry contractors might be good resources for large equipment and operators. Contact the New Mexico Forest Industry Association at (505) 705-0166.[10]

Disposal Site Tool

{IN DEVELOPMENT}
(GIS tool including critical information requirements for onsite disposal methods)

[10] For planning purposes, a contractor recently quoted $520/hour for a large industrial chipper and $520/hour for an excavator, both included operators.

Appendices

Appendix A - Open and Permitted Landfills (September 2019)

COUNTY	FACILITY NAME	FACILITY TYPE	PHYSICAL LOCATION	ADDRESS	CITY	STATE	ZIP CODE	CONTACT NAME	PHONE
Bernalillo	Cerro Colorado Landfill	Landfill - permitted	18000 Cerro Colorado SW, Albuquerque, NM 87121; 7miles west of ABQ	4600 Edith Blvd. NE	Albuquerque	NM	87107	Art Silva	505-761-8300
Bernalillo	Southwest Landfill LLC	Landfill - permitted	ABQ, Bernalillo, Coors and Pajarito Rd	5816 Pajarito Road SW	Albuquerque	NM	87121	Rafael Valdepena	505-242-2020
Chaves	Roswell Municipal Landfill	Landfill - permitted	3006 West Brasher Road (1.5 Miles west of Sunset Ave. Located in Chaves County)	3006 West Brasher Road	Roswell	NM	88203	Michael Mayes	575-624-6746
Curry	Clovis Regional Solid Waste Facility Landfill	Landfill - permitted	2801 E. Brady Ave., Clovis, Curry County New Mexico	801 S. Norris Street	Clovis	NM	88101	Oscar Macias	575-769-2376
De Baca	De Baca County Solid Waste Facility	Landfill - permitted	4 miles east of Fort Sumner, north of Highway 60	P.O. Box 347	Fort Sumner	NM	88119	William J. Moulton	575-355-2000

Doña Ana	Camino Real Landfill	Landfill - permitted	1000 Camino Real Blvd. Sunland Park, NM 88063	PO Box 580	Sunland Park	NM	88063	Juan Carlos Tomas	575-589-9440
Doña Ana	Corralitos Regional Landfill	Landfill - permitted	14535 Robert Larson Blvd	2865 W. Amador Avenue	Las Cruces	NM	88005	Patrick Peck	575-528-3800

COUNTY	FACILITY NAME	FACILITY TYPE	PHYSICAL LOCATION	ADDRESS	CITY	STATE	ZIP CODE	CONTACT NAME	PHONE
Eddy	Lea Land Inc. Industrial Solid Waste Landfill	Landfill - permitted	Mile Marker 64, Hwy 62/180 E, Carlsbad 32 miles SW of Hobbs E1/2, S32, T20S, R32E	1300 West Main Street	Hobbs	NM	73106	Robert G. Hall	405-236-4257
Eddy	Sand Point Landfill	Landfill - permitted	12 miles NE of Carlsbad NM Hwy 62-180; 164 Landfill Road	410 East Derrick Road	Carlsbad	NM	88220	Fabian Gomez	575-200-5642
Grant	Southwest New Mexico Regional Landfill	Landfill - permitted	318 Ridge Road, Silver City	PO Box 2617	Silver City	NM	88062	Danny Legarreta	575-388-8051
Guadalupe	Vaughn C&D/Asbestos Landfill	Landfill - permitted	1820 Mesa de Leon Road Section 34, Township 5N, Range 16E	P.O. Box 278	Vaughn	NM	88353	Roman Garcia, Mayor	575-584-2301

Lea	Lea County Landfill	Landfill - permitted	3219 E. State Road 234, Eunice, NM 88231 (5 miles east of Eunice)	P.O. Box 790	Eunice	NM	88231	Israel Galindo	575-394-9109
Luna	Butterfield Trail Regional Landfill	Landfill - permitted	14 miles W of Deming. Exit #68 off I-10, 1.5 miles north & west. N1/2, S6, T24S, R11W.	PO Box 706	Deming	NM	88031	Jim Massengill	575-546-8848

