Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	New England
State	Connecticut
Discipline Group	Environmental Engineering
Practice Code/Name	629 - Waste Treatment
Scenario ID	2
Scenario Name	Milking Parlor Waste Treatment System with Dosing System and Bark Beds
Scenario Description	This practice scenario includes a dosed treatment system with bark bed for milking parlor wastewater. Bark beds may be used where the following minimum separations can be achieved to the bottom of the treatment area after grading: two feet to seasonal groundwater and three feet to bedrock. Bark beds rely on the soil profile to reduce BOD5 levels in the wastewater. Bark materials provide some aeration of the soil surface and insulate the infiltration area in the winter and allows for evaporation in the summer.The purpose of the practice is to address resource concerns related to water quality degradation due to (excess nutrient, salts and pathogens). Associated practices: Nutrient Management (590), Pumping Plant (533), Fence (382), Waste Storage Facility (313), Diversion (362), Critical Area Seeding (342), Waste Transfer (634)
Before Practice Situation	Milkhouse waste water currently outlets in an untreated manner which presents potential soil, water and air quality concerns.
After Practice Situation	This scenario assumes that the treatment system is designed for 500 gal/day of wastewater from the milking parlor. It assumes pre-treatment in two tanks. The pumping tank is under PS 634-Waste Transfer and the 2" solid handling sewage pump is under PS 533-Pumping Plant. The grease trap acts as the primary settling basin. The settling tanks are equiped with effluent filters. The wastewater is pressure dosed from the pumping tank to the treatment bed (bark bed or leaching gallery). This treatment method relies primarily on the soil profile to reduce BOD5 levels. This scenario assumes that the treatment bed is dosed at 0.16 gal/square ft (3125 sq ft). To maintain bark bed performance, bark needs to be replaced or added every 3 to 5 years. This practice scenario reduces nutrient content, organic strength, or pathogen levels of agricultural waste; improve air quality by reducing odors and gaseous emissions (methane or ammonia).
Scenario Feature Measure	Bark Bed Treatment Area (SF)
Scenario Unit	Square Foot
Scenario Typical Size	3125

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$10,093.48	$3.23
Equipment/Installation	$10,413.28	$3.33
Labor	$3,163.20	$1.01
Mobilization	$2,175.94	$0.70
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$25,845.90	$8.27

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost
Materials	1738	Prefabricated concrete septic tank, 1500 gal	Precast concrete septic tank, 1,500 gal. Materials only.	Each	$1,764.88	2	$3,529.76
Materials	976	Pipe, PVC, 2", SCH 40	Materials: - 2" - PVC - SCH 40 - ASTM D1785	Foot	$1.05	290	$304.50
Materials	2063	Filter, effluent, municipal grade	Effluent filter rated 8,000 to 10,000 gallons per day with 1/16" to 1/32" filtration. Materials only.	Each	$318.31	2	$636.62
Materials	2067	Riser, Septic Tank	24" HDPE riser with cover. Materials only.	Each	$122.75	4	$491.00
Materials	978	Pipe, PVC, 4", SCH 40	Materials: - 4" - PVC - SCH 40 - ASTM D1785	Foot	$3.07	260	$798.20
Materials	980	Pipe, PVC, 6", SCH 40	Materials: - 6" - PVC - SCH 40 - ASTM D1785	Foot	$5.40	200	$1,080.00
Materials	1099	Aggregate, Gravel, Ungraded, Quarry Run	Includes materials, equipment and labor	Cubic yard	$19.98	130	$2,597.40
Materials	1209	Geotextile, non-woven, light weight	Non-woven less than 8 ounce/square yard geotextile with staple anchoring. Materials only.	Square Yard	$1.64	400	$656.00
Equipment/Installation	1199	Stripping and stockpiling, topsoil	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yard	$0.80	116	$92.80
Equipment/Installation	1098	Aggregate, Wood Chips	Includes materials, equipment and labor	Cubic yard	$20.11	350	$7,038.50
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	$1.27	460	$584.20
Equipment/Installation	1223	Excavation, common earth, large equipment, 150 ft	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	$3.39	402	$1,362.78
Equipment/Installation	50	Earthfill, Manually Compacted	Earthfill, manually compacted, includes equipment and labor	Cubic yard	$5.34	250	$1,335.00
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$39.54	80	$3,163.20
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$26.21	2	$52.42

Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$513.10	2	$1,026.20
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$274.33	4	$1,097.32

