

## Scenario Worksheet

## Practice and Scenario Description:

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	11
Scenario Name	Blind Inlet
Scenario Description	Install an excavated earthen box with perforated collector tubing placed in the bottom and filled to the surface with bedding material and rock riprap to direct surface flow into a "main line" or subsurface drain. Typically installed at the upper end of a waterway to protect the vegetation of the waterway from prolonged surface flow, thus facilitating vegetative growth and controlling ephemeral gully erosion. Costs include the collection pipe, excavation, and rock. This practice is often installed in conjunction with waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Excessive sedimentation and soil erosion is controlled or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Feet
Scenario Typical Size	40

## Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,394.10	\$34.85
Equipment/Installation	\$114.90	\$2.87
Labor	\$73.04	\$1.83
Mobilization	\$582.83	\$14.57
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$2,164.87	\$54.12

## Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1242	Pipe, HDPE, 6", CPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, 6" diameter - ASTM F405. Material cost only.	Foot	\$1.08	40	\$43.20
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$63.36	15	\$950.40
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$26.70	15	\$400.50
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.21	30	\$66.30
Equipment/Installation	1227	Excavation, common earth, side cast, large equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	\$1.62	30	\$48.60
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	2	\$73.04
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05
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	\$379.78	1	\$379.78

## Scenario Worksheet

## Practice and Scenario Description:

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	12
Scenario Name	Blind Inlet for Water Quality
Scenario Description	Install an excavated earthen box with perforated collector tubing placed in the bottom and filled to the surface with bedding material and sand/fine gravel to direct surface flow into a "main line" or subsurface drain. Typically installed in low areas to replace surface risers, thus reducing direct flow of sediment into tile and out to stream. Costs include the collection pipe, excavation, gravel and sand layers. This practice can be installed in conjunction with small drainage area WASCOBs or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations enters surface riser. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Runoff water is filtered through blind inlet before outleting through tile. Excessive sedimentation and soil erosion is controlled or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Blind Inlet
Scenario Unit	Feet
Scenario Typical Size	14

## Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$718.40	\$51.31
Equipment/Installation	\$84.26	\$6.02
Labor	\$73.04	\$5.22
Mobilization	\$203.05	\$14.50
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,078.75	\$77.05

## Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1242	Pipe, HDPE, 6", CPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, 6" diameter - ASTM F405. Material cost only.	Foot	\$1.08	10	\$10.80
Materials	989	Pipe, PVC, 4", SDR 26	Materials: - 4" - PVC - SDR 26 160 psi - ASTM D2241	Foot	\$2.03	50	\$101.50
Materials	45	Aggregate, Sand, Graded, Washed	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$25.70	8	\$205.60
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$26.70	15	\$400.50
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.21	22	\$48.62
Equipment/Installation	1227	Excavation, common earth, side cast, large equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	\$1.62	22	\$35.64
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	2	\$73.04
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	13
Scenario Name	Trickle Flow Collector
Scenario Description	Install a perforated pipe to collect surface flow and redirect water to a subsurface outlet. The Trickle Flow Collector consists of a rock/rip rap area bedded around the perforated pipe to trap sediment prior to outletting water. Scenario describes a 10' long by 30' wide by 1.5' deep rectangular shaped area lined with riprap. This scenario includes the installation of pipe in the bottom of the rock bedding to serve as a trickle flow collector. These typically are installed adjacent to waterway and with same flow dimensions. Half the flow channel is excavated, before excavation for riprap. Excess excavation is spoiled in the immediate area. Cost include excavation, spoiling of excess material, geotextile underlayment and installing Rock Riprap. TFC area is measured from upstream to downstream flow catchment area.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of ephemeral or classic gully erosion. Erosion is occurring in areas that cannot maintain established vegetation and are not otherwise protected. Water quality is compromised as nutrient/pesticide-laden sediments are leaving the site. Water quantity is also a concern as excessive surface water flow is contributing to gully erosion.
After Practice Situation	Rock lined area is 10' long by 30' wide by 1.5' deep. This armor will result in a protected surface to address the initial concern of erosion. Placement of the perforated pipe and rock/rip rap bedding will not only armor the surface area from erosion, but will provide a filter for trapping sediment laden with nutrients and/or pesticides, to result in an improvement to water quality. Area is excavated and rock is placed using a hydraulic excavator. Geotextile underlayment is installed by laborers. Associated practices are Subsurface Drain (606), Underground Outlet (620), Structure for Water Control (587), and Critical Area Seeding (342).
Scenario Feature Measure	Width of collector area (ft)
Scenario Unit	Linear Foot
Scenario Typical Size	30

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,289.58	\$42.99
Equipment/Installation	\$67.84	\$2.26
Labor	\$92.96	\$3.10
Mobilization	\$203.05	\$6.77
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,653.43	\$55.11

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$26.70	13	\$347.10
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$63.36	13	\$823.68
Materials	978	Pipe, PVC, 4", SCH 40	Materials: -4" - PVC - SCH 40 - ASTM D1785	Foot	\$2.97	40	\$118.80
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.12	32	\$67.84
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	2	\$73.04
Labor	231	General Labor	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	\$19.92	1	\$19.92
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

Information Type	Data
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	1
Scenario Name	UGO<=5" Diameter Pipe
Scenario Description	Scenario is for the installation of a 5" or less diameter approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Payment includes pipe, precast concrete drop inlet with steel grate, trench excavation, and trench backfill. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Excessive sedimentation and soil erosion is controlled or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Feet
Scenario Typical Size	500

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,269.78	\$2.54
Equipment/Installation	\$628.86	\$1.26
Labor	\$73.04	\$0.15
Mobilization	\$203.05	\$0.41
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$2,174.73	\$4.35

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1257	Catch Basin, concrete, 2'x2'x6'	Catch Basin, Precast Concrete, 2' square or round, cast grate, 6' deep. Includes materials, equipment and labor.	Cubic Yard	\$509.78	1	\$509.78
Materials	992	Pipe, PVC, 4", SDR 35	Materials: - 4" - PVC - SDR 35 - ASTM D3034	Foot	\$1.52	500	\$760.00
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.25	500	\$625.00
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yard	\$1.93	2	\$3.86
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	2	\$73.04
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

Information Type	Data
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	2
Scenario Name	UGO<=5" Diameter Pipe with Risers
Scenario Description	Scenario is for the installation of a 5" or less diameter approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Payment includes pipe, perforated PVC riser inlet, trench excavation, and trench backfill. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Excessive sedimentation and soil erosion is controlled or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Feet
Scenario Typical Size	500

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$572.28	\$1.14
Equipment/Installation	\$628.86	\$1.26
Labor	\$73.04	\$0.15
Mobilization	\$203.05	\$0.41
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,477.23	\$2.95

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1271	Pipe, HDPE, 5", PCPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 5" diameter - ASTM F405. Material cost only.	Foot	\$0.73	480	\$350.40
Materials	1261	Inlet, riser, 6"	Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 6" diameter. Materials only.	Each	\$76.64	2	\$153.28
Materials	993	Pipe, PVC, 6", SDR 35	Materials: - 6" - PVC - SDR 35 - ASTM D3034	Foot	\$3.43	20	\$68.60
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.25	500	\$625.00
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yard	\$1.93	2	\$3.86
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	2	\$73.04
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

## Scenario Worksheet

## Practice and Scenario Description:

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	7
Scenario Name	UGO = 10" Diameter Pipe
Scenario Description	Scenario is for the installation of a 10" diameter approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Payment includes pipe, precast concrete drop inlet with steel grate, trench excavation, and trench backfill. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Excessive sedimentation and soil erosion is controlled or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Feet
Scenario Typical Size	500

## Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,497.58	\$5.00
Equipment/Installation	\$1,688.86	\$3.38
Labor	\$146.08	\$0.29
Mobilization	\$203.05	\$0.41
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$4,535.57	\$9.07

## Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1251	Pipe, PVC, 10", SDR 35	Pipe, PVC, SDR 35, 10" Diameter - ASTM D3034. Material cost only.	Foot	\$9.63	20	\$192.60
Materials	1273	Pipe, HDPE, 10", PCPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 10" diameter - ASTM F667. Material cost only.	Foot	\$3.74	480	\$1,795.20
Materials	1257	Catch Basin, concrete, 2'x2'x6'	Catch Basin, Precast Concrete, 2' square or round, cast grate, 6' deep. Includes materials, equipment and labor.	Cubic Yard	\$509.78	1	\$509.78
Equipment/Installation	55	Trenching, Earth, clay, 24" x 48"	Trenching, earth, clay, 24" wide x 48" depth, includes equipment and labor for trenching and backfilling and shoring/dewatering	Foot	\$3.37	500	\$1,685.00
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yard	\$1.93	2	\$3.86
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	4	\$146.08
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	8
Scenario Name	UGO = 10" Diameter Pipe with Risers
Scenario Description	Scenario is for the installation of a 10" diameter approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Payment includes pipe, perforated PVC riser inlet, trench excavation, and trench backfill. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Excessive sedimentation and soil erosion is controlled or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Feet
Scenario Typical Size	500

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,328.92	\$4.66
Equipment/Installation	\$1,688.86	\$3.38
Labor	\$146.08	\$0.29
Mobilization	\$203.05	\$0.41
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$4,366.91</b>	<b>\$8.73</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1251	Pipe, PVC, 10", SDR 35	Pipe, PVC, SDR 35, 10" Diameter - ASTM D3034. Material cost only.	Foot	\$9.63	20	\$192.60
Materials	1273	Pipe, HDPE, 10", PCPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 10" diameter - ASTM F667. Material cost only.	Foot	\$3.74	480	\$1,795.20
Materials	1263	Inlet, riser, 10"	Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 10" diameter. Materials only.	Foot	\$170.56	2	\$341.12
Equipment/Installation	55	Trenching, Earth, clay, 24" x 48"	Trenching, earth, clay, 24" wide x 48" depth, includes equipment and labor for trenching and backfilling and shoring/dewatering	Foot	\$3.37	500	\$1,685.00
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yard	\$1.93	2	\$3.86
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	4	\$146.08
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

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**Practice and Scenario Description:**

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Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	9
Scenario Name	UGO = 12" Diameter Pipe
Scenario Description	Scenario is for the installation of a 12" diameter approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Payment includes pipe, precast concrete drop inlet with steel grate, trench excavation, and trench backfill. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Excessive sedimentation and soil erosion is controlled or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Feet
Scenario Typical Size	500

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,691.40	\$5.38
Equipment/Installation	\$2,432.08	\$4.86
Labor	\$146.08	\$0.29
Mobilization	\$203.05	\$0.41
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$5,472.61</b>	<b>\$10.95</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1252	Pipe, PVC, 12", SDR 35	Pipe, PVC, SDR 35, 12" Diameter - ASTM D3034. Material cost only.	Foot	\$20.57	20	\$411.40
Materials	1274	Pipe, HDPE, 12", PCPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 12" diameter - ASTM F667. Material cost only.	Foot	\$4.75	480	\$2,280.00
Equipment/Installation	1258	Catch Basin, concrete, 3'x3'x6'	Catch Basin, Precast Concrete, 3' square or round, cast grate, 6' deep. Includes materials, equipment and labor.	Each	\$743.22	1	\$743.22
Equipment/Installation	55	Trenching, Earth, clay, 24" x 48"	Trenching, earth, clay, 24" wide x 48" depth, includes equipment and labor for trenching and backfilling and shoring/dewatering	Foot	\$3.37	500	\$1,685.00
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yard	\$1.93	2	\$3.86
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	4	\$146.08
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

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**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	10
Scenario Name	UGO = 12" Diameter Pipe with Risers
Scenario Description	Scenario is for the installation of a 12" diameter approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Payment includes pipe, perforated PVC riser inlet, trench excavation, and trench backfill. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Excessive sedimentation and soil erosion is controlled or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Feet
Scenario Typical Size	500

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$3,860.08	\$7.72
Equipment/Installation	\$1,688.86	\$3.38
Labor	\$146.08	\$0.29
Mobilization	\$203.05	\$0.41
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$5,898.07</b>	<b>\$11.80</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1252	Pipe, PVC, 12", SDR 35	Pipe, PVC, SDR 35, 12" Diameter - ASTM D3034. Material cost only.	Foot	\$20.57	20	\$411.40
Materials	1274	Pipe, HDPE, 12", PCPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 12" diameter - ASTM F667. Material cost only.	Foot	\$4.75	480	\$2,280.00
Materials	1264	Inlet, riser, 12"	Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 12" diameter. Materials only.	Foot	\$584.34	2	\$1,168.68
Equipment/Installation	55	Trenching, Earth, clay, 24" x 48"	Trenching, earth, clay, 24" wide x 48" depth, includes equipment and labor for trenching and backfilling and shoring/dewatering	Foot	\$3.37	500	\$1,685.00
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yard	\$1.93	2	\$3.86
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	4	\$146.08
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	3
Scenario Name	UGO = 6" Diameter Pipe
Scenario Description	Scenario is for the installation of a 6" diameter approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Payment includes pipe, precast concrete drop inlet with steel grate, trench excavation, and trench backfill. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Excessive sedimentation and soil erosion is controlled or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Feet
Scenario Typical Size	500