COUNTY	FACILITY NAME	FACILITY TYPE	PHYSICAL LOCATION	ADDRESS	CITY	State	ZIP CODE	CONTACT NAME	PHONE
McKinley	Red Rocks Landfill	Landfill - permitted	101 Red Mesa Bluffs Dr. Thoreau NM (6 miles NE of Thoreau, NM)	PO Box 1330	Thoreau	NM	87323	Gary Ford	505-905-8402
Mora	Northeastern New Mexico Regional Landfill	Landfill - permitted	39346 Frontage Rd., Wagon Mound. I-25 at exit 393 5 miles north of Wagon Mound	P.O. Box 129	Wagon Mound	NM	87752	Inez May	575-668-2000
Otero	Mesa Verde C & D Landfill	Landfill - permitted	Six miles west of Alamogordo 601 La Luz Gate Road Alamogordo, NM 88310	P.O. Box 907	Alamogordo	NM	88311	Steve Dixon	575-437-2995

Otero	Otero-Greentree Regional Landfill	Landfill - permitted	4258 Hwy. 54 South, Alamogordo. 24 miles south of Alamogordo, NM; west of U.S. Highway 54.	1376 E 9th Street Attn: Landfill	Alamogordo	NM	88310	Tim White	575-430-8678
Quay	Tucumcari Landfill (New)	Landfill - permitted	NW1/4, W1/4 Section5, T11N, R 31E; 30652 US Highway 54	PO Box 1188	Tucumcari	NM	88401	Alex Arias	575-403-6337
San Juan	San Juan County Regional Landfill	Landfill - permitted	78 CR 3140 Aztec, NM 87410 (old Crouch Mesa landfill site)	PO Box 1402	Aztec	NM	87410	Joshua Vinzant	505-386-5003

COUNTY	FACILITY NAME	FACILITY TYPE	PHYSICAL LOCATION	ADDRESS	CITY	STATE	ZIP CODE	CONTACT NAME	PHONE
Sandoval	Rio Rancho Landfill	Landfill - permitted	2.5 miles west of NM528 on Northern BLVD; 33rd ST and Northern Blvd. 1132 33rd St. Rio Rancho	PO Box 15700	Rio Rancho	NM	87174	Douglas Shimic	505-433-6053
Sandoval	Sandoval County Landfill and Composting Facility	Landfill - permitted	2700 Iris RD Rio Rancho NM 87144 Sandoval County	2708 Iris, NE	Rio Rancho	NM	87144	Christopher Perea	505-269-6120
Santa Fe	Caja del Rio Landfill	Landfill - permitted	149 Wildlife Way 1.5 Miles Northwest of intersection of State Rd. 599 and Caja Del Rio Road	149 Wildlife Way	Santa Fe	NM	87506	Randall Kippenbrock	505-424-1850
Socorro	City of Socorro Landfill (Permitted)	Landfill - permitted	2465 State Highway 1, approx. 3 miles S of the intersection with B Street Socorro	PO Box K	Socorro	NM	87801	Michael Lucero	575-835-4279
Taos	Taos Regional Landfill	Landfill - permitted	24663 Hwy 64 Taos County, New Mexico	400 Camino de la Placita	Taos	NM	87571	Francisco "French" Espinoza	575-751-2000

Torrance	Estancia Valley Regional Landfill	Landfill - permitted	249 Sidewinder Rd., Moriarty. Longhorn exit 7 miles east of Moriarty Landfill Road	P.O. Box 736	Estancia	NM	87016	Martin Lucero	505-384-4270

COUNTY	FACILITY NAME	FACILITY TYPE	PHYSICAL LOCATION	ADDRESS	CITY	STATE	ZIP CODE	CONTACT NAME	PHONE
Torrance	Keers Asbestos Landfill	Landfill - permitted	91 Liberty Valley Rd. Mountainair, NM	5904 Florence Avenue, NE	Albuquerque	NM	87133	Brian J. Kilcup	505-847-2917
Valencia	Valencia Regional Landfill and Recycling Facility	Landfill - permitted	Mystic Mountain Road, 14.5 miles west of I-25 on NM6 W of Los Lunas 40 Landfill Road Los Lunas	PO Box 15700	Rio Rancho	NM	87174	Douglas Shimic	505-433-6053

