

Practice: 316 - Animal Mortality Facility

Scenario: #1 - Incineration, < 400 lbs. Capacity

Scenario Description:

This scenario consists of installing a manufactured Type IV incinerator designed to handle < 400 lbs of average daily mortality for the species and size of the operation. System shall use high temperature (>1,300 degrees F) incineration with a secondary combustion or afterburner chamber prior to flue discharge. After determining average daily mortality in lbs, select smallest incinerator that meets capacity. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed, however, in non-attainment areas, certain states may require a higher level of processing such as gasification or other approved methods.

Potential Associated Practices: Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Access Road (560), Waste Storage Facility (313), Nutrient Management (590), Roofs and Covers (367), Critical Area Planting (342).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

A 200 cf incinerator with concrete pad and fuel tanks is installed such that animal mortality is being handled in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete incineration, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation. Included is a concrete slab to set the incinerator on and a fuel tank. Ash materials to be stored in suitable containers until land disposal as per the nutrient management plan or landfilled.

Scenario Feature Measure: Each Incinerator

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: \$11,015.39

Scenario Cost/Unit: \$11,015.39

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	4	\$486.20
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.96	8	\$15.68
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$118.55	1	\$118.55
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	1	\$19.21
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	1	\$23.03
Materials						
Fuel Tank, Anchored	1033	Fuel tank for operating incinerators and/or gasifiers. Materials only.	Gallon	\$1.01	285	\$287.85
Incinerator, 200 lbs/day	1624	Poultry and livestock incinerator with an approximate chamber capacity of 200 pounds per day. Includes equipment and after burner only.	Each	\$9,568.86	1	\$9,568.86

Materials

Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	4	\$160.24
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Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77
Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	200	\$70.00

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Scenario: #2 - Incineration 400 - 600 lbs. Capacity

Scenario Description:

This scenario consists of installing a manufactured Type IV incinerator designed to handle 400 to 600 lbs of average daily mortality for the species and size of the operation. Typically very large poultry or medium sized swine operations. System shall use high temperature (>1,300 degrees F) incineration with a secondary combustion or afterburner chamber prior to flue discharge. After determining average daily mortality in lbs, select smallest incinerator that meets capacity. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors are reduced, however, in non-attainment areas, certain states may require a higher level of processing such as gasification or other approved methods.

Potential Associated Practices: Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Access Road (560), Waste Storage Facility (313), Nutrient Management (590), Roofs and Covers (367), Critical Area Planting (342).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

A 400 cf incinerator with concrete pad and fuel tanks is installed such that animal mortality is handled in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete incineration, and protection from predators to minimize pathogen survival or spreading. In non-attainment areas, certain states may require a higher level of processing such as gasification or different methods. An overall plan covers normal and catastrophic mortality events. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation.

Included is a concrete slab to set the incinerator on and a diesel fuel tank. Ash materials to be stored in suitable containers until land disposal as per the nutrient management plan or landfilled.

Scenario Feature Measure: Each Incinerator

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: \$12,790.47

Scenario Cost/Unit: \$12,790.47

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	4	\$486.20
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$118.55	1	\$118.55
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.96	8	\$15.68
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	1	\$23.03
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	1	\$19.21
Materials						
Fuel Tank, Anchored	1033	Fuel tank for operating incinerators and/or gasifiers. Materials only.	Gallon	\$1.01	285	\$287.85

Materials

Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	4	\$160.24
Incinerator, 400 lbs/day	1625	Poultry and livestock incinerator with an approximate chamber capacity of 400 pounds per day. Includes equipment and after burner only.	Each	\$11,343.94	1	\$11,343.94

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77
Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	200	\$70.00

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Scenario: #3 - Incineration > 600 lbs. Capacity

Scenario Description:

This scenario consists of installing a manufactured Type IV incinerator designed to handle greater than 600 pounds daily mortality. Typically a single dairy cow or multiple heifers or swine. System shall use high temperature (>1,300 degrees F) incineration with a secondary combustion or afterburner chamber prior to flue discharge. Select smallest incinerator that has a bin capacity to handle largest individual mortality. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed, however, in non-attainment areas, certain states may require a higher level of processing such as gasification or other approved methods.

Potential Associated Practices: Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Access Road (560), Waste Storage Facility (313), Nutrient Management (590), Roofs and Covers (367), Critical Area Planting (342).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

A 600 cf incinerator with concrete pad and fuel tanks is installed such that animal mortality is handled in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete incineration, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. In non-attainment areas, certain states may require a higher level of processing such as gasification or other approved method. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulations.

Included is a concrete slab to set the incinerator on and a fuel tank. Ash materials to be stored in suitable containers, a waste storage pit until land disposal as per the nutrient management plan or landfilled. Proper incineration will require between 15 and 25 gallons of diesel fuel per usage.