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,096.78	\$2.19
Equipment/Installation	\$628.86	\$1.26
Labor	\$73.04	\$0.15
Mobilization	\$203.05	\$0.41
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$2,001.73	\$4.00

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1242	Pipe, HDPE, 6", CPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, 6" diameter - ASTM F405. Material cost only.	Foot	\$1.08	480	\$518.40
Materials	1257	Catch Basin, concrete, 2'x2'x6'	Catch Basin, Precast Concrete, 2' square or round, cast grate, 6' deep. Includes materials, equipment and labor.	Cubic Yard	\$509.78	1	\$509.78
Materials	993	Pipe, PVC, 6", SDR 35	Materials: - 6" - PVC - SDR 35 - ASTM D3034	Foot	\$3.43	20	\$68.60
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.25	500	\$625.00
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yard	\$1.93	2	\$3.86
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	2	\$73.04
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	4
Scenario Name	UGO = 6" Diameter Pipe with Risers
Scenario Description	Scenario is for the installation of a 6" diameter approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Payment includes pipe, perforated PVC riser inlet, trench excavation, and trench backfill. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Excessive sedimentation and soil erosion is controlled or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Feet
Scenario Typical Size	500

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$740.28	\$1.48
Equipment/Installation	\$628.86	\$1.26
Labor	\$73.04	\$0.15
Mobilization	\$203.05	\$0.41
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$1,645.23</b>	<b>\$3.29</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1242	Pipe, HDPE, 6", CPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, 6" diameter - ASTM F405. Material cost only.	Foot	\$1.08	480	\$518.40
Materials	1261	Inlet, riser, 6"	Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 6" diameter. Materials only.	Each	\$76.64	2	\$153.28
Materials	993	Pipe, PVC, 6", SDR 35	Materials: - 6" - PVC - SDR 35 - ASTM D3034	Foot	\$3.43	20	\$68.60
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.25	500	\$625.00
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yard	\$1.93	2	\$3.86
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	2	\$73.04
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	5
Scenario Name	UGO = 8" Diameter Pipe
Scenario Description	Scenario is for the installation of a 8" diameter approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Payment includes pipe, precast concrete drop inlet with steel grate, trench excavation, and trench backfill. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Excessive sedimentation and soil erosion is controlled or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Feet
Scenario Typical Size	500

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,597.38	\$3.19
Equipment/Installation	\$628.86	\$1.26
Labor	\$73.04	\$0.15
Mobilization	\$203.05	\$0.41
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$2,502.33</b>	<b>\$5.00</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1257	Catch Basin, concrete, 2'x2'x6'	Catch Basin, Precast Concrete, 2' square or round, cast grate, 6' deep. Includes materials, equipment and labor.	Cubic Yard	\$509.78	1	\$509.78
Materials	1272	Pipe, HDPE, 8", PCPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 8" diameter - ASTM F667. Material cost only.	Foot	\$2.01	480	\$964.80
Materials	994	Pipe, PVC, 8", SDR 35	Materials: - 8" - PVC - SDR 35 - ASTM D3034	Foot	\$6.14	20	\$122.80
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.25	500	\$625.00
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yard	\$1.93	2	\$3.86
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	2	\$73.04
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	6
Scenario Name	UGO = 8" Diameter Pipe with Risers
Scenario Description	Scenario is for the installation of a 8" diameter approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Payment includes pipe, perforated PVC riser inlet, trench excavation, and trench backfill. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Excessive sedimentation and soil erosion is controlled or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Feet
Scenario Typical Size	500

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,334.44	\$2.67
Equipment/Installation	\$628.86	\$1.26
Labor	\$73.04	\$0.15
Mobilization	\$203.05	\$0.41
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$2,239.39</b>	<b>\$4.48</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1262	Inlet, riser, 8"	Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 8" diameter. Materials only.	Foot	\$123.42	2	\$246.84
Materials	1272	Pipe, HDPE, 8", PCPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 8" diameter - ASTM F667. Material cost only.	Foot	\$2.01	480	\$964.80
Materials	994	Pipe, PVC, 8", SDR 35	Materials: - 8" - PVC - SDR 35 - ASTM D3034	Foot	\$6.14	20	\$122.80
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.25	500	\$625.00
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yard	\$1.93	2	\$3.86
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	2	\$73.04
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	629 - Waste Treatment
Scenario ID	1
Scenario Name	Milking Parlor Waste 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)
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 a two tank scenario. The grease trap acts as the primary settling basin. The wastewater overflows into the septic tank, which is then dosed to a treatment 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	Each
Scenario Unit	Each
Scenario Typical Size	1

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$5,184.95	\$5,184.95
Equipment/Installation	\$1,469.20	\$1,469.20
Labor	\$500.96	\$500.96
Mobilization	\$1,205.46	\$1,205.46
Acquisition of Technical Knowledge	\$172.67	\$172.67
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$8,533.24</b>	<b>\$8,533.24</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	978	Pipe, PVC, 4", SCH 40	Materials: - 4" - PVC - SCH 40 - ASTM D1785	Foot	\$2.97	200	\$594.00
Materials	1001	Pipe, PE, 3", SDR 9	Materials: - 3" - PE - SDR 9 160 psi - ASTM D3035	Foot	\$4.10	250	\$1,025.00
Materials	1763	Dosing System, siphon	Dosing system siphon with typical 3" diameter and 12" drawdown	Each	\$232.50	1	\$232.50
Materials	1738	Prefabricated concrete septic tank, 1500 gal	Prefabricated concrete septic tank, 1,500 gal. Materials only.	Each	\$1,619.45	2	\$3,238.90
Materials	1099	Aggregate, Gravel, Ungraded, Quarry Run	Includes materials, equipment and labor	Cubic yard	\$18.91	5	\$94.55
Equipment/Installation	50	Earthfill, Manually Compacted	Earthfill, manually compacted, includes equipment and labor	Cubic yard	\$5.20	100	\$520.00
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.24	450	\$558.00
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	\$3.26	120	\$391.20
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.	Hours	\$31.31	16	\$500.96
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10
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	\$379.78	2	\$759.56
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.90	2	\$39.80
Acquisition of Technical Knowledge	294	Training, Workshops	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	\$116.67	1	\$116.67
Acquisition of Technical Knowledge	297	Transportation	Mileage to attend a training conference, workshop, or TSP travel associated with developing Conservation Activity Plan.	Mile	\$0.56	100	\$56.00

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	632 - Solid/Liquid Waste Separation Facility
Scenario ID	2
Scenario Name	Concrete Basin
Scenario Description	A concrete structure, such as a basin with concrete walls and floor, used to capture and separate a portion of the solids from a liquid stream from a feedlot or confinement facility. Removes a portion of the solids to facilitate waste handling and to address water quality concerns.  Associated practices include Nutrient Management (590), Composting Facility (317), Anaerobic Digester (366), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Pumping Plant (533), Vegetated Treatment Area (635), Pond Lining or Sealing (521A-D), and Waste Treatment (629).
Before Practice Situation	Applicable to situations where partitioning solids, liquids, and nutrients will facilitate the management of an animal waste management system, improve air quality (reduce odors), and address water quality concerns.
After Practice Situation	One 3' deep concrete settling basin structure (20'x20' flat bottom with 3' walls on 2 sides, 10:1 ramps on other sides, 50'x50' overall footprint) and weeping wall/picket structure or outlet control) constructed at the outlet of a open feedlot. Removes a portion of the solids that otherwise would leave with the runoff from an animal feeding operation. Part of an animal waste management system.
Scenario Feature Measure	Cubic Foot of Total Storage
Scenario Unit	Cubic Foot
Scenario Typical Size	3900 (20x20x3 flat=1200)+(30x3x.5x40 side ramps=1800)+(30x3x.5x30x.333=900 corner area)=3900 CF total

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,779.60	\$0.46
Equipment/Installation	\$13,616.33	\$3.49
Labor	\$159.36	\$0.04
Mobilization	\$683.26	\$0.18
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$16,238.55	\$4.16

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1765	Weeping Wall	Weeping wall or picket screen structure for solid settling basin. Materials only.	Foot	\$51.00	15	\$765.00
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$26.70	38	\$1,014.60
Equipment/Installation	37	Concrete, CIP, slab on grade, reinforced	Steel reinforced concrete formed and cast-in-place 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	\$255.77	33	\$8,440.41
Equipment/Installation	38	Concrete, CIP, formed reinforced	Steel reinforced concrete formed and cast-in-place 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	\$406.16	12	\$4,873.92
Equipment/Installation	49	Earthfill, Roller Compacted	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.92	50	\$196.00
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.12	50	\$106.00
Labor	231	General Labor	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	\$19.92	8	\$159.36
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	\$138.58	2	\$277.16
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	632 - Solid/Liquid Waste Separation Facility
Scenario ID	3
Scenario Name	Concrete Sand Settling Lane
Scenario Description	A concrete structure, a concrete lane with curbs, used to capture and separate a portion of the solids, mainly sand, from a liquid stream from a confinement facility. Removes as portion of the solids to facilitate waste handling and to address water quality concerns.  Associated practices include Nutrient Management (590), Composting Facility (317), Anaerobic Digester (366), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Pumping Plant (533), Vegetated Treatment Area (635), Pond Lining or Sealing (521A-D), and Waste Treatment (629).
Before Practice Situation	Applicable to situations where partitioning solids, liquids, and nutrients will facilitate the management of an animal waste management system, improve air quality (reduce odors), and address water quality concerns.
After Practice Situation	One concrete settling lane structure (25 ft wide by 200 ft long by 0.5 ft thick with 18" walls on each side.) constructed around or at a livestock feeding operation. Removes a portion of the solids (sand) that otherwise would leave with the runoff from an animal feeding operation. Part of an animal waste management system.
Scenario Feature Measure	Square Foot of Settling Lane Footprint
Scenario Unit	Square Foot
Scenario Typical Size	5000

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,655.40	\$0.33
Equipment/Installation	\$32,869.26	\$6.57
Labor	\$0.00	\$0.00
Mobilization	\$683.26	\$0.14
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$35,207.92	\$7.04

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$26.70	62	\$1,655.40
Equipment/Installation	37	Concrete, CIP, slab on grade, reinforced	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	\$255.77	78	\$19,950.06
Equipment/Installation	49	Earthfill, Roller Compacted	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.92	90	\$352.80
Equipment/Installation	38	Concrete, CIP, formed reinforced	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	\$406.16	30	\$12,184.80
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.12	180	\$381.60
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	\$138.58	2	\$277.16
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	632 - Solid/Liquid Waste Separation Facility
Scenario ID	1
Scenario Name	Earthen Settling Structure
Scenario Description	An earthen structure, such as a basin or a terrace or dike like structure, used to capture and separate a portion of the solids from a liquid stream from a feedlot or confinement facility. A concrete pad should be installed on the bottom of the basin and around outlet structures to facilitate cleanout. Removes as portion of the solids to facilitate waste handling and to address water quality concerns.  Associated practices include Nutrient Management (590), Composting Facility (317), Anaerobic Digester (366), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Vegetated Treatment Area (635), Pond Lining or Sealing (521A-D), and Waste Treatment (629).
Before Practice Situation	Applicable to situations where partitioning solids, liquids, and nutrients will facilitate the management of an animal waste management system, improve air quality (reduce odors), and address water quality concerns.
After Practice Situation	One earthen settling basin structure (60 ft wide by 200 ft long by 3 ft deep, with three screening outlet structures) constructed around or at a livestock feeding operation. Removes a portion of the solids that otherwise would leave with the runoff from an animal feeding operation. Part of an animal waste management system.
Scenario Feature Measure	Cubic Foot of Total Storage
Scenario Unit	Cubic Foot
Scenario Typical Size	30000

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,597.80	\$0.05
Equipment/Installation	\$6,989.24	\$0.23
Labor	\$159.36	\$0.01
Mobilization	\$683.26	\$0.02
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$9,429.66	\$0.31