Appendix B – Open Registered Compost Facility List

County	Facility Name	Facility Type	Physical Location	Address	City	State	Zip	Contact Name	Phone	Status
Bernalillo	Albuquerque Academy Composting	Compost Facility - registered	6400 Wyoming Blvd. NE ABQ	6400 Wyoming Blvd NE	Albuquerque	NM	87109	Mark Mellott	505-975-4953	Open
Bernalillo	Atlas Pumping Compost	Compost Facility - registered	4124 Broadway SE, #E Albuquerque, NM 87105	P.O. Box 10421	Albuquerque	NM	87184	Jo Fanelli	505-980-7977	Open
Bernalillo	Barela Landscaping Materials, Inc.	Compost Facility - other	7713 Bates Road SE	7713 Bates Road SE	Albuquerque	NM	87105	Caroline Barela	505-877-8522	Open
Bernalillo	Soils Amendment Facility (ABCWUA)	Compost Facility - registered	7401 Access Road NW, Albuquerque (1 mile west of Double Eagle Airport)	4201 Second St SW	Albuquerque	NM	87105	Joe Bailey	505-205-5721	Open
Bernalillo	Soilutions, Inc.	Compost Facility - registered	9008 Bates RD SE, Albuquerque NM	PO Box 1479	Tijeras	NM	87059	Walter Dods	505-877-0220	Open
Colfax	High Country Meats @ Raton Landfill	Compost Facility - registered	County Road A22, 1 mile east of Raton (Armstrong Lane)	340 Colfax	Raton	NM	87740	Lee Dixon	575-445-2449	Open
Curry	AGPower Composting Facility	Compost Facility - registered	385 CR 21, Texico, NM 75207	121 Payne St.	Dallas	TX	75207	Dewey Vaughn	575-303-0054	Open
Curry	Clovis WWTP-Composting Facility	Compost Facility - registered	879 CR 7, Clovis	801 South Norris; P.O. Box 760	Clovis	NM	88101	Durwood Billington	575-769-7865	Open
Doña Ana	El Ojito Composting Facility	Compost Facility - registered	120 West Ojito de Madrid, Anthony, NM 88021	P.O. Box 299	Canutillo	TX	79835	Edward Schneider	915-494-8527	Open
Doña Ana	Las Cruces Foothills Landfill Composting Facility	Compost Facility - registered	555 S. Sonoma Ranch Blvd., Las Cruces NM 88011 (at closed Foothills Landfill).	PO Box 20000	Las Cruces	NM	88004	Robin Lawrence	575-528-3700	Open
Doña Ana	Los Nogales Composting Facility	Compost Facility - registered	905 Ranch Road	PO Box 2075	Canutillo	TX	79835	Francisco Rubio	575-589-0098	Open
Doña Ana	R Qubed Energy Mesquite	Compost Facility - registered	13085 Stern Dr., Mesquite, NM	1131 Montana Ave.	El Paso	TX	79902	John Davis	915-593-7025	Open

Doña Ana	The Sierra Vista Wholesale Growers , Inc.	Compost Facility - registered	420 W. Afton Road, La Mesa, NM 88044	PO Box 225	Chamberino	NM	88027	William Kent Halla	575-589-2933	Open
Doña Ana	West Mesa Compost Facility (Las Cruces)	Compost Facility - registered	1000 South Crawford Blvd., Las Cruces, NM	P.O. Box 20000	Las Cruces	NM	88004	Joshua Rosenblatt	575-528-3704	Open

County	Facility Name	Facility Type	Physical Location	Address	City	State	Zip	Contact Name	Phone	Status
Eddy	Artesia Wastewater Treatment Plant (Composting)	Compost Facility - registered	2507 N. Pecos Artesia NM 88210	1702 N. Haldeman Road (WWTP)	Artesia	NM	88211	Jerry Whitehead	575-748-0260	Open
Eddy	Carlsbad WWTP Compost Facility	Compost Facility - registered	45 Tell Tale Rd, Carlsbad, NM	P.O. Box 1569	Carlsbad	NM	88221	Joe Harvey	575-887-5412	Open
Lea	Lovington (City of) Compost Facility at WWTP	Compost Facility - registered	920 East Avenue K, Lovington	214 S. Love Street; P.O. 1268	Lovington	NM	88260	Miguel De La Cruz	575-396-2758	Open
Lincoln	Lincoln County Compost	Compost Facility - registered	Ruidoso Downs, Lincoln, 120C Forest Road	26536 Hwy. 70, Box 1531	Ruidoso Downs	NM	88346	Harlan or Rhonda Vincent	575-937-1474	Open
Los Alamos	Los Alamos County Compost Facility	Compost Facility - registered	3500 Pueblo Canyon Road, Los Alamos	1000 Central Ave. Suite 130	Los Alamos	NM	87544	Jennifer Baca	505-662-8269	Open
Los Alamos	Los Alamos National Laboratory (WWTP)	Compost Facility - registered	LANL, Technical Area 46 (TA46) Building 333 - See Enclsure 2	PO Box 1663, Mail Stop J972	Los Alamos	NM	87545	Randy Vigil	505-606-2160	Open
McKinley	Compost Gallup	Compost Facility - registered	JDC 109 Hasler Valley Road, Gallup	100 East Aztec Avenue	Gallup	NM	87301	Tom Kaczmarek	5058631400	Open
Otero	All American Ruidoso Downs Composting Facility	Compost Facility - registered	County Road B028, Three Rivers, Otero County, NM	P.O. Box 449	Ruidoso Downs	NM	88346	Jeff True	575-378-4431	Open