Scenario Feature Measure: Each Incinerator

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: \$14,636.13

Scenario Cost/Unit: \$14,636.13

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	4	\$486.20
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$118.55	1	\$118.55
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.96	8	\$15.68
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	1	\$19.21
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	1	\$23.03
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	4	\$160.24

Materials

Fuel Tank, Anchored	1033	Fuel tank for operating incinerators and/or gasifiers. Materials only.	Gallon	\$1.01	285	\$287.85
Incinerator, 600 lbs/day	1626	Poultry and livestock incinerator with an approximate chamber capacity of 600 pounds per day. Includes equipment and after burner only.	Each	\$13,189.60	1	\$13,189.60

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77
Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	200	\$70.00

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Scenario: #4 - Static Pile, Earthen Pad

Scenario Description:

This scenario consists of installing an impervious earthen pad to compost large animal mortalities, typically dairy cow, beef, sow or boar, in a static windrow or single pile. Additional carbon based bulking material is added to facilitate aeration and provide a proper C:N ratio. Piles turned at least once to go into another heat cycle prior to land application. Access is infrequent. This option requires at least 2 more times the area in vegetation for runoff treatment. This may not be an option for sites with limited areas, karst topography, and not isolated from public view. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Any roofed portion of the facility will be addressed with Roofs and Covers (367). Any approach areas will be addressed with Heavy Use Area Protection (561).

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Diversion (362), Subsurface Drain (606), and Underground Outlet (620)). Vegetative Treatment Area (635), Composting (317), Roofs and Covers (367), Heavy Use Area Protection (561)

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is handled in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Typical system consists of a 50' x 50' compacted earth surface. Site can handle mortality for a 100 cow dairy with associated heifers and calves. On site soils can be recompact to meet required imperviousness. Include sufficient area for processing equipment access. Use single piles or windrows to minimize runoff. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area or vegetated treatment area as per regulations. Site preparation includes removal of top 1.5' and recompacting.

Scenario Feature Measure: Pad Area

Scenario Unit: Square Foot

Scenario Typical Size: 2,500

Scenario Cost: \$1,806.39

Scenario Cost/Unit: \$0.72

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.64	140	\$509.60
Excavation, common earth, large equipment, 150 ft	1223	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor.	Cubic Yard	\$3.74	140	\$523.60
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$507.42	1	\$507.42

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Scenario: #5 - Static Pile, Concrete Pad

Scenario Description:

This scenario consists of installing a concrete pad over permeable soils, karst topography, frequently accessed sites or sites with regulatory requirements. Typically associated with large dairy (1,000 cows plus heifers), beef, boar or sow animal mortality. Area sized to compost animal mortality as a static pile or windrow with equipment around materials. Sufficient carbon based bulking material added to allow natural aeration and a proper C:N ratio. Piles typically turned at least once to go into another heat cycle prior to final disposal, typically land application. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area or vegetated treatment area as per regulations. Any roofed portion of the facility will be addressed with Roofs and Covers (367). Any approach areas will be addressed with Heavy Use Area Protection (561).

Potential Associated Practices: Fence (382), Critical Area Planting (342), Heavy Use Area Protection (561), Nutrient Management (590), Access Road (560), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is handled in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Typical system consists of a 60'x95' concrete surface to process an average mortality of 175 lb/day. Concrete 5" thick with light reinforcement. Typical layout is 18' wide piles with 8' wide access area is around each pile or windrow. Site preparation includes topsoil removal, minimal regrading and compaction, installing gravel or sand subbase and then concrete.

Scenario Feature Measure: Pad Area

Scenario Unit: Square Foot

Scenario Typical Size: 5,700

Scenario Cost: \$16,677.51

Scenario Cost/Unit: \$2.93

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Excavation, common earth, large equipment, 150 ft	1223	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor.	Cubic Yard	\$3.74	212	\$792.88
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	88	\$10,696.40
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.64	106	\$385.84
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	70	\$2,804.20
Mobilization						
Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	3500	\$1,225.00
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$507.42	1	\$507.42

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Scenario: #6 - Freezer

Scenario Description:

This scenario consists of installing a manufactured freezer to hold animal mortality until all mortality is removed from the farm and handled according to state regulations. Payment made based on the volume of the freezer installed. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

Potential Associated Practices: Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Access Road (560), Waste Storage Facility (313), Nutrient Management (590), Roofs and Covers (367), Critical Area Planting (342).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is handled in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete removal of the animal mortality to eliminate pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation. Mortalities are removed by the rendering facility and are carried off site and disposed of according to state regulations. Includes is a concrete slab to set the freezer on.