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1765	Weeping Wall	Weeping wall or picket screen structure for solid settling basin. Materials only.	Foot	\$51.00	24	\$1,224.00
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$26.70	14	\$373.80
Equipment/Installation	37	Concrete, CIP, slab on grade, reinforced	Steel reinforced concrete formed and cast-in-place 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	\$255.77	12	\$3,069.24
Equipment/Installation	49	Earthfill, Roller Compacted	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.92	1000	\$3,920.00
Labor	231	General Labor	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	\$19.92	8	\$159.36
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	\$138.58	2	\$277.16
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	632 - Solid/Liquid Waste Separation Facility
Scenario ID	4
Scenario Name	Gravity Tank
Scenario Description	A concrete tank used for gravity separation of solid material in a dairy waste management system. The waste management system must utilize a "flush" type system in order to convey and agitate the material. The flush system is needed to maintain high solids removal. Associated practices include Nutrient Management (590), Composting Facility (317), Anaerobic Digester (366), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Pumping Plant (533), Vegetated Treatment Area (635), Pond Lining or Sealing (521A-D), and Waste Treatment (629).
Before Practice Situation	Applicable to situations where partitioning solids, liquids, and nutrients will facilitate the management of an animal waste management system, improve air quality (reduce odors), and address water quality concerns.
After Practice Situation	A concrete tank 20' x 20' x 6' with a full width ramp of 20' x 72'. For a total structure capacity of 6,720 cu ft. Separator description: Dairy manure is flushed into the Gravity Tank (Pull Plug) Separator that utilizes a vertical pipe, surrounded by a baffle, that is open at the top. The vertical pipe maintains 4.5 feet of material in the tank. When the manure is flushed into the tank the level rises in the tank and slowly drains through the baffle, floating mat of fibrous material (roughage from the dairy manure) and the open top of the vertical pipe as the level returns to 4.5 feet. The liquid goes to a storage structure.  This process is repeated each time the manure is flushed into the tank, typically 2 times per day. The floating material will form a mat on the surface of the separator, the heavy material will sink to the bottom of the separator. Eventually the floating mat and the heavy material will meet and the tank level will not return to 4.5 feet. The basin will continue to be used a few more weeks. This helps to dewater the separated solids. When the separator is ready to be cleaned out the vertical pipe (Pull Plug) is removed and the basin dewatered for 12 to 24 hours. The solids are removed. The vertical pipe installed and the process starts again.
Scenario Feature Measure	Total capacity of basin
Scenario Unit	Cubic Foot
Scenario Typical Size	6720

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$764.28	\$0.11
Equipment/Installation	\$21,547.70	\$3.21
Labor	\$0.00	\$0.00
Mobilization	\$812.20	\$0.12
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$23,124.18	\$3.44

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$26.70	24	\$640.80
Materials	993	Pipe, PVC, 6", SDR 35	Materials: - 6" - PVC - SDR 35 - ASTM D3034	Foot	\$3.43	36	\$123.48
Equipment/Installation	37	Concrete, CIP, slab on grade, reinforced	Steel reinforced concrete formed and cast-in-place 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	\$255.77	50	\$12,788.50
Equipment/Installation	38	Concrete, CIP, formed reinforced	Steel reinforced concrete formed and cast-in-place 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	\$406.16	20	\$8,123.20
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.12	300	\$636.00
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	4	\$812.20

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	9
Scenario Name	Gravity or Low pressure 24" Dual Wall pipeline.
Scenario Description	<p>Gravity or low pressure flow pipeline used to transfer manure or wastewater according to the CNMP. This practice includes the pipe plus clean-out risers and fittings, trench excavation and backfill, labor and equipment for installation. Typical installation includes gravel bedding.</p> <p>This pipeline is part of a manure transfer system for a planned waste management or comprehensive nutrient management plan. This scenario addresses the transport of liquid waste to a waste storage or treatment facility to prevent a water quality resource concern of excessive nutrients/organics and harmful levels of pathogens in surface water and/or excessive nutrients/organics in ground water.</p> <p>Associated practices may include: 313 Waste Storage Facility for storage structures; 533, Pumping Plant; 632, Solid/Liquid Waste Separation Facility; 590 Nutrient Management for waste application; 633, Waste Recycling; 635, Vegetated Treatment Area.</p>
Before Practice Situation	There is a need to transport manure or wastewater within a waste management system.
After Practice Situation	The transfer pipeline will deliver the manure slurry according to the CNMP, thereby protecting water quality resources.
Scenario Feature Measure	Length of pipe installed
Scenario Unit	Feet
Scenario Typical Size	100

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$4,161.15	\$41.61
Equipment/Installation	\$908.58	\$9.09
Labor	\$454.74	\$4.55
Mobilization	\$44.92	\$0.45
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$5,569.39</b>	<b>\$55.69</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$26.70	72	\$1,922.40
Materials	1246	Pipe, HDPE, CPT, Double Wall, Soil Tight, 24"	Pipe, Corrugated HDPE Double Wall, 24" diameter with soil tight joints - AASHTO M294. Material cost only.	Foot	\$17.91	125	\$2,238.75
Equipment/Installation	932	Hydraulic Excavator, 2 CY	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$151.43	6	\$908.58
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.67	6	\$136.02
Labor	231	General Labor	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	\$19.92	16	\$318.72
Mobilization	1143	Mobilization, Light Equipment Operator	Mobilization of light equipment operators: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.46	2	\$44.92

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	8
Scenario Name	Gravity or Low pressure ≤ 8" PVC pipeline
Scenario Description	<p>Gravity or low pressure flow pipeline used to transfer manure or wastewater according to the CNMP. This practice includes the pipe plus clean-out risers and fittings, trench excavation and backfill, labor and equipment for installation. Typical installation applies to soils with no special bedding requirements.</p> <p>This pipeline is part of a manure transfer system for a planned waste management or comprehensive nutrient management plan. This scenario addresses the transport of liquid waste to a waste storage or treatment facility to prevent a water quality resource concern of excessive nutrients/organics and harmful levels of pathogens in surface water and/or excessive nutrients/organics in ground water.</p> <p>Associated practices may include: 313 Waste Storage Facility for storage structures; 533, Pumping Plant; 632, Solid/Liquid Waste Separation Facility; 590 Nutrient Management for waste application; 633, Waste Recycling; 635, Vegetated Treatment Area.</p>
Before Practice Situation	There is a need to transport manure or wastewater within a waste management system.
After Practice Situation	Install a 100 foot long 8 inch diameter PVC gasketed IPS pipe to transfer the manure wastewater. This scenario includes the pipe, inlet conditions, trench excavation, and backfill. The site should be evaluated by the designing engineer to make sure the design will function.
Scenario Feature Measure	The transfer pipeline will deliver the manure slurry according to the CNMP, thereby protecting water quality resources.
Scenario Feature Measure	Length of pipe installed
Scenario Unit	Feet
Scenario Typical Size	100

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$767.50	\$7.68
Equipment/Installation	\$325.84	\$3.26
Labor	\$318.72	\$3.19
Mobilization	\$44.92	\$0.45
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$1,456.98</b>	<b>\$14.57</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	994	Pipe, PVC, 8", SDR 35	Materials: - 8" - PVC - SDR 35 - ASTM D3034	Foot	\$6.14	125	\$767.50
Equipment/Installation	50	Earthfill, Manually Compacted	Earthfill, manually compacted, includes equipment and labor	Cubic yard	\$5.23	8	\$41.84
Equipment/Installation	54	Trenching, Earth, loam, 24" x 48"	Trenching, earth, loam, 24" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$2.84	100	\$284.00
Labor	231	General Labor	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	\$19.92	16	\$318.72
Mobilization	1143	Mobilization, Light Equipment Operator	Mobilization of light equipment operators: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.46	2	\$44.92

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	13
Scenario Name	Agitator-large (basin or pit > 15 ft. deep)
Scenario Description	<p>This scenario is for a large manure and wastewater agitator associated with an agricultural production operation to transfer agricultural waste product from the storage facility to a site for proper utilization. This agitator is typically 100 HP and is used where the waste storage facility tank or pond is greater than 15 feet deep. This scenario does not include a pump.</p> <p>Associated practices may include: PS 313 Waste Storage Facility for storage structures; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Solid/Liquid Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management for waste application; PS 633, Waste Recycling</p> <p>The waste transfer equipment is installed to address water quality concerns by facilitating timely land application of waste at agronomic rates according to the nutrient management plan. This scenario addresses the potential for surface water and groundwater quality degradation.</p>
Before Practice Situation	In this typical setting, the operator has waste production from a confined animal feeding operation without an effective waste handling and transfer system to manage the waste stream departing from the facility.
After Practice Situation	A typical installation would be for a large 100 HP manure agitator to put settled manure solids into suspension for removal from an animal waste storage structure and facilitate the transfer of this material to the next step of waste treatment or utilization. This agitator is for a tank deeper than 15 feet and is part of an animal waste management system to address water quality concerns. This covers the cost of the agitator equipment materials and labor for the electrical hook-up.
Scenario Feature Measure	Agitator for wastewater, installed
Scenario Unit	Each
Scenario Typical Size	1

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$25,000.00	\$25,000.00
Equipment/Installation	\$0.00	\$0.00
Labor	\$375.72	\$375.72
Mobilization	\$406.10	\$406.10
Acquisition of Technical Knowledge	\$583.35	\$583.35
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$26,365.17</b>	<b>\$26,365.17</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1767	Manure agitator, mixing depth greater than 15 feet deep.	Agitator to move put settled manure solids into suspension for removal from an animal waste storage structure. Materials only.	Each	\$25,000.00	1	\$25,000.00
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	\$31.31	12	\$375.72
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10
Acquisition of Technical Knowledge	294	Training, Workshops	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	\$116.67	5	\$583.35

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	12
Scenario Name	Agitator-medium (basin or pit 10 to 15 ft. deep)
Scenario Description	<p>This scenario is for a manure and wastewater agitator associated with an agricultural production operation to transfer agricultural waste product from the storage facility to a site for proper utilization. This agitator is typically 30 HP and is used where the waste storage facility tank or pond is between 10 and 15 feet deep. This scenario does not include a pump.</p> <p>Associated practices may include: PS 313 Waste Storage Facility for storage structures; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Solid/Liquid Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management for waste application; PS 633, Waste Recycling</p> <p>The waste transfer equipment is installed to address water quality concerns by facilitating timely land application of waste at agronomic rates according to the nutrient management plan. This scenario addresses the potential for surface water and groundwater quality degradation.</p>
Before Practice Situation	In this typical setting, the operator has waste production from a confined animal feeding operation without an effective waste handling and transfer system to manage the waste stream departing from the facility.
After Practice Situation	A typical installation would be for a medium 30 HP manure agitator to put settled manure solids into suspension for removal from an animal waste storage structure and transfer to the next step of waste treatment, utilization or storage. Part of an animal waste management system to address water quality concerns. If required a wastewater reception pit, concrete channel or transfer conduit scenario may need to be contracted to support the operation of this waste transfer system equipment.
Scenario Feature Measure	Agitator for wastewater, installed
Scenario Unit	Each
Scenario Typical Size	1

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$17,000.00	\$17,000.00
Equipment/Installation	\$0.00	\$0.00
Labor	\$375.72	\$375.72
Mobilization	\$277.16	\$277.16
Acquisition of Technical Knowledge	\$583.35	\$583.35
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$18,236.23</b>	<b>\$18,236.23</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1766	Manure agitator, mixing depth 10 to 15 feet deep	Agitator to move put settled manure solids into suspension for removal from an animal waste storage structure. Materials only.	Each	\$17,000.00	1	\$17,000.00
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	\$31.31	12	\$375.72
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	\$138.58	2	\$277.16
Acquisition of Technical Knowledge	294	Training, Workshops	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	\$116.67	5	\$583.35

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	11
Scenario Name	Agitator-small (basin or pit < 10 ft. deep)
Scenario Description	<p>This scenario is for a manure and wastewater agitator associated with an agricultural production operation to transfer agricultural waste product from the production source to a storage facility for proper utilization. This agitator is typically no more than 15 HP and is used for smaller waste storage facilities that are less than 10 feet deep. This scenario does not include a pump.</p> <p>Associated practices may include: PS 313 Waste Storage Facility for storage structures; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Solid/Liquid Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management for waste application; PS 633, Waste Recycling</p> <p>The waste transfer equipment is installed to address water quality concerns by facilitating timely land application of waste at agronomic rates according to the nutrient management plan. This scenario addresses the potential for surface water and groundwater quality degradation.</p>
Before Practice Situation	In this typical setting, the operator has a small waste storage structure from a confined animal feeding operation without an effective waste handling and transfer system to manage the waste stream departing from the facility.
After Practice Situation	The typical installation would be for a small manure 10 HP agitator to put settled manure solids into suspension for removal from an animal waste storage structure and transfer to the next step of waste treatment, utilization or storage. Part of an animal waste management system to address water quality concerns. If required a wastewater reception pit, concrete channel or transfer conduit scenario may need to be contracted to support the operation of this waste transfer system equipment.
Scenario Feature Measure	Agitator for wastewater, installed
Scenario Unit	Each
Scenario Typical Size	1

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$11,000.00	\$11,000.00
Equipment/Installation	\$0.00	\$0.00
Labor	\$344.41	\$344.41
Mobilization	\$112.44	\$112.44
Acquisition of Technical Knowledge	\$583.35	\$583.35
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$12,040.20</b>	<b>\$12,040.20</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1768	Manure agitator, mixing depth less than 10 feet.	Agitator to move put settled manure solids into suspension for removal from an animal waste storage structure. Materials only.	Each	\$11,000.00	1	\$11,000.00
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	\$31.31	11	\$344.41
Mobilization	1137	Mobilization, very small equipment	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	\$56.22	2	\$112.44
Acquisition of Technical Knowledge	294	Training, Workshops	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	\$116.67	5	\$583.35