Quay	Tucumcari (City of) Compost Facility	Compost Facility - other	Next to the WWTP; 1700 North Rock Island	Box 1188	Tucumcari	NM	88401	Jared Langeneger	575-461-4542	Open
Rio Arriba	EVOP Harvest Club	Compost Facility - registered	2198 Highway 68; Embudo (Offal composting)	P.O. Box 44	Embudo	NM	87531	John McMullin	575-579-4147	Open
Rio Arriba	Naturally New Mexico Foods, Inc.	Compost Facility - other		P.O. Box 52	El Rito	NM	87530	Donald Martinez	505-469-1350	Open
Roosevelt	Portales (City of) WWTP	Compost Facility - registered	683 S. Roosevelt Rd., Q 1/2, Portales, NM 88130	100 W. First St.	Portales	NM	88130	John DeSha	575-760-5497	Open

County	Facility Name	Facility Type	Physical Location	Address	City	State	Zip	Contact Name	Phone	Status
San Juan	Farmington WWTP Composting Facility	Compost Facility - registered	1395 South Lake Street, Farmington, NM	805 Municipal Drive	Farmington	NM	87401	Jeff Smaka	505-327-7701	Open
San Juan	Four Corners Compost and Mulch	Compost Facility - registered	805 HWY 170, Farmington, New Mexico 87401	785 HWY 170	Farmington	NM	87401	Arin Fishburn	505-326-5865	Open
San Juan	Hunt's Meat Company	Compost Facility - other	3658 Highway 64, Waterflow	P.O. Box 65	Waterflow	NM	87421	R.G. Hunt, Jr.	5055986050	Open
San Juan	MGS Custom Cutting	Compost Facility - registered	#24 CR 6339 Kirtland, NM	#24 CR 6339	Kirtland	NM	87417	S. Gale Smith	5755985254	Open
Sandoval	Desert Rock	Compost Facility - other		2600 Idalia Rd.	Rio Rancho	NM	87124	Steve Espinosa		Open
Santa Fe	Arroyo Seco Custom Meats	Compost Facility - registered	37 Boneyard Road; Espanola	37 Boneyard Road	Espanola	NM	87532	Mike Padilla	505-753-6338	Open
Santa Fe	City of Santa Fe Municipal Biosolids Composting Facility	Compost Facility - registered	73 Paseo Real; Santa Fe, NM	P.O. Box 909; 73 Paseo Real	Santa Fe	NM	87507	Sherman Bilbo	505-955-4650	Open
Santa Fe	Glorieta Camps Composting Facility	Compost Facility - registered	11 State Road 50, Glorieta, NM 87535	P.O. Box 8	Glorieta	NM	87535	Jon Malvig	505-757-6161	Open

Santa Fe	Las Acequias Farm Composting Facility	Compost Facility - registered	22A Rancho Las Acequias Santa Fe, NM 87506	PO Box 1116	Santa Fe	NM	87504	Meade P. Martin	505-455-2562	Open
Santa Fe	Payne's Organic Soil Yard (POSY)	Compost Facility - registered	6037 Agua Fria St. Santa Fe	P.O. Box 4817	Santa Fe	NM	87502	Sam McCarthy	505-424-0336	Open
Santa Fe	Reunity Resources Composting Facility	Compost Facility - registered	1829 San Isidro Crossing Santa Fe	1000 Cordova Place #650	Santa Fe	NM	87505	(Michael) Tejinder Ciano	505-393-1196	Open
Sierra	Old Fashion Meat Market	Compost Facility - registered	50622 Pinkneyln; Arrey	P.O. Box 309	Arrey	NM	87930	Paul and Patty Green	575-267-8809	Open
Socorro	Pollo Real	Compost Facility - registered	108 Hope Farms Road, 20 acre site	108 Hope Farms Road	Socorro	NM	87801	Tom Delehanty	505-550-3123	Open
Torrance	EVSWA Septage Composting Facility	Compost Facility - registered	249 Sidewinder Road, Moriarty, NM	P.O. Box 736	Estancia	NM	87016	Martin Lucero	505-384-4270	Open