Scenario Feature Measure: Volume of freezer

Scenario Unit: Cubic Foot

Scenario Typical Size: 65

Scenario Cost: \$4,528.40

Scenario Cost/Unit: \$69.67

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	4	\$486.20
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$44.86	1	\$44.86
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	1	\$23.03
Materials						
Freezer, animal mortality, small	2052	Freezer to hold animal mortalities until rendering services become available or until treated by other processes. Capacity < 75 cubic feet. Includes labor and equipment.	Each	\$3,795.56	1	\$3,795.56
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$178.75	1	\$178.75

Practice: 316 - Animal Mortality Facility

Scenario: #8 - Small Rotary Drum 270lbs. to 523lbs. of Daily Mortality

Scenario Description:

The system provides a composted material that is 100% contained during the composting process reducing the chance of pathogens and virus contact, especially since the poultry houses are in close proximity to others. Material will be composted and stored for a minimum of 30 days before land application. A small unit can process between 270 and 523 # of daily animal mortality plus equal volume of carbon material (i.e. wood chips). Scenario: 300 lbs. per day of poultry mortality (135,000-5# birds for 90 days @ 4% mortality) plus bulking agent (i.e. wood chips) requires a 300 mortality #/day small drum (22' long) system placed on a concrete pad. A secondary composting storage area is not needed because an approved one meeting NRCS requirements is on site. Payment quantity based on each facility.

This scenario shall not be used in conjunction with "Operation Type" scenarios (Nursery, Finisher, Sow, Poultry, and Turkey) that are developed for numerous types of technologies using the least cost alternative and use a Scenario Unit of Pounds Per Day.

Associated Practices: Roofs and Covers (367), Waste Storage Facility (313), Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Diversion (362), Subsurface Drain (606),and Underground Outlet (620).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators with additional concerns of about influenza A virus. There is limited space for a traditional composting facility and air quality is an additional concern.

After Situation:

A rotary drum system is installed on a concrete pad that contains and composts the daily animal mortality and secretions, allows for continuous temperature management to assure even temperature distribution and protection from predators to minimize pathogen survival or spreading of viruses. An overall plan covers normal and catastrophic mortality events.

The secondary compost volume is expected to be 40-60% of the original volume of material and a existing compost area meet's NRCS criteria and specifications. Final product material will be composted and stored for a minimum of 30 days before land applicaiton.

Additional practices, if needed are Roofs and Covers (367), Heavy Use area Protection (561, Diversion (362), Waste Storage Facilities (313) or Composter (317).

Scenario Feature Measure: Each facility

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: \$32,806.93

Scenario Cost/Unit: \$32,806.93

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	3.7	\$449.74
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$384.06	0.3	\$115.22
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.96	5.9	\$11.56
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$118.55	2	\$237.10

Labor

Labor

General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	2	\$38.42
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	2	\$46.06

Materials

Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	2.93	\$117.38
Composter, drum, 12 CY	1627	12 CY drum composter unit. Includes equipment, operation controls, and shipping. Labor not included.	Each	\$31,418.94	1	\$31,418.94

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77
Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	305	\$106.75

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Scenario: #9 - Small Rotary Drum 270lbs. to 523lbs. of Daily Mortality with composter

Scenario Description:

The system provides a composted material that is 100% contained during the composting process reducing the chance of pathogens and virus contact, especially since the poultry houses are in close proximity to others. Material will be composted and stored for a minimum of 30 days before land application. A small unit can process between 270 and 523 # of daily animal mortality plus equal volume of carbon material (i.e. wood chips). Scenario: 300 lbs. per day of poultry mortality (135,000-5# birds for 90 days @ 4% mortality) plus bulking agent (i.e. wood chips) requires a 300 mortality #/day small drum (22' long) system placed on a concrete pad. A secondary composting storage area (450 CF) is needed; 1 three side bin -(10L*10W*5H) Payment quantity based on each facility. This scenario shall not be used in conjunction with "Operation Type" scenarios (Nursery, Finisher, Sow, Poultry, and Turkey) that are developed for numerous types of technologies using the least cost alternative and use a Scenario Unit of Pounds Per Day. Associated Practices: Roofs and Covers (367), Waste Storage Facility (313), Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Diversion (362), Subsurface Drain (606),and Underground Outlet (620).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators with additional concerns of about influenza A virus. There is limited space for a traditional composting facility and air quality is an additional concern.

After Situation:

A rotary drum system and secondary composter bin is installed on a concrete pad that contains and composts the daily animal mortality and secretions, allows for continuous temperature management to assure even temperature distribution and protection from predators to minimize pathogen survival or spreading of viruses. An overall plan covers normal and catastrophic mortality events. The secondary composter volume is expected to be 40-60% of the original volume of material.. Final product material will be composted and stored for a minimum of 30 days before land applicaiton. Additonal practices, if needed are Roofs and Covers (367), Heavy Use area Protection (561) , Diversion (362), Waste Storage Facilities (313) or Composter (317).