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	1
Scenario Name	Manure Auger
Scenario Description	<p>This scenario is for a manure auger associated with an agricultural production operation to transfer agricultural waste product from the storage facility to manure spreading equipment for proper utilization. This auger is used when the manure consistency will not allow for pumping. Associated practices may include: PS 313 Waste Storage Facility for storage structures; PS 632, Solid/Liquid Waste Separation Facility; PS 590 Nutrient Management for waste application; PS 633, Waste Recycling</p> <p>The waste transfer equipment is installed to address water quality concerns by facilitating timely land application of waste at agronomic rates according to the nutrient management plan. This scenario addresses the potential for surface water and groundwater quality degradation.</p>
Before Practice Situation	In this typical setting, the operator has waste production from an animal feeding operation without an effective waste handling and transfer system to manage the waste stream departing from the facility.
After Practice Situation	A typical installation would be for an auger to remove manure from an animal waste storage structure and facilitate the transfer of this material to the next step of waste treatment or utilization. This auger is for a tank less than 14' deep and is part of an animal waste management system to address water quality concerns. This covers the cost of the auger and labor for the electrical hook-up.
Scenario Feature Measure	Auger, installed
Scenario Unit	Each
Scenario Typical Size	1

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$4,225.33	\$4,225.33
Equipment/Installation	\$0.00	\$0.00
Labor	\$375.72	\$375.72
Mobilization	\$406.10	\$406.10
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$5,007.15	\$5,007.15

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1773	Manure Transfer, Auger or screw conveyor to transfer waste solids	Auger or screw conveyor to transfer waste solids to a storage facility or manure spreading equipment. Includes shipping.	Each	\$4,225.33	1	\$4,225.33
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	\$31.31	12	\$375.72
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	5
Scenario Name	Concrete Channel with push-off wall at pond and safety gate
Scenario Description	<p>Installation of a concrete channel that consists of a slab with curb and footing on each side of the slab for the entire length of the channel to enable the facility manager to direct liquid waste to a collection basin and/or waste storage facility.</p> <p>Water quality concerns will be addressed by preventing liquid waste from entering surface waters, and to facilitate timely land application of manure and wastewater at agronomic rates according to the CNMP. This scenario addresses the potential for surface water and groundwater quality degradation.</p> <p>Associated practices may include: 313 Waste Storage Facility for storage structures; 533, Pumping Plant; 632, Solid/Liquid Waste Separation Facility; 590 Nutrient Management for waste application; 633, Waste Recycling.</p>
Before Practice Situation	Current facility operations are allowing liquid waste to flow uncontrolled during periods of precipitation events or cleaning operations such that water resources can be contaminated.
After Practice Situation	Typical installation of a 12 foot wide 100' long concrete channel that consists of a 5" thick concrete slab with curbing on each side of the slab that is 2' high, 6" thick with footing for the entire length. The push-off ramp is a concrete cantilever structure that allows the waste to be moved into the storage facility. The purpose is to transfer liquids or manure slurry from one area to a collection basin or waste storage facility. Includes safety gate for human and animal exclusion.
Scenario Feature Measure	Bottom surface area of concrete channel
Scenario Unit	Square Foot
Scenario Typical Size	1200

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,299.72	\$1.08
Equipment/Installation	\$13,042.75	\$10.87
Labor	\$851.76	\$0.71
Mobilization	\$406.10	\$0.34
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$15,600.33	\$13.00

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1952	Safety gate, span manure transfer channel or chute	Safety gate to span manure transfer channel at push off wall or chute outlet. Minimum of 4' tall with openings that will not pass a 6" or larger sphere. Materials and shipping only.	Foot	\$50.00	16	\$800.00
Materials	1099	Aggregate, Gravel, Ungraded, Quarry Run	Includes materials, equipment and labor	Cubic yard	\$19.22	26	\$499.72
Equipment/Installation	929	Dozer, 80 HP	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$53.48	8	\$427.84
Equipment/Installation	38	Concrete, CIP, formed reinforced	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	\$406.16	17	\$6,904.72
Equipment/Installation	1498	Demolition, concrete	Demolition and disposal of reinforced concrete structures including slabs and walls. Includes labor and equipment.	Cubic Yard	\$16.65	5	\$83.25
Equipment/Installation	37	Concrete, CIP, slab on grade, reinforced	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	\$255.77	22	\$5,626.94
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.79	8	\$214.32
Labor	231	General Labor	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	\$19.92	32	\$637.44
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	3
Scenario Name	Concrete Channel, with footers
Scenario Description	<p>Installation of a concrete channel that consists of a slab with curb and footing on each side of the slab for the entire length of the channel to enable the facility manager to direct liquid waste to a collection basin and/or waste storage facility.</p> <p>Water quality concerns will be addressed by preventing liquid waste from entering surface waters, and to facilitate timely land application of manure and wastewater at agronomic rates according to the CNMP. This scenario addresses the potential for surface water and groundwater quality degradation.</p> <p>Associated practices may include: 313 Waste Storage Facility for storage structures; 533, Pumping Plant; 632, Solid/Liquid Waste Separation Facility; 590 Nutrient Management for waste application; 633, Waste Recycling.</p>
Before Practice Situation	Current facility operations are allowing liquid waste to flow uncontrolled during periods of precipitation events or cleaning operations such that water resources can be contaminated.
After Practice Situation	Typical installation of a 12 foot wide 100' long concrete channel that consists of a 5" thick concrete slab with curbing on each side of the slab that is 2' high, 6" thick with footing for the entire length. The purpose is to transfer liquids or manure slurry from one area to a collection basin or waste storage facility.
Scenario Feature Measure	Bottom surface area of concrete channel
Scenario Unit	Square Foot
Scenario Typical Size	1200

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,099.72	\$0.92
Equipment/Installation	\$10,589.14	\$8.82
Labor	\$533.04	\$0.44
Mobilization	\$406.10	\$0.34
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$12,628.00	\$10.52

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1952	Safety gate, span manure transfer channel or chute	Safety gate to span manure transfer channel at push off wall or chute outlet. Minimum of 4' tall with openings that will not pass a 6" or larger sphere. Materials and shipping only.	Foot	\$50.00	12	\$600.00
Materials	1099	Aggregate, Gravel, Ungraded, Quarry Run	Includes materials, equipment and labor	Cubic yard	\$19.22	26	\$499.72
Equipment/Installation	929	Dozer, 80 HP	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$53.48	8	\$427.84
Equipment/Installation	38	Concrete, CIP, formed reinforced	Steel reinforced concrete formed and cast-in-place 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	\$406.16	11	\$4,467.76
Equipment/Installation	1498	Demolition, concrete	Demolition and disposal of reinforced concrete structures including slabs and walls. Includes labor and equipment.	Cubic Yard	\$16.65	4	\$66.60
Equipment/Installation	37	Concrete, CIP, slab on grade, reinforced	Steel reinforced concrete formed and cast-in-place 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	\$255.77	22	\$5,626.94
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.79	8	\$214.32
Labor	231	General Labor	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	\$19.92	16	\$318.72
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	4
Scenario Name	Concrete Channel, no footers
Scenario Description	<p>Installation of a concrete channel that consists of a slab with curb for the entire length of the channel to enable the facility manager to direct liquid waste to a collection basin and/or waste storage facility.</p> <p>Water quality concerns will be addressed by preventing liquid waste from entering surface waters, and to facilitate timely land application of manure and wastewater at agronomic rates according to the CNMP. This scenario addresses the potential for surface water and groundwater quality degradation.</p> <p>Associated practices may include: 313 Waste Storage Facility for storage structures; 533, Pumping Plant; 632, Solid/Liquid Waste Separation Facility; 590 Nutrient Management for waste application; 633, Waste Recycling.</p>
Before Practice Situation	Current facility operations are allowing liquid waste to flow uncontrolled during periods of precipitation events or cleaning operations such that water resources can be contaminated.
After Practice Situation	Typical installation of a 12 foot wide 100' long concrete channel that consists of a 5" thick concrete slab with curbing on each side of the slab that is 2' high, 6" thick for the entire length. The purpose is to transfer liquids or manure slurry from one area to a collection basin or waste storage facility.
Scenario Feature Measure	Bottom surface area of concrete channel
Scenario Unit	Square Foot
Scenario Typical Size	1200

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$499.72	\$0.42
Equipment/Installation	\$8,942.91	\$7.45
Labor	\$214.32	\$0.18
Mobilization	\$203.05	\$0.17
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$9,860.00	\$8.22

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1099	Aggregate, Gravel, Ungraded, Quarry Run	Includes materials, equipment and labor	Cubic yard	\$19.22	26	\$499.72
Equipment/Installation	929	Dozer, 80 HP	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$53.48	8	\$427.84
Equipment/Installation	37	Concrete, CIP, slab on grade, reinforced	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	\$255.77	19	\$4,859.63
Equipment/Installation	38	Concrete, CIP, formed reinforced	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	\$406.16	9	\$3,655.44
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.79	8	\$214.32
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

Information Type	Data
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	6
Scenario Name	Manure Flush System
Scenario Description	<p>Installation of a manure flush system that includes materials and structures to flush waste from a concrete surface into a collection basin or a waste storage facility. The system includes flush water tank, piping and valves. The animal waste will be transferred by a flush cycle released from the flush tank to rinse the concrete surface and carry the waste to a collection basin, into a pipe or to a waste storage facility.</p> <p>Associated practices may include: 313 Waste Storage Facility for storage structures; PS 632, Solid/Liquid Waste Separation Facility; 590 Nutrient Management for waste application; PS 633, Waste Recycling.</p> <p>This scenario addresses the potential for surface water and groundwater quality degradation from animal waste.</p>
Before Practice Situation	An animal production facility does not have an efficient method for collecting and transferring the animal waste produced. A source of sufficient water or wastewater resources are available to design a flush system to clean the production floor and collect the waste materials deposited.
After Practice Situation	This practice scenario is suitable only where the water or wastewater supplies are available for operating a flush system to collect the animal waste deposited on the concrete surfaces. The design flush volume for the flush system is less than 1000 gallons and requires no more than 50 feet of an 8 inch diameter pressure pipe for the flush pipe. The scenario includes materials and installation of a flush tank, piping and valves to manage the flush flow, concrete flush lane, concrete curbs or gutters to transfer the flow to a collection basin. The liquids then flow from the basin to the waste storage pond, an estimated length of 200 feet and requires an 8 inch diameter low pressure pipeline with an open outlet to the waste storage pond. The cost includes excavation, placement of bedding aggregate as needed, forming and placement of structures, conveyance pipeline with valves and structural backfill. Pump must be contracted under pumping plant, PS 533.
Scenario Feature Measure	1000 Gallons of flush water
Scenario Unit	Gallon
Scenario Typical Size	1000

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$949.20	\$0.95
Equipment/Installation	\$2,660.00	\$2.66
Labor	\$500.08	\$0.50
Mobilization	\$406.10	\$0.41
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$4,515.38	\$4.52

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1074	Tank, Poly enclosed Storage, 300-1000 gal	Includes materials	Gallon	\$0.74	1000	\$740.00
Materials	980	Pipe, PVC, 6", SCH 40	Materials: - 6" - PVC - SCH 40 - ASTM D1785	Foot	\$5.23	40	\$209.20
Equipment/Installation	926	Backhoe, 80 HP	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$43.98	8	\$351.84
Equipment/Installation	1498	Demolition, concrete	Demolition and disposal of reinforced concrete structures including slabs and walls. Includes labor and equipment.	Cubic Yard	\$16.65	4	\$66.60
Equipment/Installation	38	Concrete, CIP, formed reinforced	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	\$406.16	3	\$1,218.48
Equipment/Installation	37	Concrete, CIP, slab on grade, reinforced	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	\$255.77	4	\$1,023.08
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.67	8	\$181.36
Labor	231	General Labor	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	\$19.92	16	\$318.72
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10

