

Practice: 375 - Dust Control from Animal Activity on Open Lot Surfaces

Scenario: #1 - Manure Harvesting, Once per Year

Scenario Description:

Removal of loose, dry layer of manure from a confined animal operation once per year in addition to a regular annual manure clean-out to reduce emissions of particulate matter. The specific resource concern to be addressed is "Emissions of Particulate Matter (PM) and PM Precursors".

Before Situation:

The confined animal operation conducts a manure clean-out once per year. There is a dry, loose manure layer that is subject to animal activity resulting in emissions of particulate matter that cause nuisance dusting or visibility-impairment effects.

After Situation:

In addition to the annual manure clean-out, an additional manure harvesting removes the dry, loose manure layer from the pens and working alleys. This manure harvesting will leave a 1-2 inch layer of well-compacted manure above the mineral soil and a smooth pen/alley surface to deter ponding of moisture.

Scenario Feature Measure: Pen Surface Area, Including Working Alleys

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$295.67

Scenario Cost/Unit: \$295.67

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hour	\$46.46	2.25	\$104.54
Front End Loader, 95 HP	1327	Wheeled front end loader with horsepower range of 80 to 110. Equipment and power unit costs. Labor not included.	Hour	\$44.65	2.25	\$100.46
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$20.15	4.5	\$90.68

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Scenario: #2 - Manure Harvesting, Twice per Year

Scenario Description:

Removal of loose, dry layer of manure from a confined animal operation twice per year in addition to a regular annual manure clean-out to reduce emissions of particulate matter. The specific resource concern to be addressed is "Emissions of Particulate Matter (PM) and PM Precursors".

Before Situation:

The confined animal operation conducts a manure clean-out once per year. There is a dry, loose manure layer that is subject to animal activity resulting in emissions of particulate matter that cause nuisance dusting or visibility-impairment effects.

After Situation:

In addition to the annual manure clean-out, two additional manure harvesting efforts remove the dry, loose manure layer from the pens and working alleys. Each manure harvesting will leave a 1-2 inch layer of well-compacted manure above the mineral soil and a smooth pen/alley surface to deter ponding of moisture.

Scenario Feature Measure: Pen Surface Area, Including Working Alleys

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$591.35

Scenario Cost/Unit: \$591.35

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hour	\$46.46	4.5	\$209.07
Front End Loader, 95 HP	1327	Wheeled front end loader with horsepower range of 80 to 110. Equipment and power unit costs. Labor not included.	Hour	\$44.65	4.5	\$200.93
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$20.15	9	\$181.35

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Scenario: #3 - Solid-Set Sprinkler System, Less than 20 Acres

Scenario Description:

Installation of a solid-set dust control sprinkler system on a confined animal operation with a pen and working alley area of less than 20 acres. The specific resource concern to be addressed is "Emissions of Particulate Matter (PM) and PM Precursors".

Before Situation:

The confined beef feedlot does not supply additional moisture to the pens and working alleys. There is a dry, loose manure layer that is subject to animal activity resulting in emissions of particulate matter that cause nuisance dusting or visibility-impairment effects.

After Situation:

A solid-set dust control sprinkler system is installed to provide enough water addition to meet the maximum total daily wet soil evaporation rate, with allowances for moisture input to pens/alley from animal manure and urine. The system is designed to avoid excessive overlap and over-application of water. This scenario has a typical pen/alley area of 15 acres. Associated practices include 430 - Irrigation Pipeline, 436 - Irrigation Reservoir, 442 - Irrigation System, Sprinkler, 516 - Pipeline, and 533 - Pumping Plant.

Scenario Feature Measure: Pen Surface Area, Including Working Alleys

Scenario Unit: Acre

Scenario Typical Size: 15

Scenario Cost: \$174,004.35

Scenario Cost/Unit: \$11,600.29

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Equipment/Installation</i>						
Dust Control, Open Lot Solid Set Sprinkler System, w/Appurtenances, < 20 Acres	1344	Solid set sprinkler system for dust control on open lot livestock pens, less than 20 acres, w/appurtenances and including complete labor and installation.	Acre	\$11,600.29	15	\$174,004.35

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Scenario: #4 - Solid-Set Sprinkler System, 20-60 Acres

Scenario Description:

Installation of a solid-set dust control sprinkler system on a confined animal operation with a pen and working alley area of 20-60 acres. The specific resource concern to be addressed is "Emissions of Particulate Matter (PM) and PM Precursors".