Scenario Feature Measure: Each Facility

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: \$34,211.53

Scenario Cost/Unit: \$34,211.53

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Equipment/Installation</i>						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.96	7.8	\$15.29
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	1	\$121.55
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$384.06	0.3	\$115.22
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$118.55	4	\$474.20
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	\$8.69	2	\$17.38

Equipment/Installation

Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	5.24	\$636.92
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Labor

General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	10	\$192.10
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	6	\$138.18

Materials

Composter, drum, 12 CY	1627	12 CY drum composter unit. Includes equipment, operation controls, and shipping. Labor not included.	Each	\$31,418.94	1	\$31,418.94
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	4.16	\$166.65
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2". Includes lumber and fasteners. Does not include labor.	Board Foot	\$1.56	168	\$262.08
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners	Board Foot	\$0.85	330	\$280.50

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77
Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	305	\$106.75

Practice: 316 - Animal Mortality Facility

Scenario: #10 - Large Rotary Drum Greater than 523lbs. of Daily Mortality

Scenario Description:

The system provides a composted material that is 100% contained during the composting process reducing the chance of pathogens and virus contact, especially since the poultry houses are in close proximity to others. A large unit can process more than 523 # of daily animal mortality or more plus equal volume of carbon material (i.e. wood chips). Final compost material will be composted and stored for a minimum of 30 days before land application. Scenario: 750 lbs. per day of poultry mortality (270,000-5# birds for 90 days @ 5% mortality) plus bulking agent (i.e. wood chips) requires a 750 mortality #/day drum system placed on a concrete pad. Install a mechanical, horizontal continuous flow, completely contained, large rotary drum to compost poultry mortality. It can process more than 750 # of daily animal mortality plus equal volume of carbon material (i.e. wood chips). A secondary composting storage area is not needed because an approved one meeting NRCS requirements is on site. Payment quantity based on each facility. This scenario shall not be used in conjunction with "Operation Type" scenarios (Nursery, Finisher, Sow, Poultry, and Turkey) that are developed for numerous types of technologies using the least cost alternative and use a Scenario Unit of Pounds Per Day. Associated Practices: Roofs and Covers (367), Waste Storage Facility (313), Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators with additional concerns of about influenza A virus. There is limited space for a traditional composting facility and air quality is an additional concern.

After Situation:

A rotary drum system is installed on a concrete pad that contains and composts the daily animal mortality and secretions, allows for continuous temperature management to assure even temperature distribution and protection from predators to minimize pathogen survival or spreading of viruses. An overall plan covers normal and catastrophic mortality events. The secondary composter volume is expected to be 40-60% of the original volume of material and a existing composter area meet's NRCS criteria and specifications. Final product material will be composted and stored for a minimum of 30 days before land applicaiton. Additonal practices, if needed are Roofs and Covers (367), Heavy Use area Protection (561, Diversion (362), Waste Storage Facilities (313) or Composter (317).

Scenario Feature Measure: Each facility

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: \$68,134.43

Scenario Cost/Unit: \$68,134.43

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	7.84	\$952.95
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$384.06	9	\$3,456.54
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$118.55	2	\$237.10
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.96	12	\$23.52
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	2	\$46.06

Labor

General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	2	\$38.42
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Materials

Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	6.2	\$248.37
Composter, drum, 28 CY	1628	28 CY drum composter unit. Includes equipment, operation controls, and shipping. Labor not included.	Each	\$62,699.45	1	\$62,699.45

Mobilization

Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	475	\$166.25
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77

Practice: 316 - Animal Mortality Facility

Scenario: #11 - Large Rotary Drum Greater than 523lbs. of Daily Mortality with composter

Scenario Description:

The system provides a composted material that is 100% contained during the composting process reducing the chance of pathogens and virus contact, especially since the poultry houses are in close proximity to others. A large unit can process more than 523 # of daily animal mortality or more plus equal volume of carbon material (i.e. wood chips). Final compost material will be composted and stored for a minimum of 30 days before land application. Scenario: 750 lbs. per day of poultry mortality (270,000-5# birds for 90 days @ 5% mortality) plus bulking agent (i.e. wood chips) requires a 750 mortality #/day drum system placed on a concrete pad plus a secondary composting storage area (1,125 CF) is needed; 1 - three side bin (28L*10W*5H). Install a mechanical, horizontal continuous flow, completely contained, large rotary drum to compost poultry mortality. It can process more than 750 # of daily animal mortality plus equal volume of carbon material (i.e. wood chips). Payment quantity based on each facility.