**Scenario Worksheet**

**Practice and Scenario Description:**

Information Type	Data
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	10
Scenario Name	PVC Pressure Distribution Pipeline.
Scenario Description	<p>The pressure pipe moves the water by pumping from the intake riser location, through a buried mainline with outlet risers. This practice includes the pipe plus an inlet riser structure, clean-out risers and outlet risers plus all other valves and fittings, trench excavation and backfill, labor and a equipment for installation. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves. Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements.</p> <p>This pipeline is part of a manure transfer system for a planned waste management or comprehensive nutrient management plan. This scenario addresses the transport of liquid waste to a waste storage or treatment facility to prevent a water quality resource concern of excessive nutrients/organics and harmful levels of pathogens in surface water and/or excessive nutrients/organics in ground water.</p> <p>Associated practices may include: 313 Waste Storage Facility for storage structures; 533, Pumping Plant; 632, Solid/Liquid Waste Separation Facility; 590 Nutrient Management for waste application; PS 633, Waste Recycling; PS 635, Vegetated Treatment Area.</p>
Before Practice Situation	There is a need to transport manure or wastewater within a waste management system. The pressure distribution pipeline is utilized in the land application aspect of the operation.
After Practice Situation	<p>Install a 2000 foot long 8 inch diameter PVC gasketed IPS pipe that has an SDR of 21 and is water tight under pressure flow to transfer the manure wastewater. An inlet riser and is located near the pump site of the waste storage pond and designed for the desired pressure and flow for the application system. This scenario includes the pipe, inlet riser, couplers, air-vac vents, all other fittings, and risers placed as specified by the design, trench excavation, pipe bedding and backfill. The site should be evaluated by the designing engineer to make sure the design will function.</p> <p>The transfer pipeline will deliver the manure slurry to the fields for agronomic nutrient utilization according to the CNMP, thereby protecting water quality resources.</p>
Scenario Feature Measure	Length of pipe installed
Scenario Unit	Feet
Scenario Typical Size	2000

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$19,850.44	\$9.93
Equipment/Installation	\$7,123.32	\$3.56
Labor	\$2,324.00	\$1.16
Mobilization	\$44.92	\$0.02
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$29,342.68	\$14.67

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	2104	Valve, sprinkler hydrant irrigation valve with riser, metal, 8" x 4" x 42"	Irrigation hydrant valve assembly including saddle tee, coated metal riser and integral valve installed on a 8" dia. pipeline, 4" dia. X 42" long riser. Materials only.	Each	\$263.30	7	\$1,843.10
Materials	2101	Plug Valve, 8"	8" diameter plug valve. Materials only.	Each	\$1,138.32	1	\$1,138.32
Materials	991	Pipe, PVC, 8", SDR 26	Materials: - 8" - PVC - SDR 26 160 psi - ASTM D2241	Foot	\$8.17	2000	\$16,340.00
Materials	1042	Valve, Pressure Relief	Materials for <2" Pressure Relief Valve	Each	\$32.34	1	\$32.34
Materials	1106	Valve, Air Vacuum Release, Continuous	Materials for <2" Automatic Air/Vacuum Relief Valve (3 - Way Air Vac)	Each	\$165.56	3	\$496.68
Equipment/Installation	50	Earthfill, Manually Compacted	Earthfill, manually compacted, includes equipment and labor	Cubic yard	\$5.23	180	\$941.40
Equipment/Installation	54	Trenching, Earth, loam, 24" x 48"	Trenching, earth, loam, 24" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$2.84	2000	\$5,680.00
Equipment/Installation	36	Concrete, CIP, formless, non reinforced	Non reinforced concrete cast-in-place without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$125.48	4	\$501.92
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	20	\$730.40
Labor	231	General Labor	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	\$19.92	80	\$1,593.60
Mobilization	1143	Mobilization, Light Equipment Operator	Mobilization of light equipment operators: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.46	2	\$44.92

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	14
Scenario Name	Waste hauling Solid
Scenario Description	<p>This scenario describes hauling of animal manure to agricultural land for final utilization. This scenario can only be used for distances up to 150 miles. It is intended to be used in high risk water quality drainage areas or when soil test phosphorus exceeds the allowable limit on fields that have typically been used for manure application. This waste transfer payment is intended to offset additional costs associated with hauling the manure out of the high risk drainage area or transported a longer distance to fields with low soil test phosphorus. Limits of soil test phosphorus for contracting purposes need to meet acceptable state criteria.</p> <p>Associated practices may include: PS 313 Waste Storage Facility for storage structures; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Solid/Liquid Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management for waste application; PS 633, Waste Recycling and Concrete channel and Transfer conduit scenario 634 - Waste Transfer.</p> <p>This practice scenario addresses the water quality concerns for excessive nutrients or degradation of water resources from over application of manure on local fields.</p>
Before Practice Situation	The local drainage area is at high risk for phosphorus leaving the fields in the runoff solution and further manure waste application will likely cause water quality degradation.
After Practice Situation	Trucks are loaded with 6.3 tons of manure solids an average of 20 miles outside of the high risk drainage area to a location where phosphorus levels are in the low risk category according to the PhosphorusRisk index for leaving the fields. Waste is transferred out of the critical drainage area for use as fertilizer on crops and pasture land.
Scenario Feature Measure	Ton of Waste Hauled
Scenario Unit	Ton
Scenario Typical Size	6.3

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$28.22	\$4.48
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$28.22	\$4.48

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	2031	Manure Hauling, solid manure, transportation	Transportation cost of hauling solid manure. Trucking costs based on tons hauled times miles. Includes equipment, power unit and labor. Does not include costs for loading or unloading.	Ton-Mile	\$0.11	126	\$13.86
Equipment/Installation	2277	Manure Hauling, Solid manure, loading costs	Base cost of solid manure hauling. Includes loading and equipment preparation costs. Use in conjunction with transportation component to determine total cost. Includes equipment, power unit and labor.	Ton	\$2.28	6.3	\$14.36

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	14
Scenario Name	Waste hauling Solid
Scenario Description	<p>This scenario describes hauling of animal manure to agricultural land for final utilization. This scenario can only be used for distances up to 150 miles. It is intended to be used in high risk water quality drainage areas or when soil test phosphorus exceeds the allowable limit on fields that have typically been used for manure application. This waste transfer payment is intended to offset additional costs associated with hauling the manure out of the high risk drainage area or transported a longer distance to fields with low soil test phosphorus. Limits of soil test phosphorus for contracting purposes need to meet acceptable state criteria.</p> <p>Associated practices may include: PS 313 Waste Storage Facility for storage structures; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Solid/Liquid Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management for waste application; PS 633, Waste Recycling and Concrete channel and Transfer conduit scenario 634 - Waste Transfer.</p> <p>This practice scenario addresses the water quality concerns for excessive nutrients or degradation of water resources from over application of manure on local fields.</p>
Before Practice Situation	The local drainage area is at high risk for phosphorus leaving the fields in the runoff solution and further manure waste application will likely cause water quality degradation.
After Practice Situation	Trucks are loaded with 6.3 tons of manure solids an average of 2 miles outside of the high risk drainage area to a location where phosphorus levels are in the low risk category according to the PhosphorusRisk index for leaving the fields. Waste is transferred out of the critical drainage area for use as fertilizer on crops and pasture land.
Scenario Feature Measure	Ton of Waste Hauled
Scenario Unit	Ton
Scenario Typical Size	6.3

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$15.75	\$2.50
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$15.75	\$2.50

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	2031	Manure Hauling, solid manure, transportation	Transportation cost of hauling solid manure. Trucking costs based on tons hauled times miles. Includes equipment, power unit and labor. Does not include costs for loading or unloading.	Ton-Mile	\$0.11	12.6	\$1.39
Equipment/Installation	2277	Manure Hauling, Solid manure, loading costs	Base cost of solid manure hauling. Includes loading and equipment preparation costs. Use in conjunction with transportation component to determine total cost. Includes equipment, power unit and labor.	Ton	\$2.28	6.3	\$14.36

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	14
Scenario Name	Waste hauling Solid
Scenario Description	<p>This scenario describes hauling of animal manure to agricultural land for final utilization. This scenario can only be used for distances up to 150 miles. It is intended to be used in high risk water quality drainage areas or when soil test phosphorus exceeds the allowable limit on fields that have typically been used for manure application. This waste transfer payment is intended to offset additional costs associated with hauling the manure out of the high risk drainage area or transported a longer distance to fields with low soil test phosphorus. Limits of soil test phosphorus for contracting purposes need to meet acceptable state criteria.</p> <p>Associated practices may include: PS 313 Waste Storage Facility for storage structures; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Solid/Liquid Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management for waste application; PS 633, Waste Recycling and Concrete channel and Transfer conduit scenario 634 - Waste Transfer.</p> <p>This practice scenario addresses the water quality concerns for excessive nutrients or degradation of water resources from over application of manure on local fields.</p>
Before Practice Situation	The local drainage area is at high risk for phosphorus leaving the fields in the runoff solution and further manure waste application will likely cause water quality degradation.
After Practice Situation	Trucks are loaded with 6.3 tons of manure solids an average of 5 miles outside of the high risk drainage area to a location where phosphorus levels are in the low risk category according to the PhosphorusRisk index for leaving the fields. Waste is transferred out of the critical drainage area for use as fertilizer on crops and pasture land.
Scenario Feature Measure	Ton of Waste Hauled
Scenario Unit	Ton
Scenario Typical Size	6.3

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$17.83	\$2.83
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$17.83	\$2.83

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	2031	Manure Hauling, solid manure, transportation	Transportation cost of hauling solid manure. Trucking costs based on tons hauled times miles. Includes equipment, power unit and labor. Does not include costs for loading or unloading.	Ton-Mile	\$0.11	31.5	\$3.47
Equipment/Installation	2277	Manure Hauling, Solid manure, loading costs	Base cost of solid manure hauling. Includes loading and equipment preparation costs. Use in conjunction with transportation component to determine total cost. Includes equipment, power unit and labor.	Ton	\$2.28	6.3	\$14.36

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	14
Scenario Name	Waste hauling Solid
Scenario Description	<p>This scenario describes hauling of animal manure to agricultural land for final utilization. This scenario can only be used for distances up to 150 miles. It is intended to be used in high risk water quality drainage areas or when soil test phosphorus exceeds the allowable limit on fields that have typically been used for manure application. This waste transfer payment is intended to offset additional costs associated with hauling the manure out of the high risk drainage area or transported a longer distance to fields with low soil test phosphorus. Limits of soil test phosphorus for contracting purposes need to meet acceptable state criteria.</p> <p>Associated practices may include: PS 313 Waste Storage Facility for storage structures; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Solid/Liquid Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management for waste application; PS 633, Waste Recycling and Concrete channel and Transfer conduit scenario 634 - Waste Transfer.</p> <p>This practice scenario addresses the water quality concerns for excessive nutrients or degradation of water resources from over application of manure on local fields.</p>
Before Practice Situation	The local drainage area is at high risk for phosphorus leaving the fields in the runoff solution and further manure waste application will likely cause water quality degradation.
After Practice Situation	Trucks are loaded with 6.3 tons of manure solids an average of 10 miles outside of the high risk drainage area to a location where phosphorus levels are in the low risk category according to the PhosphorusRisk index for leaving the fields. Waste is transferred out of the critical drainage area for use as fertilizer on crops and pasture land.
Scenario Feature Measure	Ton of Waste Hauled
Scenario Unit	Ton
Scenario Typical Size	6.3

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$21.29	\$3.38
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$21.29	\$3.38

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	2031	Manure Hauling, solid manure, transportation	Transportation cost of hauling solid manure. Trucking costs based on tons hauled times miles. Includes equipment, power unit and labor. Does not include costs for loading or unloading.	Ton-Mile	\$0.11	63	\$6.93
Equipment/Installation	2277	Manure Hauling, Solid manure, loading costs	Base cost of solid manure hauling. Includes loading and equipment preparation costs. Use in conjunction with transportation component to determine total cost. Includes equipment, power unit and labor.	Ton	\$2.28	6.3	\$14.36

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	15
Scenario Name	Waste Hauling - Liquid
Scenario Description	This scenario describes hauling of animal manure to agricultural land for final utilization. This scenario can only be used for distances up to 150 miles. It is intended to be used in high risk water quality drainage areas or when soil test phosphorus exceeds the allowable limit on fields that have typically been used for manure application. This waste transfer payment is intended to offset additional costs associated with hauling the manure out of the high risk drainage area or transported a longer distance to fields with low soil test phosphorus. Limits of soil test phosphorus for contracting purposes need to meet acceptable state criteria.
Before Practice Situation	The local drainage area is at high risk for phosphorus leaving the fields in the runoff solution and further manure waste application will likely cause water quality degradation.
After Practice Situation	Trucks are loaded with 6000 gallons of manure solids and hauled an average of 20 miles outside of the high risk drainage area to a location where phosphorus levels are in the low risk category according to the PhosphorusRisk index for leaving the fields. Waste is transferred out of the critical drainage area for use as fertilizer on crops and pasture land.
Scenario Feature Measure	Gallon of waste hauled
Scenario Unit	Gallon
Scenario Typical Size	6,000

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$60.00	\$0.01
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$60.00	\$0.01

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	2276	Manure Hauling, Liquid manure, loading costs	Base cost of liquid manure hauling. Includes loading and equipment preparation costs. Use in conjunction with transportation component to determine total cost. Includes equipment, power unit and labor.	Gallon	\$0.01	6000	\$60.00