Appendix C - Technical Training

Training Course	Provider(s)	Description
OSHA HazWOPER Training	OSHA.com (Online OSHA Training) OSHA.com HAZWOPER	40 Hour Course- clean-up operations, emergency response, and storage, disposal, or treatment of hazardous substances or uncontrolled hazardous waste sites. 24 Hour Course- broad issues pertaining to the hazard recognition at work sites. 8 Hour Refresher Course- meets the requirements outlined in OSHA 29 CFR 1910.120 for eight hours of annual refresher training for workers at hazardous waste sites.
Equipment Operator Training	New Mexico Local Technical Assistance Program (LTAP) Center New Mexico LTAP Heavy Equipment Training	Heavy Equipment Training- Operator instruction on host's choice of heavy equipment, plus grade reading, laser level, soils, safety, site layout, and maintenance. Limited to 10 students
Equipment Operator Training	New Mexico Junior College Training and Outreach 575.492.4713 Operator HQ	Offers heavy equipment training for beginner and intermediate level. Classes range from 2-3 weeks or 4-5 days depending on machinery. Offers hands-on training including backhoe, loader, and motor grader. All trainings done at NMJC (limited to 12 students)
Mortality Composting Training	New Mexico Recycling Coalition New Mexico Recycling Coalition Training	NMED: SWB holds 2 recycling and 2 compost facility operators certification courses each year. 3 days, 8 am-5 pm, 35 max class size. Participants must pass test at the end of the course with 70% or above. Courses cover a lot of material including Mortality composting.
Respirator Training and Medical Evaluation	New Mexico Environment Department NMED Respirator Training	Presentation taken from Occupational Safety and Health Standards. Created by the Occupational Safety and Health Division of North Carolina so it may contain references to regulations unique to North Carolina.
PPE Training	New Mexico Environment Department NMED PPE Training	Presentation taken from Occupational Safety and Health Standards. Created by the Occupational Safety and Health Division of North Carolina so it may contain references to regulations unique to North Carolina.
Biosecurity Awareness Training	Southwest Border Food Protection and Emergency Preparedness Center	
Large Animal Handling	Southwest Border Food Protection and Emergency Preparedness Center	Participants will have real world experience handling large animals, master practical animal rescue techniques utilizing animal behaviors, best handling practices, and rescue equipment.

APHIS Carcass Management Training	Link
Rendering	Rendering Module
On-Site Burial	On-Site Burial Module
Landfill	Off-Site Permitted Landfill Module
Composting	Composting Module
Incineration	Off-Site Incineration Module
Open Burning	Open Burning Module

Appendix D - Specific Carcass Management Plan

Instructions [Delete this page when creating plan]

The goal of this template is to assist owners and managers with developing a carcass management plan specific to their site. The information will be useful for pre-event planning as well as during an emergency response.

Sections

Fill out each of the sections of this template with the corresponding information from the Carcass Management Dashboard.

Site Map

Insert a map created with a mapping tool, such as Google Earth, Google Maps, or MapQuest into Annex A: Site Map. Include the following information:

- Property lines, easements, rights-of-way, and any deed restrictions
- Location, type, and size of existing and public utilities (overhead power lines, cable, pipelines, water, sewer, telephone, natural gas, etc.)
- Position of buildings, wells, septic systems, culverts, drains and waterways, walls, fences, roads and other paved areas, runoff, and drainage patterns
- Proximity and access to roads
- Operation access points (gates/driveways into premises) and staging areas (for carbon source, carcasses, roll-offs), including biosecurity control zones (see FADPReP Biosecurity SOP)

The following resources, if available, may be helpful:

- A soils map of the area where all livestock production facilities are or will be located (see NRCS Web Soil Survey)
- Aerial photos – useful in laying out the proposed site
- Topographic map of site