This scenario shall not be used in conjunction with "Operation Type" scenarios (Nursery, Finisher, Sow, Poultry, and Turkey) that are developed for numerous types of technologies using the least cost alternative and use a Scenario Unit of Pounds Per Day.

Associated Practices: Roofs and Covers (367), Waste Storage Facility (313), Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Diversion (362), Subsurface Drain (606),and Underground Outlet (620).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators with additional concerns of about influenza A virus. There is limited space for a traditional composting facility and air quality is an additional concern.

After Situation:

A rotary drum system and secondary composter bin is installed on a concrete pad that contains and composts the daily animal mortality and secretions, allows for continuous temperature management to assure even temperature distribution and protection from predators to minimize pathogen survival or spreading of viruses. An overall plan covers normal and catastrophic mortality events. The secondary composter volume is expected to be 40-60% of the original volume of material.. Final product material will be composted and stored for a minimum of 30 days before land applicaiton. Additonal practices, if needed are Roofs and Covers (367), Heavy Use area Protection (561, Diversion (362), Waste Storage Facilities (313) or Composter (317).

Scenario Feature Measure: Each Facility

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: \$71,725.39

Scenario Cost/Unit: \$71,725.39

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$118.55	7	\$829.85
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	2	\$243.10
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	\$8.69	5	\$43.45
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.96	17.2	\$33.71
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$384.06	9	\$3,456.54

Equipment/Installation

Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	12.2	\$1,482.91
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Labor

Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	12	\$276.36
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	28	\$537.88

Materials

Composter, drum, 28 CY	1628	28 CY drum composter unit. Includes equipment, operation controls, and shipping. Labor not included.	Each	\$62,699.45	1	\$62,699.45
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2". Includes lumber and fasteners. Does not include labor.	Board Foot	\$1.56	408	\$636.48
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners	Board Foot	\$0.85	740	\$629.00
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	10.6	\$424.64

Mobilization

Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	475	\$166.25
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77

Practice: 316 - Animal Mortality Facility

Scenario: #13 - Composter with Storage, Nursery

Scenario Description:

This scenario consists of installing a facility to compost animal mortality. The facility can consist of, but is not limited to, any of the following technologies:

- Static Bin: Consisting of a group of small bins (concrete or wood walls) on a concrete pad to compost mortality in static pile(s) that have sufficient bulking material to allow natural aeration. Piles are turned to go through a second heat cycle prior to final land application.
- In-vessel Grinding Batch. A commercially manufactured grinding batch composter with a minimum capacity of 1,000 lbs per batch. A secondary composting storage area is required to finish materials.
- Forced Air Composting Bins: Consisting of a group of small bins with an aeration and leachate collection system.
- (This scenario does not address incinerators.)

The least cost scenario is based on a static bin system with wood walls and an open storage area located adjacent to the bins. Size of facility is based on daily mortality and sizing procedures accepted in particular state. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed.

Potential Associated Practices: Roofs and Covers (367), Heavy Use Area Protection (561), Critical Area Planting (342), Livestock Pipeline (516), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Roof Runoff Structure (558), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is handled in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation.

The typical mortality facility is based on a wood wall static bin composting facility with the primary, secondary, and tertiary bins on one side and a separate storage area located adjacent to the bins. Material storage is required under the 316 standard by reference to the 317 Composting Facility standard (under facility sizing) therefore, the scenario includes the additional area required for raw material storage. A Nursery operation consists of 5,000 head building capacity with 3.5 turns per year and an average weight of 25 pounds and a mortality rate of 5%. The average daily mortality loss (ADL) is 60 lb/day and a primary stage composting time of 30 days is based on 5 times the square root of the maximum weight of the nursery pig (35 pounds). The primary stage bin volume is based on 0.2 times ADL times primary stage time. This requires a minimum primary bin volume of 355 ft³. Using a 10' x 8' x 5' bin (with an effective height of 4.5' for additional bedding for leachate absorption) with a volume of 360 cf, this operation requires 1 primary composting bin. The number of secondary bins equals the number of primary bins. Tertiary bin volume is based on 30 day storage time, therefore, 1 - 400 cf bin is required. This small operation requires 3 (10' x 8' x 5') bins along with a storage area of 15' x 15' = 225 sf. Bins are sized to the nearest larger whole number of bins. Site preparation includes topsoil removal and grading, installing 4" of gravel, setting posts, installing concrete slab (4"), installing wooden walls and retaining planks.