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	2
Scenario Name	Wastewater catch basin < 1000 gal.
Scenario Description	<p>Installation of a wastewater collection system that includes materials and structures to collect liquids of a design volume less than 1000 gallons such as silage leachate, lot runoff and other contaminated liquid effluent. This may include curbs, screens, precast manholes, sumps or catch basins. The wastewater will be transferred from the collection basin to a waste storage facility.</p> <p>Associated practices may include: 313 Waste Storage Facility for storage structures; 533, Pumping Plant; 632, Solid/Liquid Waste Separation Facility; 590 Nutrient Management for waste application; 633, Waste Recycling.</p> <p>This scenario addresses the potential for surface water and groundwater quality degradation from liquid wastewater running unchecked out of silage bunkers and off of animal feeding lots.</p>
Before Practice Situation	Inadequate waste management system able to collect wastewater from an operation that may contaminate surface or groundwater resources.
After Practice Situation	This practice scenario is suitable where the estimated design volume for wastewater transfer is less than 1000 gallons of contaminated liquid that may flow from silage bunkers or animal production facilities. The practice scenario typically includes materials and installation of flat and formed concrete for curbs and/or gutters to collect liquids. With the installation of a precast manhole with lid or catch basin with grate. The cost includes excavation, placement of bedding as needed, placement of structure and backfill with construction of concrete inlet collection area. Transfer pump if needed must be contracted under pumping plant, 533.
Scenario Feature Measure	Collection volume installed
Scenario Unit	Gallon
Scenario Typical Size	1000

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,155.12	\$2.16
Equipment/Installation	\$2,622.70	\$2.62
Labor	\$373.68	\$0.37
Mobilization	\$683.26	\$0.68
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$5,834.76</b>	<b>\$5.83</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1754	Catch Basin, concrete, 60" dia.	Precast 60-in diameter catch basin, 6' deep, with collar and grate cover. Materials only.	Each	\$2,059.02	1	\$2,059.02
Materials	1099	Aggregate, Gravel, Ungraded, Quarry Run	Includes materials, equipment and labor	Cubic yard	\$19.22	5	\$96.10
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	4	\$188.24
Equipment/Installation	929	Dozer, 80 HP	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$53.48	4	\$213.92
Equipment/Installation	38	Concrete, CIP, formed reinforced	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	\$406.16	2	\$812.32
Equipment/Installation	926	Backhoe, 80 HP	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$43.98	8	\$351.84
Equipment/Installation	1498	Demolition, concrete	Demolition and disposal of reinforced concrete structures including slabs and walls. Includes labor and equipment.	Cubic Yard	\$16.65	2	\$33.30
Equipment/Installation	37	Concrete, CIP, slab on grade, reinforced	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	\$255.77	4	\$1,023.08
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.79	8	\$214.32
Labor	231	General Labor	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	\$19.92	8	\$159.36
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10

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	\$138.58	2	\$277.16
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**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	634 - Waste Transfer
Scenario ID	7
Scenario Name	Wastewater Recycle System for Flush System - Pipes only
Scenario Description	<p>Installation of the pipe and appurtenances for a manure and wastewater flush system that provides the structures to utilize recycled wastewater to flush waste from a concrete surface into a catch basin or awaste storage facility.</p> <p>Associated practices may include: 313 Waste Storage Facility for storage structures; 533, Pumping Plant; 632, Solid/Liquid Waste Separation Facility; 590 Nutrient Management for waste application; 633, Waste Recycling.</p> <p>This scenario addresses the potential for surface water and groundwater quality degradation from animal waste.</p>
Before Practice Situation	An animal production facility does not have an efficient method for collecting and transferring the animal waste produced. Wastewater however is available in a sufficient quantity to provide a flush cycle to clean the production floor and collect the waste materials deposited.
After Practice Situation	This practice scenario is suitable where wastewater can be recycled for a flush system. Supplemental piping is needed to install the recycled flush water as a means to collect the animal waste deposited on the concrete production surfaces. The pipe design for the flush volume requires 300 feet of 3 inch diameter pipe for pressure flow. The cost includes excavation, placement of bedding as needed, conveyance pipelines with valves and pipe backfill to transport water to the flush tank. Pumps must be contracted under pumping plant, PS 533.
Scenario Feature Measure	Flush - pipes
Scenario Unit	Feet
Scenario Typical Size	300

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$884.00	\$2.95
Equipment/Installation	\$902.76	\$3.01
Labor	\$431.40	\$1.44
Mobilization	\$277.16	\$0.92
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$2,495.32	\$8.32

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	45	Aggregate, Sand, Graded, Washed	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$25.70	10	\$257.00
Materials	977	Pipe, PVC, 3", SCH 40	Materials: - 3" - PVC - SCH 40 - ASTM D1785	Foot	\$2.09	300	\$627.00
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.25	300	\$375.00
Equipment/Installation	926	Backhoe, 80 HP	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$43.98	12	\$527.76
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.67	12	\$272.04
Labor	231	General Labor	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	\$19.92	8	\$159.36
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	\$138.58	2	\$277.16

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	635 - Vegetated Treatment Area
Scenario ID	1
Scenario Name	VTA-Constructed Vegetative Area with Flow Distribution
Scenario Description	This is a permanent herbaceous vegetative area installed near livestock production area. Wastewater (runoff or milking parlor wastewater) is properly collected and released with a controlled gravity outflow or is pumped into distribution piping within the VTA. The VTA vegetation is harvested to remove nutrients on a regular basis. This practice addresses water quality degradation due to uncontrolled nutrient rich wastewater that can flow into surface waters or leach into ground water. Associated practices: Waste Storage Facility (313), Fence (382), Solid/Liquid Waste Separation Facility (632), Manure Transfer (634), Roof runoff Management (558), Pumping Plant (533), Subsurface Drain (606), Critical Area Planting (342), Terrace (600), Nutrient Management (590), Diversion (362), Pipeline (516), Land Smoothing (466), Precision Land Forming (462), Waste Treatment (629)
Before Practice Situation	Nutrient rich wastewater is running off from or directly discharging from an animal operation that has the potential to pollute surface waters or pond and leaching into groundwater.
After Practice Situation	Typical VTA is 1.0 ac in size, includes a gravel trench for distribution flow (sheet flow) into the VTA. Typically requires grading and shaping, gravel spreader trenches and perforated pipe to maintain sheet flow throughout the VTA. A settling basin for wastewater collection is contracted using Solid/Liquid Waste Separation Facility (632). For milkhouse waste, Waste Treatment (629) and/or Waste Storage Facility (313) could be contracted to provide pre-treatment/ storage prior to being released into the VTA. The VTA practice will provide a controlled release of nutrient rich wastewater into a designed vegetative area for nutrient uptake. This system will improve water quality by treating nutrient rich wastewater and prevent contamination of surface and ground water resources.
Scenario Feature Measure	Amount of VTA installed
Scenario Unit	Acre
Scenario Typical Size	1

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$3,572.25	\$3,572.25
Equipment/Installation	\$1,943.38	\$1,943.38
Labor	\$827.04	\$827.04
Mobilization	\$462.32	\$462.32
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$6,804.99</b>	<b>\$6,804.99</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1728	"Pipe, PE, 6", SIDR 9, perforated"	"Materials: 6" - Perforated PE- SIDR 9 - ASTM D3035"	Foot	\$21.06	80	\$1,684.80
Materials	1727	"Coupling, PVC, endcap, 2", SCH 20"	"2" - PVC- SCH 40- ASTM D1785 pipe endcaps. Materials only."	Each	\$1.23	15	\$18.45
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$26.70	70	\$1,869.00
Equipment/Installation	42	Geotextile, woven	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.35	400	\$940.00
Equipment/Installation	929	Dozer, 80 HP	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$53.48	16	\$855.68
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.11	70	\$147.70
Labor	231	General Labor	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	\$19.92	20	\$398.40
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.79	16	\$428.64
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10
Mobilization	1137	Mobilization, very small equipment	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	\$56.22	1	\$56.22

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	635 - Vegetated Treatment Area
Scenario ID	3
Scenario Name	VTA using an Existing Vegetative Area with Flow Distribution
Scenario Description	An existing permanent herbaceous vegetated area that meets the requirements for a VTA and is used as an overland flow area for nutrient rich runoff treatment. A flow distribution component is installed to achieve sheet flow at the start of the VTA. Clean runoff is diverted where possible. The VTA vegetation is harvested to removed nutrients on a regular basis. This practice addresses water quality degradation due to uncontrolled nutrient rich runoff that can flow into surface waters or leach into ground water. Associated practices: Waste Storage Facility (313), Fence (382), Solid/Liquid Waste Separation Facility (632), Manure Transfer (634), Irrigation System, Sprinkler (442), Roof runoff Management (558), Pumping Plant (533), Subsurface Drain (606), Critical Area Planting (342), Terrace (600), Nutrient Management (590), Diversion (362), Pipeline (516), Land Smoothing (466), Precision Land Forming (462), Waste Treatment Area (629)
Before Practice Situation	Nutrient rich wastewater is running off from an animal operation that has the potential to pollute surface waters or ponding and leaching into groundwater.
After Practice Situation	Typical VTA is 1.0 ac in size, includes a gravel trenches and perforated pipe to establish sheet flow into the VTA where an existing permanent herbaceous vegetated area meets the requirements for a VTA. Does not include any grading or seeding. The VTA practice will provide a controlled release of nutrient rich runoff into an existing vegetative area for nutrient uptake. This system will improve water quality by treating nutrient rich runoff and prevent contamination of surface and ground water resources.
Scenario Feature Measure	Amount of VTA treating wastewater
Scenario Unit	Acre
Scenario Typical Size	1

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$4,108.50	\$4,108.50
Equipment/Installation	\$3,984.19	\$3,984.19
Labor	\$318.72	\$318.72
Mobilization	\$315.49	\$315.49
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$8,726.90</b>	<b>\$8,726.90</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1728	"Pipe, PE, 6", SiDR 9, perforated"	"Materials: 6" - Perforated PE- SiDR 9 - ASTM D3035"	Foot	\$21.06	100	\$2,106.00
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$26.70	75	\$2,002.50
Equipment/Installation	42	Geotextile, woven	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.35	445	\$1,045.75
Equipment/Installation	38	Concrete, CIP, formed reinforced	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	\$397.17	7	\$2,780.19
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.11	75	\$158.25
Labor	231	General Labor	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	\$19.92	16	\$318.72
Mobilization	1137	Mobilization, very small equipment	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	\$56.22	2	\$112.44
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	635 - Vegetated Treatment Area
Scenario ID	2
Scenario Name	VTA-Constructed with Mechanical distribution
Scenario Description	This is a permanent herbaceous vegetative area located adjacent to a livestock production area. Wastewater (runoff or milking parlor wastewater) is properly collected at the production area and pumped to mechanically distribute wastewater onto the VTA. The VTA vegetation is harvested to removed nutrients on a regular basis. This practice addresses water quality degradation due to uncontrolled nutrient rich wastewater that can flow into surface waters or leach into ground water. Associated practices: Waste Storage Facility (313), Fence (382), Solid/Liquid Waste Separation Facility (632), Manure Transfer (634), Irrigation System, Sprinkler (442), Roof runoff Management (558), Pumping Plant (533), Subsurface Drain (606), Critical Area Planting (342), Terrace (600), Nutrient Management (590), Diversion (362), Pipeline (516), Land Smoothing (466), Precision Land Forming (462), Waste Treatment (629)
Before Practice Situation	Nutrient rich wastewater is running off from an animal operation that has the potential to pollute surface waters or ponding and leaching into groundwater.
After Practice Situation	Typical VTA is 1.0 ac in size, includes the sizing, grading and shaping of the VTA area. Typically requires grading and shaping to maintain sheet flow onto the VTA. A settling basin for wastewater collection is contracted using Solid/Liquid Waste Separation Facility (632) and Pumping Plant (533) to get the wastewater to the VTA mechanical distribution component that is contracted using Irrigation System, Sprinkler (442). For milkhouse waste, Waste Treatment (629) could be contracted to provide pretreatment prior to being pumped and distributed onto the VTA. The VTA practice will provide a controlled release of nutrient rich wastewater into a designed vegetative area for nutrient uptake. This system will improve water quality by treating nutrient rich wastewater and prevent contamination of surface and ground water resources.
Scenario Feature Measure	Amount of VTA installed
Scenario Unit	Acre
Scenario Typical Size	1