Before Situation:

The confined beef feedlot does not supply additional moisture to the pens and working alleys. There is a dry, loose manure layer that is subject to animal activity resulting in emissions of particulate matter that cause nuisance dusting or visibility-impairment effects.

After Situation:

A solid-set dust control sprinkler system is installed to provide enough water addition to meet the maximum total daily wet soil evaporation rate, with allowances for moisture input to pens/alley from animal manure and urine. The system is designed to avoid excessive overlap and over-application of water. This scenario has a typical pen/alley area of 35 acres. Associated practices include 430 - Irrigation Pipeline, 436 - Irrigation Reservoir, 442 - Irrigation System, Sprinkler, 516 - Pipeline, and 533 - Pumping Plant.

Scenario Feature Measure: Pen Surface Area, Including Working Alleys

Scenario Unit: Acre

Scenario Typical Size: 35

Scenario Cost: \$323,338.05

Scenario Cost/Unit: \$9,238.23

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Equipment/Installation</i>						
Dust Control, Open Lot Solid Set Sprinkler System, w/Appurtenances, 20 to 60 Acres	1345	Solid set sprinkler system for dust control on open lot livestock pens, 20-60 acres, w/appurtenances and including complete labor and installation	Acre	\$9,238.23	35	\$323,338.05

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Scenario: #5 - Solid-Set Sprinkler System, Greater than 60 Acres

Scenario Description:

Installation of a solid-set dust control sprinkler system on a confined animal operation with a pen and working alley area of greater than 60 acres. The specific resource concern to be addressed is "Emissions of Particulate Matter (PM) and PM Precursors".

Before Situation:

The confined beef feedlot does not supply additional moisture to the pens and working alleys. There is a dry, loose manure layer that is subject to animal activity resulting in emissions of particulate matter that cause nuisance dusting or visibility-impairment effects.

After Situation:

A solid-set dust control sprinkler system is installed to provide enough water addition to meet the maximum total daily wet soil evaporation rate, with allowances for moisture input to pens/alley from animal manure and urine. The system is designed to avoid excessive overlap and over-application of water. This scenario has a typical pen/alley area of 100 acres. Associated practices include 430 - Irrigation Pipeline, 436 - Irrigation Reservoir, 442 - Irrigation System, Sprinkler, 516 - Pipeline, and 533 - Pumping Plant.

Scenario Feature Measure: Pen Surface Area, Including Working Alleys

Scenario Unit: Acre

Scenario Typical Size: 100

Scenario Cost: \$588,888.00

Scenario Cost/Unit: \$5,888.88

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Equipment/Installation</i>						
Dust Control, Open Lot Solid Set Sprinkler System, w/Appurtenances, > 60 Acres	1346	Solid set sprinkler system for dust control on open lot livestock pens, greater than 60 acres, w/appurtenances and including complete labor and installation	Acre	\$5,888.88	100	\$588,888.00

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Scenario: #6 - Solid-Set Sprinkler System Labor

Scenario Description:

Active management labor of a solid-set dust control sprinkler system for subsequent years following the installation of a solid-set dust control sprinkler system at a confined animal operation to improve the system performance. The specific resource concern to be addressed is "Emissions of Particulate Matter (PM) and PM Precursors".

Before Situation:

A solid-set dust control sprinkler system is installed. However, the confined animal operation is not actively managing the sprinkler system to optimize performance.

After Situation:

In subsequent years following the installation of a solid-set dust control sprinkler system, the confined animal operation provides appropriate labor to actively manage the sprinkler system, thereby improving the reliability and effectiveness of the system.

Scenario Feature Measure: Pen Surface Area, Including Working Alleys

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$55.20

Scenario Cost/Unit: \$55.20

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Labor</i>						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$37.95	0.5	\$18.98
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	\$18.11	2	\$36.22