Scenario Feature Measure: Pounds per Day Mortality

Scenario Unit: Pounds per Day

Scenario Typical Size: 60

Scenario Cost: \$8,766.19

Scenario Cost/Unit: \$146.10

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Equipment/Installation</i>						
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$24.37	12	\$292.44
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.64		\$0.00
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	\$8.69	12	\$104.28

Equipment/Installation

Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	4	\$486.20
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	6	\$729.30
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.25	55	\$123.75
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.96	296	\$580.16

Labor

Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	12	\$276.36
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	96	\$1,844.16
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$103.18	10	\$1,031.80

Materials

Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2". Includes lumber and fasteners. Does not include labor.	Board Foot	\$1.56	576	\$898.56
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners	Board Foot	\$0.85	1683	\$1,430.55
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	6	\$240.36

Mobilization

Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	300	\$105.00
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$178.75	2	\$357.50

Practice: 316 - Animal Mortality Facility

Scenario: #14 - Composter with Storage, Finisher

Scenario Description:

This scenario consists of installing a facility to compost animal mortality. The facility can consist of, but is not limited to, any of the following technologies:

- Static Bin: Consisting of a group of small bins (concrete or wood walls) on a concrete pad to compost mortality in static pile(s) that have sufficient bulking material to allow natural aeration. Piles are turned to go through a second heat cycle prior to final land application.
- In-vessel Grinding Batch. A commercially manufactured grinding batch composter with a minimum capacity of 1,000 lbs per batch. A secondary composting storage area is required to finish materials.
- Forced Air Composting Bins: Consisting of a group of small bins with an aeration and leachate collection system.
- (This scenario does not address incinerators.)

The least cost scenario is based on a static bin system with wood walls and an open storage area located adjacent to the bins. Size of facility is based on daily mortality and sizing procedures accepted in particular state. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed.

Potential Associated Practices: Roofs and Covers (367), Heavy Use Area Protection (561), Critical Area Planting (342), Livestock Pipeline (516), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Roof Runoff Structure (558), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is handled in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation.

The typical mortality facility is based on a wood wall static bin composting facility with the primary, secondary, and tertiary bins on one side and a separate storage area located adjacent to the bins. Material storage is required under the 316 standard by reference to the 317 Composting Facility standard (under facility sizing) therefore, the scenario includes the additional area required for raw material storage. A Finisher operation consists of 1065 head building capacity with 2.7 turns per year and an average weight of 140 pounds and a mortality rate of 4%. The average daily mortality loss (ADL) is 44 lb/day and a primary stage composting time of 72 days is based on 5 times the square root of the maximum weight of the finisher (210 pounds). The primary stage bin volume is based on 0.2 times ADL times primary stage time. This requires a minimum primary bin volume of 639 ft3. Using a 10' x 8' x 5' bin (with an effective height of 4' for additional bedding for leachate absorption) with a volume of 320 cf, this operation requires 2 primary composting bins. The number of secondary bins equals the number of primary bins. Tertiary bin volume is based on 30 day storage time, therefore, 1 - 400 cf bin is required. This small operation requires 5 (10' x 8' x 5') bins along with a storage area of 25' x 25' = 625 sf. Bins are sized to the nearest larger whole number of bins. Site preparation includes topsoil removal and grading, installing 6" of gravel, setting posts, installing concrete slab (6"), installing wooden walls and retaining planks.

Scenario Feature Measure: Pounds per Day Mortality

Scenario Unit: Pounds per Day

Scenario Typical Size: 44

Scenario Cost: \$17,868.30

Scenario Cost/Unit: \$406.10

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.64	190	\$691.60
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.96	806	\$1,579.76
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.25	120	\$270.00

Equipment/Installation

Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	20	\$2,431.00
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	7	\$850.85
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic yard	\$2.99	190	\$568.10
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	\$8.69	19	\$165.11
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$24.37	19	\$463.03

Labor

General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	144	\$2,766.24
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$103.18	20	\$2,063.60
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	19	\$437.57

Materials

Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	20	\$801.20
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners	Board Foot	\$0.85	2805	\$2,384.25
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2". Includes lumber and fasteners. Does not include labor.	Board Foot	\$1.56	912	\$1,422.72

Mobilization

Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$178.75	2	\$357.50
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77
Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	1000	\$350.00

Practice: 316 - Animal Mortality Facility

Scenario: #15 - Composter with Storage, Sow

Scenario Description:

This scenario consists of installing a facility to compost animal mortality. The facility can consist of, but is not limited to, any of the following technologies:

- Static Bin: Consisting of a group of small bins (concrete or wood walls) on a concrete pad to compost mortality in static pile(s) that have sufficient bulking material to allow natural aeration. Piles are turned to go through a second heat cycle prior to final land application.
- In-vessel Grinding Batch. A commercially manufactured grinding batch composter with a minimum capacity of 1,000 lbs per batch. A secondary composting storage area is required to finish materials.
- Forced Air Composting Bins: Consisting of a group of small bins with an aeration and leachate collection system.
- (This scenario does not address incinerators.)