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$855.68	\$855.68
Labor	\$747.36	\$747.36
Mobilization	\$203.05	\$203.05
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$1,806.09</b>	<b>\$1,806.09</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	929	Dozer, 80 HP	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$53.48	16	\$855.68
Labor	231	General Labor	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	\$19.92	16	\$318.72
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.79	16	\$428.64
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	638 - Water & Sediment Control Basin
Scenario ID	4
Scenario Name	WASCOB - Farmable
Scenario Description	Typical scenario for the construction of an earthen WASCOB. Outlet is typically an underground outlet. An earthen embankment or combination ridge and channel generally constructed across the slope and minor watercourses to form a sediment trap and water detention basin. The typical installation includes a broadbased WASCOB system consisting of 6 WASCOBs in series having a 6' top width, 7.5:1 upstream and 7.5:1 downstream slopes. The finished WASCOB system measures 1,800 feet (6 WASCOBs at 300' each) in a field with slopes from 2% to 8% constructed in loam soils or similar in regards to workability. WASCOB area is farmed. Work is done with dozer, scraper, or road grader. Costs include all equipment necessary to excavate, shape, grade and compact the Water and Sediment Control Basin and mobilization of equipment. Seeding not included. This practice is utilized to reduce watercourse and gully erosion, trap sediment, reduce and manage onsite and downstream runoff. Sheet and rill erosion will be controlled by other conservation practices.
Before Practice Situation	Farming fields with excessive slope length has resulted in multiple rills and/or ephemeral gullies that will continue to worsen over time. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport. Resource concerns addressed include soil erosion and water quality by trapping sediment and/or reducing erosion in a field to protect riparian areas and water bodies from sediment deposition. Surface water causes erosion and the sediment (and potentially pesticides) to be transported into the riparian areas and water bodies downstream.
After Practice Situation	A series of six (6) Water and Sediment Control Basins are constructed measuring 1,800 feet in length, 2.5' height, 6' top width, with 7.5:1 front and back slopes. Excavation/earthfill conducted with dozer, scraper and/or road grader. Rill and/or gully erosion is reduced. If riser and underground outlet are needed, then include Underground Outlet (620). Include Critical Area Planting (342) where necessary to prevent erosion following construction activities.
Scenario Feature Measure	Length of embankment
Scenario Unit	Foot
Scenario Typical Size	1800 6 WASCOBs at 300' each

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$9,160.45	\$5.09
Labor	\$109.56	\$0.06
Mobilization	\$203.05	\$0.11
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$9,473.06</b>	<b>\$5.26</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.21	4145	\$9,160.45
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	3	\$109.56
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	638 - Water & Sediment Control Basin
Scenario ID	3
Scenario Name	WASCOB - Narrow Base
Scenario Description	Typical scenario for the construction of an earthen WASCOB. Outlet is typically an underground outlet. An earthen embankment or combination ridge and channel generally constructed across the slope and minor watercourses to form a sediment trap and water detention basin. The typical installation includes a WASCOB system with 2.5' ridge height, 6' top width, and 2.5:1 front and back slopes. The finished WASCOB system measures 1,800 feet (6 WASCOBs at 300' each) in a field with slopes from 2% to 8% constructed in loam soils or similar in regards to workability. Work is done with dozer, scraper, or road grader. Costs include all equipment necessary to excavate, shape, grade and compact the Water and Sediment Control Basin and mobilization of equipment. Seeding not included. This practice is utilized to reduce watercourse and gully erosion, trap sediment, reduce and manage onsite and downstream runoff. Sheet and rill erosion will be controlled by other conservation practices.
Before Practice Situation	Farming fields with excessive slope length has resulted in multiple rills and/or ephemeral gullies that will continue to worsen over time. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport. Resource concerns addressed include soil erosion and water quality by trapping sediment and/or reducing erosion in a field to protect riparian areas and water bodies from sediment deposition. Surface water causes erosion and the sediment (and potentially pesticides) to be transported into the riparian areas and water bodies downstream.
After Practice Situation	A system of six (6) Water and Sediment Control Basins are constructed measuring 1,800 feet in length, 2.5' height, 6' top width with 2.5:1 front and 2.5:1 back slopes. Excavation/earthfill conducted with dozer, scraper and/or road grader. Rill and/or gully erosion is reduced. If riser and underground outlet are needed, then include Underground Outlet (620). Include Critical Area Planting (342) where necessary to prevent erosion following construction activities.
Scenario Feature Measure	Length of embankment
Scenario Unit	Foot
Scenario Typical Size	1800 6 WASCOBs at 300' each

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$3,580.20	\$1.99
Labor	\$73.04	\$0.04
Mobilization	\$203.05	\$0.11
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$3,856.29	\$2.14

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.21	1620	\$3,580.20
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	2	\$73.04
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	638 - Water & Sediment Control Basin
Scenario ID	2
Scenario Name	WASCOB topsoil
Scenario Description	Typical scenarios for the construction of an earthen embankment or the rebuild of an existing WASCOB. Prior to constructing/reconstructing the embankment, 6 inches of topsoil is removed and stockpiled. Outlet is typically an underground outlet. An earthen embankment or combination ridge and channel generally constructed/rebuilt across the slope and minor watercourses to form a sediment trap and water detention basin. Topsoil is replaced following construction of the embankment. Costs include all equipment necessary to strip and stock pile topsoil, excavate, shape, grade and compact the Water and Sediment Control Basin, spread and replace topsoil after construction and mobilization of equipment. Seeding not included. This practice is utilized to reduce watercourse and gully erosion, trap sediment, reduce and manage onsite and downstream runoff. Sheet and rill erosion will be controlled by other conservation practices. Work is done with dozer, scraper, or road grader.
Before Practice Situation	Site has shallow topsoil which if removed by earthwork for construction of embankment will significantly impact yields. Farming fields with excessive slope length has resulted in multiple rills and/or ephemeral gullies that will continue to worsen over time. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport. Resource concern addressed includes soil erosion and water quality by trapping sediment and/or reduce erosion in a field to protect riparian areas and water bodies from sediment deposition. Surface water causes erosion and the sediment (and potentially pesticides) is being transported into the riparian areas and water bodies downstream.
After Practice Situation	Water and Sediment Control Basis is constructed or rebuilt by the excavation/earthfill with dozer, scraper and/or road grader. Rill and/or gully erosion is reduced. If riser and underground outlet are needed, then include Underground Outlet (620). Include Critical Area Planting (342) where necessary to prevent erosion following construction activities.
Scenario Feature Measure	CY of WASCOB Embankment
Scenario Unit	Cubic Yard
Scenario Typical Size	700

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$1,739.50	\$2.49
Labor	\$36.52	\$0.05
Mobilization	\$203.05	\$0.29
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$1,979.07</b>	<b>\$2.83</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	1199	Stripping and stockpiling, topsoil	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yard	\$0.77	250	\$192.50
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.21	700	\$1,547.00
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	1	\$36.52
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agricultural Engineering
Practice Code/Name	638 - Water & Sediment Control Basin
Scenario ID	1
Scenario Name	WASCOB base
Scenario Description	Typical scenario for the construction of an earthen embankment or the rebuild of an existing WASCOB. Rebuild work includes the removal of accumulated sediment from the pool area to restore original capacity. Outlet is typically an underground outlet. An earthen embankment or combination ridge and channel generally constructed/rebuilt across the slope and minor watercourses to form a sediment trap and water detention basin. Work is done with dozer, scraper, or road grader. Costs include all equipment necessary to excavate, shape, grade and compact the Water and Sediment Control Basin and mobilization of equipment. Seeding not included. This practice is utilized to reduce watercourse and gully erosion, trap sediment, reduce and manage onsite and downstream runoff. Sheet and rill erosion will be controlled by other conservation practices.
Before Practice Situation	Farming fields with excessive slope length has resulted in multiple rills and/or ephemeral gullies that will continue to worsen over time. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport. Resource concerns addressed include soil erosion and water quality by trapping sediment and/or reducing erosion in a field to protect riparian areas and water bodies from sediment deposition. Surface water causes erosion and the sediment (and potentially pesticides) to be transported into the riparian areas and water bodies downstream.
After Practice Situation	Water and Sediment Control Basin is constructed or rebuilt by the excavation/earthfill with dozer, scraper and/or road grader. Rill and/or gully erosion is reduced. If riser and underground outlet are needed, then include Underground Outlet (620). Include Critical Area Planting (342) where necessary to prevent erosion following construction activities.
Scenario Feature Measure	CY of WASCOB Embankment
Scenario Unit	Cubic Yard
Scenario Typical Size	700

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$1,547.00	\$2.21
Labor	\$36.52	\$0.05
Mobilization	\$203.05	\$0.29
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,786.57	\$2.55

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.21	700	\$1,547.00
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$36.52	1	\$36.52
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Engineering General
Practice Code/Name	642 - Water Well
Scenario ID	3
Scenario Name	Deep Drilled Well, > 100 Feet
Scenario Description	Typical construction is for the installation of a well, in areas where sufficient water is known to occur >100 feet of the ground surface. The well shall be drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer for water supply. The purpose of the practice is to provide water for livestock.
Before Practice Situation	Livestock have insufficient water or are fenced from their water source.
After Practice Situation	An average well depth is 400 feet. Well casings are 4-6" in diameter. Casing is installed to a depth of 200 feet, and lining is included for the remaining depth where needed. Sufficient water is available for livestock. Utilize Pumping Plant (533) and Pipeline (516) as associated practices. Use Critical Area Seeding (342) where necessary to prevent erosion following construction activities.
Scenario Feature Measure	No.
Scenario Unit	Foot
Scenario Typical Size	400

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$4,293.45	\$10.73
Equipment/Installation	\$3,657.36	\$9.14
Labor	\$0.00	\$0.00
Mobilization	\$256.13	\$0.64
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$8,206.94	\$20.52

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1804	Well Casing, Plastic, 6"	PVC or ABS well casing, 6". Materials only.	Foot	\$18.14	200	\$3,628.00
Materials	1335	Chlorine	Liquid chlorine bleach. Materials only.	Gallon	\$2.32	1	\$2.32
Materials	1786	Well Cap, 6"	Well cap, 6". Materials only.	Each	\$32.35	1	\$32.35
Materials	1333	Grout, cement	Cement grout meeting ASTM specifications for well sealing. Includes both neat-cement grout and bentonite gout mixtures. Includes materials, equipment and labor to place.	Cubic Yard	\$80.59	2	\$161.18
Materials	1999	Well Screen, plastic, 6"	6" PVC well screen. Materials only.	Foot	\$11.74	40	\$469.60
Equipment/Installation	1595	Rotary Drill Rig with Operator	Rotary drill rig including equipment and power unit costs and labor.	Hour	\$152.39	24	\$3,657.36
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.54	2	\$53.08
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Engineering General
Practice Code/Name	642 - Water Well
Scenario ID	1
Scenario Name	Large Diameter Drilled Well
Scenario Description	Typical construction is for the drilling of a well using a bucket well drill rig. These wells are large diameter drilled wells. The purpose of the practice is to provide water for livestock. An average well depth is less than 100 foot at 36" diameter. These wells are typically implemented in areas where the ground water resource has slow recharge rate, and the large diameter of the well allows for storage of water to meet the demand.
Before Practice Situation	Livestock have insufficient water or are fenced from their water source.
After Practice Situation	Sufficient water is available for livestock. Utilize Pumping Plant (533) and Pipeline (516) as associated practices. Use Critical Area Seeding (342) where necessary to prevent erosion following construction activities.
Scenario Feature Measure	No.
Scenario Unit	Foot
Scenario Typical Size	48

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,782.88	\$57.98
Equipment/Installation	\$3,047.80	\$63.50
Labor	\$159.36	\$3.32
Mobilization	\$222.95	\$4.64
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$6,212.99</b>	<b>\$129.44</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$26.70	4	\$106.80
Materials	1335	Chlorine	Liquid chlorine bleach. Materials only.	Gallon	\$2.32	5	\$11.60
Equipment/Installation	1595	Rotary Drill Rig with Operator	Rotary drill rig including equipment and power unit costs and labor.	Hour	\$152.39	20	\$3,047.80
Labor	231	General Labor	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	\$19.92	8	\$159.36
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.90	1	\$19.90
Materials	2173	Well Casing, Concrete	Concrete tile 3' diameter x 8' long. Materials only.	Foot	\$54.60	40	\$2,184.00
Materials	2174	Well Casing, Concrete, perforated	Perforated concrete tile 3' diameter x 8' long. Materials only.	Foot	\$60.06	8	\$480.48

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Engineering General
Practice Code/Name	642 - Water Well
Scenario ID	2
Scenario Name	Shallow Drilled Well, ≤ 100 feet
Scenario Description	Typical construction is for the installation of a well, in areas where sufficient water is known to occur within 100 feet of the ground surface. The well shall be drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer for water supply. The purpose of the practice is to provide water for livestock.
Before Practice Situation	Livestock have insufficient water or are fenced from their water source.
After Practice Situation	An average well depth is 100 feet. Well casings are 12" in diameter. Casing is installed to a depth of 50 feet, and the additional length is lined. Sufficient water is available for livestock. Utilize Pumping Plant (533) and Pipeline (516) as associated practices. Use Critical Area Seeding (342) where necessary to prevent erosion following construction activities.
Scenario Feature Measure	No.
Scenario Unit	Foot
Scenario Typical Size	100

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$3,028.42	\$30.28
Equipment/Installation	\$1,523.90	\$15.24
Labor	\$0.00	\$0.00
Mobilization	\$256.13	\$2.56
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$4,808.45	\$48.08