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	New England
State	Connecticut
Discipline Group	Environmental Engineering
Practice Code/Name	629 - Waste Treatment
Scenario ID	3
Scenario Name	Milking Parlor Waste Treatment System with Dosing System and Bark Mounds
Scenario Description	This practice scenario includes a dosed treatment system with bark mounds for milking parlor wastewater. Bark mounds may be used on level area requiring no grading where the following minimum separations can be achieved to the bottom of the mound: two feet to seasonal groundwater and three feet to bedrock. Treatment in bark mounds takes place primarily in the above-ground mounds and at the mound/soil interface. The purpose of the practice is to address resource concerns related to water quality degradation due to (excess nutrient, salts and pathogens). Associated practices: Nutrient Management (590), Pumping Plant (533), Fence (382), Waste Storage Facility (313), Diversion (362), Critical Area Seeding (342), Waste Transfer (634)
Before Practice Situation	Milkhouse waste water currently outlets in an untreated manner which presents potential soil, water and air quality concerns.
After Practice Situation	This scenario assumes that the treatment system is designed for 500 gal/day of wastewater from the milking parlor. It assumes pre-treatment in two tanks. The pumping tank is under PS 634-Waste Transfer and the 2" solid handling sewage pump is under PS 533-Pumping Plant. The grease trap acts as the primary settling basin. The settling tanks are equiped with effluent filters. The wastewater is pressure dosed from the pumping tank to the treatment bark mounds. This treatment method relies primarily on the bark media to reduce BOD5 levels. This scenario assumes that the treatment area is dosed at 0.16 gal/square ft (3125 sq ft). To maintain bark mound performance, bark needs o be replaced or added every 3 to 5 years. This practice scenario reduces nutrient content, organic strength, or pathogen levels of agricultural waste; improve air quality by reducing odors and gaseous emissions (methane or ammonia).
Scenario Feature Measure	Bark Bed Treatment Area (SF)
Scenario Unit	Square Foot
Scenario Typical Size	3125

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$8,389.15	$2.68
Equipment/Installation	$21,076.74	$6.74
Labor	$3,163.20	$1.01
Mobilization	$2,175.94	$0.70
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$34,805.03	$11.14

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost
Materials	2064	Valve, distribution	Sequencing valve, 4 or 6 way, for pressure dosing wastewater. Materials only.	Each	$133.71	1	$133.71
Materials	2066	Arch septic leaching chamber, HDPE	HDPE leaching galley, 2.5' to 3' wide x 6' to 8' long. Materials only.	Foot	$6.08	270	$1,641.60
Materials	1738	Prefabricated concrete septic tank, 1500 gal	Precast concrete septic tank, 1,500 gal. Materials only.	Each	$1,764.88	2	$3,529.76
Materials	976	Pipe, PVC, 2", SCH 40	Materials: - 2" - PVC - SCH 40 - ASTM D1785	Foot	$1.05	290	$304.50
Materials	2063	Filter, effluent, municipal grade	Effluent filter rated 8,000 to 10,000 gallons per day with 1/16" to 1/32" filtration. Materials only.	Each	$318.31	2	$636.62
Materials	2067	Riser, Septic Tank	24" HDPE riser with cover. Materials only.	Each	$122.75	4	$491.00
Materials	978	Pipe, PVC, 4", SCH 40	Materials: - 4" - PVC - SCH 40 - ASTM D1785	Foot	$3.07	460	$1,412.20
Materials	1099	Aggregate, Gravel, Ungraded, Quarry Run	Includes materials, equipment and labor	Cubic yard	$19.98	12	$239.76
Equipment/Installation	1098	Aggregate, Wood Chips	Includes materials, equipment and labor	Cubic yard	$20.11	900	$18,099.00
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	$1.27	450	$571.50
Equipment/Installation	1223	Excavation, common earth, large equipment, 150 ft	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	$3.39	316	$1,071.24
Equipment/Installation	50	Earthfill, Manually Compacted	Earthfill, manually compacted, includes equipment and labor	Cubic yard	$5.34	250	$1,335.00
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$39.54	80	$3,163.20
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$26.21	2	$52.42
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$513.10	2	$1,026.20
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$274.33	4	$1,097.32