The least cost scenario is based on a static bin system with wood walls and an open storage area located adjacent to the bins. Size of facility is based on daily mortality and sizing procedures accepted in particular state. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed.

Potential Associated Practices: Roofs and Covers (367), Heavy Use Area Protection (561), Critical Area Planting (342), Livestock Pipeline (516), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Roof Runoff Structure (558), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is handled in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation.

The typical mortality facility is based on a wood wall static bin composting facility with the primary, secondary, and tertiary bins on one side and a separate storage area located adjacent to the bins. Material storage is required under the 316 standard by reference to the 317 Composting Facility standard (under facility sizing) therefore, the scenario includes the additional area required for raw material storage. A Sow (farrow to wean) operation consists of 350 sows, average weight of 350 pounds and a sow mortality rate of 5% and each sow has 2.5 litters of 10 pigs each per year, average weight of 6 pounds, with a piglet mortality rate of 12%. The average daily mortality loss (ADL) of sows and piglets is 17 lb/day each for a total of 34 lb/day and a primary stage composting time of 94 days is based on 5 times the square root of the maximum weight of sow only (350 #). The primary stage bin volume is based on 0.2 times ADL times primary stage time. This requires a minimum primary bin volume of 637 ft³. Using a 10' x 8' x 5' bin (with an effective height of 4' for additional bedding for leachate absorption) with a volume of 320 cf, this operation requires 2 primary composting bins. The number of secondary bins equals the number of primary bins. Tertiary bin volume is based on 30 day storage time, therefore, 1 - 400 cf bin is required. This small operation requires 5 (10' x 8' x 5') bins along with a storage area of 25' x 25' = 625 sf. Bins are sized to the nearest larger whole number of bins. Site preparation includes topsoil removal and grading, installing 6" of gravel, setting posts, installing concrete slab (6"), installing wooden walls and retaining planks.

Scenario Feature Measure: Pounds per Day Mortality

Scenario Unit: Pounds per Day

Scenario Typical Size: 34

Scenario Cost: \$17,868.30

Scenario Cost/Unit: \$525.54

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Equipment/Installation</i>						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	\$8.69	19	\$165.11
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic yard	\$2.99	190	\$568.10
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.64	190	\$691.60

Equipment/Installation

Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.96	806	\$1,579.76
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.25	120	\$270.00
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	7	\$850.85
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$24.37	19	\$463.03
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	20	\$2,431.00

Labor

Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$103.18	20	\$2,063.60
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	144	\$2,766.24
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	19	\$437.57

Materials

Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2". Includes lumber and fasteners. Does not include labor.	Board Foot	\$1.56	912	\$1,422.72
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners	Board Foot	\$0.85	2805	\$2,384.25
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	20	\$801.20

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$178.75	2	\$357.50
Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	1000	\$350.00

Practice: 316 - Animal Mortality Facility

Scenario: #16 - Composter with Storage, Poultry

Scenario Description:

This scenario consists of installing a facility to compost animal mortality. The facility can consist of, but is not limited to, any of the following technologies:

- Static Bin: Consisting of a group of small bins (concrete or wood walls) on a concrete pad to compost mortality in static pile(s) that have sufficient bulking material to allow natural aeration. Piles are turned to go through a second heat cycle prior to final land application.
- In-vessel Grinding Batch. A commercially manufactured grinding batch composter with a minimum capacity of 1,000 lbs per batch. A secondary composting storage area is required to finish materials.
- Forced Air Composting Bins: Consisting of a group of small bins with an aeration and leachate collection system.
- (This scenario does not address incinerators.)

The least cost scenario is based on a static bin system with wood walls and an open storage area located adjacent to the bins. Size of facility is based on daily mortality and sizing procedures accepted in particular state. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed.

Potential Associated Practices: Roofs and Covers (367), Heavy Use Area Protection (561), Critical Area Planting (342), Livestock Pipeline (516), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Roof Runoff Structure (558), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is handled in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation.

The typical mortality facility is based on a wood wall static bin composting facility with the primary, secondary, and tertiary bins on one side and a separate storage area located adjacent to the bins. Material storage is required under the 316 standard by reference to the 317 Composting Facility standard (under facility sizing) therefore, the scenario includes the additional area required for raw material storage. A Broiler operation consists of a 43000 head operation, average bird weight of 4 pounds, 6 flocks per year, and a mortality rate of 5%. The average daily mortality loss (ADL) is 141 lb/day and a primary stage composting time of 14 days is based on 5 times the square root of the maximum weight. The primary stage bin volume is based on 0.2 times ADL times primary stage time. This requires a minimum primary bin volume of 400 ft³. Using a 10' x 8' x 5' bin with a volume of 400 cf, this operation requires 1 primary composting bin. The number of secondary bins equals the number of primary bins. Tertiary bin volume is based on 30 day storage time, therefore, 2 - 400 cf bin is required. This small operation requires a total of 4 (10' x 8' x 5') bins along with a storage area of 25' x 25' = 625 sf. Site preparation includes topsoil removal and grading, installing 4" of gravel, setting posts, installing concrete slab (6"), installing wooden walls and retaining planks.