Vicinity Map

Insert a map created with a mapping tool, such as Google Earth, Google Maps, or MapQuest into Annex B: Vicinity Map. Include the following information:

- Location of wetlands, streams, legally established public drains, public drinking water wells, and other bodies of water in close proximity to facility/proposed site
- Existing land uses for contiguous land
- Names and addresses of adjacent property owners
- Location and distance to all nonfarm residences within a half mile radius of the facility
- Aerial photos – identifying nonfarm residences in the area; key facilities such as airports
- Topographic map of surrounding area
- Security control sites
- Potential access points, staging areas, and biosecurity control points (within 100-150 yds)
- Nearby disposal facilities (such as landfills)
- Main roadways, including access and control points

Location Information

Location Name:	Click or tap here to enter text.				
Street Address:	Click or tap here to enter text.				
City:	Click or tap here to enter text.	State:	Click or tap here to enter text.	Zip:	Click or tap here to enter text.
Phone:	Click or tap here to enter text.	E-mail:	Click or tap here to enter text.		

Land Owner Name:	Click or tap here to enter text.		
Phone Number:	Click or tap here to enter text.	E-mail:	Click or tap here to enter text.

Livestock Owner Name:	Click or tap here to enter text.		
Phone Number:	Click or tap here to enter text.	E-mail:	Click or tap here to enter text.

Location Point of Contact:	Click or tap here to enter text.		
Phone Number:	Click or tap here to enter text.	E-mail:	Click or tap here to enter text.

Alternate Contact:	Click or tap here to enter text.		
Phone Number:	Click or tap here to enter text.	E-mail:	Click or tap here to enter text.

[Insert Map Here]

Emergency Contacts

County Emergency Manager Name:	Click or tap here to enter text.		
Phone Number:	Click or tap here to enter text.	E-mail:	Click or tap here to enter text.

State Agriculture Point of Contact:	**Southwest Border Food Protection and Emergency Preparedness Center**		
Phone Number:	**(575) 646-4402**	E-mail:	**swcenter@nmsu.edu**

Other Point of Contact Name (ex: Farm Services Agency):	Click or tap here to enter text.		
Phone Number:	Click or tap here to enter text.	E-mail:	Click or tap here to enter text.

Location Description

Operation Type:	Click or tap here to enter text.
Species of Animals:	Click or tap here to enter text.
Number of Animals:	Click or tap here to enter text.
Avg. Weight of Animals:	Click or tap here to enter text.

Disposal Methods

Primary Disposal Method: Choose an item.

Estimated Needed Equipment

Example: Excavators, loaders, transport vehicles

Type:	Click or tap here to enter text.			Size:	Click or tap here to enter text.	Quantity:	Click or tap here to enter text.				
Point of Contact Name:	Click or tap here to enter text.			Phone Number:	Click or tap here to enter text.			E-mail:	Click or tap here to enter text.		
Equipment Owned/Not Owned:	Choose an item.										
Type:	Click or tap here to enter text.			Size:	Click or tap here to enter text.	Quantity:	Click or tap here to enter text.				
Point of Contact Name:	Click or tap here to enter text.			Phone Number:	Click or tap here to enter text.			E-mail:	Click or tap here to enter text.		
Equipment Owned/Not Owned:	Choose an item.										

Estimated PPE and Supplies:

Latex Gloves (boxes of 100 ct.):	Click or tap here to enter text. boxes	N95 Face Masks (boxes of 25 ct.):	Click or tap here to enter text. boxes
Tyvek Suits (one size):	Click or tap here to enter text.	Boot Covers (pairs):	Click or tap here to enter text.
Safety Goggles:	Click or tap here to enter text.	Trash Bags:	Click or tap here to enter text.
Sprayers:	Click or tap here to enter text.	Disinfectant:	Click or tap here to enter text.
Other:	Click or tap here to enter text.	Other:	Click or tap here to enter text.

Personnel (ex: Supervisor, Safety Manager, Equipment Operator, etc.):

Job Duties:
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.

Secondary Disposal Location: Choose an item.

Estimated Needed Equipment:

Example: Excavators, loaders, transport vehicles

Type:	Click or tap here to enter text.	Size:	Click or tap here to enter text.	Quantity:	Click or tap here to enter text.
Point of Contact Name:	Click or tap here to enter text.	Phone Number:	Click or tap here to enter text.	E-mail:	Click or tap here to enter text.
Equipment Owned/Not Owned:	Choose an item.				
Type:	Click or tap here to enter text.	Size:	Click or tap here to enter text.	Quantity:	Click or tap here to enter text.
Point of Contact Name:	Click or tap here to enter text.	Phone Number:	Click or tap here to enter text.	E-mail:	Click or tap here to enter text.
Equipment Owned/Not Owned:	Choose an item.				