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	New England
State	Connecticut
Discipline Group	Environmental Engineering
Practice Code/Name	629 - Waste Treatment
Scenario ID	4
Scenario Name	Milking Parlor Wastewater Treatment System with Dosing System
Scenario Description	This practice scenario includes a dosed treatment system for milking parlor wastewater that will outlet to a constructed wetland and/or vegetated treatment area and/or other acceptable treatment. The purpose of the practice is to address resource concerns related to water quality degradation due to (excess nutrient, salts and pathogens). Associated practices: Constructed Wetland (656), Vegetated Treatment Area (635), Waste Transfer (634), Nutrient Management (590), Pumping Plant (533), Fence (382), & Waste Storage Facility (313), Waste Transfer (634)
Before Practice Situation	Milkhouse waste water currently outlets in an untreated manner which presents potential soil, water and air quality concerns.
After Practice Situation	This scenario assumes that the treatment system is designed for 500 gal/day of wastewater from the milking parlor. It assumes pre-treatment in two tanks. The grease trap acts as the primary settling basin. The settling tanks are equiped with effluent filters. The wastewater is dosed from a wastewater holding tank (under PS 634-Waste Transfer) with a mechanical floating outlet to a final treatment and discharge area (constructed wetland and/or vegetated treatment area and/or other acceptable treatment). This practice scenario reduces nutrient content, organic strength, or pathogen levels of agricultural waste; improve air quality by reducing odors and gaseous emissions (methane or ammonia).
Scenario Feature Measure	Design Flow
Scenario Unit	Gallon/Day
Scenario Typical Size	500

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$6,846.14	$13.69
Equipment/Installation	$2,465.44	$4.93
Labor	$632.64	$1.27
Mobilization	$1,627.28	$3.25
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$11,571.50	$23.14

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost
Materials	2065	Floating Outlet	4" diameter floating chamber with flexible connector for gravity dosing from a septic tank. Materials only.	Gallon	$255.00	1	$255.00
Materials	1738	Prefabricated concrete septic tank, 1500 gal	Precast concrete septic tank, 1,500 gal. Materials only.	Each	$1,764.88	2	$3,529.76
Materials	2063	Filter, effluent, municipal grade	Effluent filter rated 8,000 to 10,000 gallons per day with 1/16" to 1/32" filtration. Materials only.	Each	$318.31	2	$636.62
Materials	2067	Riser, Septic Tank	24" HDPE riser with cover. Materials only.	Each	$122.75	4	$491.00
Materials	978	Pipe, PVC, 4", SCH 40	Materials: - 4" - PVC - SCH 40 - ASTM D1785	Foot	$3.07	200	$614.00
Materials	980	Pipe, PVC, 6", SCH 40	Materials: - 6" - PVC - SCH 40 - ASTM D1785	Foot	$5.40	200	$1,080.00
Materials	1099	Aggregate, Gravel, Ungraded, Quarry Run	Includes materials, equipment and labor	Cubic yard	$19.98	12	$239.76
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	$1.27	400	$508.00
Equipment/Installation	1223	Excavation, common earth, large equipment, 150 ft	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	$3.39	286	$969.54
Equipment/Installation	50	Earthfill, Manually Compacted	Earthfill, manually compacted, includes equipment and labor	Cubic yard	$5.34	185	$987.90
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$39.54	16	$632.64
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$26.21	2	$52.42
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$513.10	2	$1,026.20
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$274.33	2	$548.66

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	New England
State	Connecticut
Discipline Group	Environmental Engineering
Practice Code/Name	629 - Waste Treatment
Scenario ID	6
Scenario Name	Aerator greater than 5 hp
Scenario Description	This practice scenario includes installation of an aerator into a liquid storage pond or tank with a surface area larger than 1 acre. The purpose of the practice is to address resource concerns related to water quality degradation due to (excess nutrient and pathogens) and air quality impacts (PM & PM precursors, and objectionable odors). Associated practices: Nutrient Management (590) and Waste Storage Facility (313)
Before Practice Situation	A dairy, swine, or other agricultural operation in which the waste goes into a storage pond. The pond is not managed as an anaerobic lagoon and the nutrients stratify over time and odors are objectionable. It is difficult to properly estimate the nutrient content being pumped onto the land because of the stratification. There is also not enough aerobic microbial activity in the pond to prevent objectionable odors.
After Practice Situation	This scenario assumes that the producer would like to increase oxygen content in the storage pond and mix the waste for even nutrient distribution. Under aerobic conditions microorganisms can convert nutrients and odors will be reduced. Nutrient content of the liquid waste is more uniform which is better for uniform agronomic applications rates improving nutrient management and to protect air and water quality resources.
Scenario Feature Measure	Each aerator
Scenario Unit	Each
Scenario Typical Size	1