Scenario Feature Measure: Pounds per Day Mortality

Scenario Unit: Pounds per Day

Scenario Typical Size: 141

Scenario Cost: \$12,698.77

Scenario Cost/Unit: \$90.06

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Equipment/Installation</i>						
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	5.5	\$668.53
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$24.37	17	\$414.29
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	\$8.69	17	\$147.73

Equipment/Installation

Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.96	296	\$580.16
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.25	110	\$247.50
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	18.5	\$2,248.68

Labor

Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$103.18	10	\$1,031.80
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	17	\$391.51
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	120	\$2,305.20

Materials

Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners	Board Foot	\$0.85	2409	\$2,047.65
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	12.5	\$500.75
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2". Includes lumber and fasteners. Does not include labor.	Board Foot	\$1.56	816	\$1,272.96

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$178.75	2	\$357.50
Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	625	\$218.75

Practice: 316 - Animal Mortality Facility

Scenario: #17 - Composter with Storage, Turkey

Scenario Description:

This scenario consists of installing a facility to compost animal mortality. The facility can consist of, but is not limited to, any of the following technologies:

- Static Bin: Consisting of a group of small bins (concrete or wood walls) on a concrete pad to compost mortality in static pile(s) that have sufficient bulking material to allow natural aeration. Piles are turned to go through a second heat cycle prior to final land application.
- In-vessel Grinding Batch. A commercially manufactured grinding batch composter with a minimum capacity of 1,000 lbs per batch. A secondary composting storage area is required to finish materials.
- Forced Air Composting Bins: Consisting of a group of small bins with an aeration and leachate collection system.
- (This scenario does not address incinerators.)

The least cost scenario is based on a static bin system with wood walls and an open storage area located adjacent to the bins. Size of facility is based on daily mortality and sizing procedures accepted in particular state. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed.

Potential Associated Practices: Roofs and Covers (367), Heavy Use Area Protection (561), Critical Area Planting (342), Livestock Pipeline (516), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Roof Runoff Structure (558), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Animal mortality is handled in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is handled in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation.

The typical mortality facility is based on a wood wall static bin composting facility with the primary, secondary, and tertiary bins on one side and a separate storage area located adjacent to the bins. Material storage is required under the 316 standard by reference to the 317 Composting Facility standard (under facility sizing) therefore, the scenario includes the additional area required for raw material storage. A Tom Turkey operation consists of a 2,717 head operation, maximum bird weight of 42 pounds (average wt. 25lbs.), 112 day flock life (3 flocks/year), and a mortality rate of 12%. The average daily mortality loss (ADL) is 67 lb/day and a primary stage composting time of 32 days is based on 5 times the square root of the maximum weight. The primary stage bin volume is based on 0.2 times ADL times primary stage time. This requires a minimum primary bin volume of 432 ft³. Using a 10' x 8' x 5' bin with a volume of 400 cf, this operation requires 2 primary composting bins. The number of secondary bins equals the number of primary bins. Tertiary treatment will occur in the storage area. This small operation requires a total of 4 (10' x 8' x 5') bins along with a storage area of 25' x 25' = 625 sf. (Bins are sized to the nearest larger whole number of bins). Site preparation includes topsoil removal and grading, installing 4" of gravel, setting posts, installing concrete slab (6"), installing wooden walls and retaining planks.

Scenario Feature Measure: Pounds per Day Mortality

Scenario Unit: Pounds per Day

Scenario Typical Size: 67

Scenario Cost: \$12,698.77

Scenario Cost/Unit: \$189.53

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Equipment/Installation</i>						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	18.5	\$2,248.68
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$121.55	5.5	\$668.53

Equipment/Installation

Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	\$8.69	17	\$147.73
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.25	110	\$247.50
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.96	296	\$580.16
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.64	0	\$0.00
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic yard	\$2.99	0	\$0.00
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$24.37	17	\$414.29

Labor

Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$103.18	10	\$1,031.80
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.03	17	\$391.51
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.21	120	\$2,305.20

Materials

Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners	Board Foot	\$0.85	2409	\$2,047.65
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	12.5	\$500.75
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2". Includes lumber and fasteners. Does not include labor.	Board Foot	\$1.56	816	\$1,272.96

Mobilization

Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard-Mile	\$0.35	625	\$218.75
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$178.75	2	\$357.50
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$265.77	1	\$265.77