Estimated PPE and Supplies:

Latex Gloves (boxes of 100 ct.):	Click or tap here to enter text. boxes	N95 Face Masks (boxes of 25 ct.):	Click or tap here to enter text. boxes
Tyvek Suits (one size):	Click or tap here to enter text.	Boot Covers (pairs):	Click or tap here to enter text.
Safety Goggles:	Click or tap here to enter text.	Trash Bags:	Click or tap here to enter text.
Sprayers:	Click or tap here to enter text.	Disinfectant:	Click or tap here to enter text.
Other:	Click or tap here to enter text.	Other:	Click or tap here to enter text.

Personnel:

Job Duties:
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.
Click or tap here to enter text.

Offsite Location: Choose an item.

If Primary or Secondary Disposal Method will take place off-site, please enter the location here.

Location Name:	Click or tap here to enter text.				
Street Address:	Click or tap here to enter text.				
City:	Click or tap here to enter text.	State:	Click or tap here to enter text.	Zip:	Click or tap here to enter text.
Miles away from premises:	Click or tap here to enter text.	Method of Transportation:	Click or tap here to enter text.		
Cost/Ton:	Click or tap here to enter text.	Tipping Fees (if any):	Click or tap here to enter text.		

Other Waste Material

Decontamination Wastewater Amount (gal/day):	Click or tap here to enter text.		
PPE Waste (# Contractor Trash Bags):	Click or tap here to enter text.		
Other Waste:	Click or tap here to enter text.	Amount:	Click or tap here to enter text.
Other Waste:	Click or tap here to enter text.	Amount:	Click or tap here to enter text.
Other Waste:	Click or tap here to enter text.	Amount:	Click or tap here to enter text.
Other Waste:	Click or tap here to enter text.	Amount:	Click or tap here to enter text.
Other Waste:	Click or tap here to enter text.	Amount:	Click or tap here to enter text.

Appendix E – Acronyms

APHIS	Animal and Plant Health Inspection Service
C&D	Cleaning and Disinfection
CFR	Code of Federal Regulations
DOT	Department of Transportation
EOC	Emergency Operation Center
ESF	Emergency Support Function
ESF-11	Emergency Support Function 11
FAD	Foreign Animal Disease
FEMA	Federal Emergency Management Agency
HAZWOPER	Hazardous Waste Operations and Emergency Response
ICS	Incident Command Systems
IMT	Incident Management Team
NIMS	National Incident Management Systems
NMAC	New Mexico Administrative Code
NMDA	New Mexico Department of Agriculture
NMDGF	New Mexico Department of Game and Fish
NMDOH	New Mexico Department of Health
NMED	New Mexico Environment Department
NMLB	New Mexico Livestock Board
NMSU	New Mexico State University
NRCS	National Resource Conservation Service
OSHA	Occupational Safety and Health Administration
PIO	Public Information Officer
POD	Points of Diversion
PPE	Personal Protective Equipment
SOP	Standard Operating Procedure
USDA	United States Department of Agriculture
VS	Veterinary Service

Appendix F - Carcass Management Planning Team Members

Lead Author:
Marshal Wilson – Southwest Border Food Protection and Emergency Preparedness Center

Co Authors:
Tom Dean - Southwest Border Food Protection and Emergency Preparedness Center
Frannie Miller – New Mexico State University

Contributors
Lori Miller – Animal and Plant Health Inspection Service, USDA
Robert Miknis – Animal and Plant Health Inspection Service, USDA
Sean McCartney – Animal and Plant Health Inspection Service, USDA
Dustin Cox – New Mexico Department of Agriculture
Tim Hanosh – New Mexico Department of Health
Joan Snider – New Mexico Environment Department
Sarah Schnell – New Mexico Environment Department
Jaben Richards – New Mexico Environment Department
Robert Hagevort – New Mexico State University
Ralph Zimmerman – New Mexico Livestock Board
Joshua Dise
Janet Witte – Southwest Border Food Protection and Emergency Preparedness Center
Marissa Cereceres – New Mexico State University