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$15,480.00	$15,480.00
Equipment/Installation	$0.00	$0.00
Labor	$118.62	$118.62
Mobilization	$0.00	$0.00
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$15,598.62	$15,598.62

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost
Materials	1709	Aerator, pond, 10 hp	10 hp Aerator for pond or tank with 10 or more acres of surface area. Materials only	Each	$15,480.00	1	$15,480.00
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$39.54	3	$118.62

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	New England
State	Connecticut
Discipline Group	Environmental Engineering
Practice Code/Name	629 - Waste Treatment
Scenario ID	5
Scenario Name	Aerator less than or equal to 5 hp
Scenario Description	This practice scenario includes installation of an aerator into a liquid storage pond or tank that has a surface area less than 1 acre. The purpose of the practice is to address resource concerns related to water quality degradation due to (excess nutrient and pathogens) and air quality impacts (PM & PM precursors, and objectionable odors). Associated practices: Nutrient Management (590) and Waste Storage Facility (313)
Before Practice Situation	A dairy, swine, or other agricultural operation in which the waste goes into a storage pond. The pond is not managed as an anaerobic lagoon and the nutrients stratify over time and odors are objectionable. It is difficult to properly estimate the nutrient content being pumped onto the land because of the stratification. There is also not enough aerobic microbial activity in the pond to prevent objectionable odors.
After Practice Situation	This scenario assumes that the producer would like to increase oxygen content in the storage pond and mix the waste for even nutrient distribution. Under aerobic conditions microorganisms can convert nutrients and odors will be reduced. Nutrient content of the liquid waste is more uniform which is better for uniform agronomic application rates improving nutrient management and to protect air and water quality resources.
Scenario Feature Measure	Horse Power of aerator
Scenario Unit	Horse Power
Scenario Typical Size	1

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$2,888.93	$2,888.93
Equipment/Installation	$0.00	$0.00
Labor	$79.08	$79.08
Mobilization	$0.00	$0.00
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$2,968.01	$2,968.01

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost
Materials	1708	Aerator, pond, 1 hp	1 hp Aerator for pond or tank with less than 10 acres of surface area. Materials only.	Each	$2,888.93	1	$2,888.93
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$39.54	2	$79.08

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	New England
State	Connecticut
Discipline Group	Environmental Engineering
Practice Code/Name	629 - Waste Treatment
Scenario ID	7
Scenario Name	Straw Pond Cover
Scenario Description	This practice scenario is a permeable organic cover applied to the liquid surface of a waste storage facility that has a surface area less than or equal to 2 acres. Straw cover applications can remain on top of the pond for between 2 and 6 months. The cover will reduce radiation and wind velocity over the surface of a manure storage to reduce transmission of odors and act as a medium for growth of microorganisms that utilize carbon, nitrogen, and sulfur to decompose odorous compounds. Associated practices include Waste Storage Facility (313).
Before Practice Situation	This practice is applicable on a dairy or swine operation in which the waste goes into a liquid storage pond or tank and the bio-treatment of emissions will improve air quality. The maximum recommended surface area is 2 acres.
After Practice Situation	Permeable organic cover applied to the liquid surface of a waste storage or treatment facility. Organic materials often used as covers include straws, cornstalks and peat moss. Typical application is an 8" straw application on a 120' diameter storage tank every 3 months. The scenario unit calculation is (Surface Area of Pond)*(Number of applications per year). For this scenario, the calculation is: (120/2)^2*pi *4 = 45,239sf Organic covers can reduce odors up to 90 percent if the straw cover is 12" deep.
Scenario Feature Measure	Surface Area of Pond or Tank per application
Scenario Unit	Square Foot
Scenario Typical Size	45239

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$29,136.00	$0.64
Equipment/Installation	$1,466.56	$0.03
Labor	$382.40	$0.01
Mobilization	$1,497.84	$0.03
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$32,482.80	$0.72

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost
Materials	1237	Straw	Small grain straw (non organic and certified organic). Materials and shipping only.	Ton	$120.00	242.8	$29,136.00
Equipment/Installation	938	Brush Chipper, 6" capacity	Brush Chipper, 6" capacity, typically 35 HP. Includes chipper and power unit. Labor not included.	Hour	$17.84	40	$713.60
Equipment/Installation	962	Tractor, agricultural, 120 HP	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hour	$47.06	16	$752.96
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.90	16	$382.40
Mobilization	1138	Mobilization, small equipment	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	$187.23	8	$1,497.84

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	New England
State	Connecticut
Discipline Group	Environmental Engineering
Practice Code/Name	629 - Waste Treatment
Scenario ID	1
Scenario Name	Litter Windrow Pasteurization
Scenario Description	This practice scenario includes the in house windrowing of poultry litter to promote pasteurization between flocks. The purpose of the practice is to address resource concerns related to water quality degradation due to (excess nutrient and pathogens) and air quality impacts (PM & PM precursors, and objectionable odors). Associated practices: Amendments for Treatment of Agricultural Waste (591), Waste Storage Facility (313), & Nutrient Management (590)
Before Practice Situation	A poultry operation typically removes part of the litter and bedding between flocks, called a cakeout. A full cleanout of litter and bedding is typically done once every 1-3 years depending on the operation. Over time, the accumulation of poultry waste in the litter contributes to an increase in odors and high ammonia emissions in the house contribute to impacts on bird health.
After Practice Situation	This scenario assumes 4 flocks per year in an operation with 2 - 42 x 500 square foot houses. Three (3) in-house pasteurization events will be performed annually. There will be a full cleanout after the 4th flock. Formula to calculate the total number of pasteurization events per year on a 1000 SF basis: (Square Feet of house) / 1000 SF X (Number of houses) X (Number of pasteurization events) = Number of 1000SF. 21,000 SF / 1000 SF X 2 houses X 3 events = 126 units of 1000SF In house pasteurization of poultry litter is achieved by windrowing the litter in the house. The process takes approximately one week. This process successfully addresses the air quality impacts (ammonia emissions, PM and PM precursors) and bird health resource concerns. This process also improves the quality of poultry litter that must be spread on farmland. Bird health is improved and bird mortality is reduced.
Scenario Feature Measure	Surface Area of housing floor windrowed per year in 1000 SF
Scenario Unit	1000 Square Feet
Scenario Typical Size	126

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$279.60	$2.22
Equipment/Installation	$3,105.96	$24.65
Labor	$1,577.40	$12.52
Mobilization	$0.00	$0.00
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$4,962.96	$39.39

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost
Materials	1707	Aerator Attachment, 8", PTO	Aerator attachment for mounting to tractor and PTO, 8" diameter. Equipment cost only with out tractor. Brown Bear R24C-8' or equivalent	Hour	$9.32	30	$279.60
Equipment/Installation	962	Tractor, agricultural, 120 HP	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hour	$47.06	66	$3,105.96
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.90	66	$1,577.40

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	New England
State	Connecticut
Discipline Group	Environmental Engineering
Practice Code/Name	629 - Waste Treatment
Scenario ID	8
Scenario Name	Phosphorus Reduction System
Scenario Description	This practice scenario includes infrastructure to remove phosphorus from swine operation wastewater. The purpose of the practice is to address resource concerns related to water quality degradation (excess nutrients). Associated practices: Nutrient Management (590), Waste Storage Facility (313), Irrigation Water Conveyance, Pipeline (430), Irrigation System, Sprinkler (442), Irrigation System, Microirrigation (442)
Before Practice Situation	Swine lagoon water is applied to fields without treatment.
After Practice Situation	This scenario assumes that swine wastewater is treated with a phosphorus reduction system. The precipitated phosphorus, in the form of struvite, can be collected and sold to commercial fertilizer producers. The treated wastewater may be able to be agronomically applied at higher application rates and/or on fewer acres. This system has been shown to decrease movement of phosphorus particles into waterways.
Scenario Feature Measure	gallons per minute treated
Scenario Unit	Gallon/Minute
Scenario Typical Size	600

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$300,000.00	$500.00
Equipment/Installation	$0.00	$0.00
Labor	$44,186.81	$73.64
Mobilization	$7,955.10	$13.26
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$352,141.91	$586.90

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost
Materials	1865	Struvite extraction system	Struvite extraction system (magnesium ammonium phosphate) Phred components including fabricated parts, off the shelf parts, and installation materials.	Each	$300,000.00	1	$300,000.00
Labor	235	Specialist Labor	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	$83.22	149.2	$12,416.42
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$39.54	803.5	$31,770.39
Mobilization	1043	Mobilization, Material, distance > 50 miles	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollar	$1.00	7442	$7,442.00
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$513.10	1	$513.10