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1807	Well Casing, Plastic, 12"	PVC or ABS well casing, 12". Materials only.	Foot	\$55.15	50	\$2,757.50
Materials	1789	Well Cap, 12"	Well cap, 12". Materials only.	Each	\$107.42	1	\$107.42
Materials	1333	Grout, cement	Cement grout meeting ASTM specifications for well sealing. Includes both neat-cement grout and bentonite gout mixtures. Includes materials, equipment and labor to place.	Cubic Yard	\$80.59	2	\$161.18
Materials	1335	Chlorine	Liquid chlorine bleach. Materials only.	Gallon	\$2.32	1	\$2.32
Equipment/Installation	1595	Rotary Drill Rig with Operator	Rotary drill rig including equipment and power unit costs and labor.	Hour	\$152.39	10	\$1,523.90
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators ≥50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers ≥12", Dump Trucks, Ag Equipment ≥150 HP, Scrapers, Water Wagons.	Hour	\$26.54	2	\$53.08

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	643 - Restoration and Management of Rare and Declining Habitats
Scenario ID	1
Scenario Name	Monitoring, & Management, Low Intensity
Scenario Description	One monitoring effort will be used to assess dynamic site conditions in order to implement adaptive management strategies needed to successfully implement the standard which meets or exceeds the purpose and criteria. Setting is any land use with the potential to provide habitat for species of plants and animals identified as rare and declining and the habitat potential is not currently being captured. The identified habitat limiting factors can be restored, enhanced or created, with the application of this practice alone, or in combination with other supporting and facilitating practices. Costs are incurred prior to certifying that the practice has been fully implemented according to the practice standard. Monitoring activities include but are not limited to: evaluation of vegetative response to management treatments, photo points taken, use documentation by livestock, regeneration/breeding success, documenting wildlife sightings, documenting location and species of invasive plants. Using monitoring data, adaptive management treatments/actions are taken to improve habitat to meet or exceed quality criteria for the practice. No decision or treatment associated with this practice or facilitating practices will require income foregone. The planner will specify locations and identify the methods to
Before Practice Situation	Existing degraded plant conditions and resulting inadequate habitat for fish and wildlife have resulted in inadequate use of the area by target rare and declining species and associated species.
After Practice Situation	The application of adaptive habitat management efforts based on monitoring data have been implemented. With the application of this practice alone, or in combination with other supporting and facilitating practices, the inadequate conditions and deficiencies have been addressed.
Scenario Feature Measure	Acres Managed and Monitored
Scenario Unit	Acre
Scenario Typical Size	100

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$55.80	\$0.56
Equipment/Installation	\$37.51	\$0.38
Labor	\$300.24	\$3.00
Mobilization	\$77.29	\$0.77
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$470.84	\$4.71

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	967	Miscellaneous (Camera, clippers, plot frame, scale, tape measure).	Range field kit	Each	\$44.24	1	\$44.24
Materials	298	Miscellaneous, containers, traps, etc.	Pheromone Traps, Culture container with lid	Each	\$2.89	4	\$11.56
Equipment/Installation	939	Truck, Pickup	Equipment and power unit costs. Labor not included.	Hour	\$25.51	1	\$25.51
Equipment/Installation	966	Satellite imagery, aerial photography, infrared	Infrared imagery	Acre	\$0.12	100	\$12.00
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	\$75.06	4	\$300.24
Mobilization	1146	Mobilization, Specialist Labor	Mobilization of Specialist Labor. Includes Agronomists, Foresters, Biologists, etc.	Hour	77.29	1	77.29

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	644 - Wetland Wildlife Management
Scenario ID	3
Scenario Name	Topographic Feature Creation, High
Scenario Description	The setting is all landuses, but typically is on lands used for the production of forest products grazing and/or fish and wildlife where the slope gradient is less than two percent and soils that are not excessively drained. The State-approved habitat evaluation or appraisal found that a limiting factor for wetland wildlife is the absence of sufficient variability in microtopographic relief in the area. The construction of topographic features will provide for diverse soil hydrologic conditions needed to treat the degraded plant condition and/or inadequate habitat for wetland wildlife. Excavated spoil is needed to further enhance macrotopographic relief by placing and compacting the fill in strategic areas. This scenario is for earthwork, not associated with habitat structures or any other national standard (e.g. Wetland Restoration (657), Wetland Enhancement (659), Wetland Creation (658), and Dike (356)). Facilitating practices may include Structure for Water Control (587).
Before Practice Situation	The site lacks sufficient micro- and macrotopographic features needed for optimal wetland wildlife habitat for target species. Typically the site has been previously manipulated and utilized for agricultural, livestock or forest production. With the loss of hummocks, depressions and other topographic features scattered throughout the site, both plant and animal species that are dependent on the microenvironments created by these features are no longer present or are in decline within the planning unit.
After Practice Situation	As a result of the installation, the topographic relief needed to provide the varied wetland wildlife habitat needs is provided.
Scenario Feature Measure	Acres of constructed features
Scenario Unit	Acre
Scenario Typical Size	10

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$13,973.92	\$1,397.39
Labor	\$1,500.24	\$150.02
Mobilization	\$671.72	\$67.17
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$16,145.88</b>	<b>\$1,614.59</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	49	Earthfill, Roller Compacted	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.92	2150	\$8,428.00
Equipment/Installation	966	Satellite imagery, aerial photography, infrared	Infrared imagery	Acre	\$0.12	100	\$12.00
Equipment/Installation	927	Dozer, 140 HP	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$98.82	56	\$5,533.92
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.79	56	\$1,500.24
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	\$379.78	1	\$379.78
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.54	11	\$291.94

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	644 - Wetland Wildlife Management
Scenario ID	2
Scenario Name	Topographic Feature Creation, Low
Scenario Description	The setting is all landuses, but typically is on lands used for the production of forest products grazing and/or fish and wildlife where the slope gradient is less than two percent and soils that are not excessively drained. The State-approved habitat evaluation or appraisal found that a limiting factor for wetland wildlife is the absence of sufficient variability in microtopographic relief in the area. The construction of topographic features will provide for diverse soil hydrologic conditions needed to treat the degraded plant condition and/or inadequate habitat for wetland wildlife. Excavated spoil is spread adjacent to excavation or moved to designated locations but not compacted. This scenario is for earthwork, not associated with habitat structures or any other national standard (e.g. Wetland Restoration (657), Wetland Enhancement (659), Wetland Creation (658), and Dike (356)). Facilitating practices may include Structure for Water Control (587).
Before Practice Situation	The site lacks sufficient micro- and macrotopographic features needed for optimal wetland wildlife habitat for target species. Typically the site has been previously manipulated and utilized for agricultural, livestock or forest production. With the loss of hummocks, depressions and other topographic features scattered throughout the site, both plant and animal species that are dependent on the microenvironments created by these features are no longer present or are in decline within the planning unit.
After Practice Situation	As a result of the installation, the topographic relief needed to provide the varied wetland wildlife habitat needs is provided.
Scenario Feature Measure	Acres of constructed features
Scenario Unit	Acre
Scenario Typical Size	10

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$5,545.92	\$554.59
Labor	\$1,500.24	\$150.02
Mobilization	\$565.56	\$56.56
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$7,611.72	\$761.17

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	966	Satellite imagery, aerial photography, infrared	Infrared imagery	Acre	\$0.12	100	\$12.00
Equipment/Installation	927	Dozer, 140 HP	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$98.82	56	\$5,533.92
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.79	56	\$1,500.24
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.54	7	\$185.78
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	\$379.78	1	\$379.78

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	645 - Upland Wildlife Habitat Management
Scenario ID	7
Scenario Name	Glade/Savanna Restoration
Scenario Description	Removing or reducing tree canopy and utilizing chemical treatment (except for non-sprouting woody species) to promote herbaceous growth or early woody succession to benefit wildlife habitat. Designed for glade savanna restoration where Basal Area removal exceeds 60 square feet per acre, or more than 400 stems per acre. This practice is intended to restore and manage for associated wildlife species that benefit from habitats such as savannas and glades. Facilitating practices may include but not limited to: Wetland Creation (658), Wetland Restoration (657), Wetland Enhancement (659), Early Successional Habitat Management/Development (647), Prescribed Burning (338), Restoration and Management of Rare and Declining Habitats (643), and Conservation Cover (327).
Before Practice Situation	A 100 acre stand of trees that is even aged and lacks structural diversity. The understory has a minimal amount of herbaceous and early woody successional vegetation. Wildlife food, cover, and shelter are lacking, and woody cover control is needed to manage for associated wildlife species that benefit from habitats such as savannas and glades.
After Practice Situation	The Glade or Savanna habitat is restored and flora and fauna that depend on the glade or savannah habitat flourish.
Scenario Feature Measure	area of opening
Scenario Unit	Acres
Scenario Typical Size	2

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$22.08	\$11.04
Equipment/Installation	\$126.48	\$63.24
Labor	\$557.76	\$278.88
Mobilization	\$79.60	\$39.80
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$785.92	\$392.96

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	334	Herbicide, Glyphosate	A broad-spectrum, non-selective systemic herbicide. Product is typically used in these practices 340, 645, 314, 666, and 512. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$11.04	2	\$22.08
Equipment/Installation	937	Chainsaw	Equipment and power unit costs. Labor not included.	Hour	\$5.27	24	\$126.48
Labor	231	General Labor	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	\$19.92	28	\$557.76
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.90	4	\$79.60

**Scenario Worksheet**

**Practice and Scenario Description:**

Information Type	Data
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	645 - Upland Wildlife Habitat Management
Scenario ID	4
Scenario Name	Downed Wildlife Tree Structures
Scenario Description	Downed tree structures will be created to provide shrubby/woody escape cover for wildlife. Existing sod will be killed prior to placement of tree structures. Felling of select trees and placement in selected locations to provide wildlife cover. Minimum 30' x 50' area for structure covered by interlocking limbs of trees at least 12" in diameter. Existing sod must be killed prior to tree placement. Payment includes tree felling and placement and herbicide application to kill existing sod. Note that it takes three 1500 square feet areas to equal 0.1 acre. Facilitating practices may include but not limited to: Wetland Creation (658), Wetland Restoration (657), Wetland Enhancement (659), Early Successional Habitat Management/Development (647), Prescribed Burning (338), Restoration and Management of Rare and Declining Habitats (643), and Conservation Cover (327).
Before Practice Situation	A 40 acre operation managing for quail and other small game habitat. Shrubby/woody escape cover is often the missing habitat component for bobwhite quail and other small game in fields managed for upland wildlife wildlife.
After Practice Situation	The installation of a downed tree structure enhances the overall habitat needs of quail and other small game species. These structures/features enhance habitat and improve species survivability.
Scenario Feature Measure	area covered by structures
Scenario Unit	Each
Scenario Typical Size	3

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1.10	\$0.37
Equipment/Installation	\$381.46	\$127.15
Labor	\$315.30	\$105.10
Mobilization	\$19.90	\$6.63
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$717.76	\$239.25

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	334	Herbicide, Glyphosate	A broad-spectrum, non-selective systemic herbicide. Product is typically used in these practices 340, 645, 314, 666, and 512. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$11.04	0.1	\$1.10
Equipment/Installation	937	Chainsaw	Equipment and power unit costs. Labor not included.	Hour	\$5.27	9	\$47.43
Equipment/Installation	939	Truck, Pickup	Equipment and power unit costs. Labor not included.	Hour	\$25.51	2	\$51.02
Equipment/Installation	948	Chemical, ground application	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.50	0.1	\$0.65
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	6	\$282.36
Labor	231	General Labor	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	\$19.92	9	\$179.28
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.67	6	\$136.02
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.90	1	\$19.90

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	645 - Upland Wildlife Habitat Management
Scenario ID	5
Scenario Name	Edgefeathering
Scenario Description	Implementing edge feathering techniques consisting of tree cutting and clipping to create dense woody cover and a transitional area between cropland and forestland to support early successional wildlife species. This 'cutback' border will extend at least 30' into the wooded area, measured from the outside tree trunk, and at least 50' long -- resulting in a minimum area of 1500 square feet covered by interlocking woody branches. Cut stumps will be treated with brush herbicide. Existing sod must be killed prior to the edge feathering operation. Cost estimate includes tree felling and herbicide application to kill existing sod. Facilitating practices may include but not limited to: Wetland Creation (658), Wetland Restoration (657), Wetland Enhancement (659), Early Successional Habitat Management/Development (647), Prescribed Burning (338), Restoration and Management of Rare and Declining Habitats (643), and Conservation Cover (327).
Before Practice Situation	A 80 acre operation consisting of forested land adjacent to cropland with a hard edge. A transitional area consisting of shrubs, forbs, vines, and other herbaceous vegetation is needed to provide cover for many wildlife species including rabbits, bobwhite quail, birds, and other upland wildlife species.
After Practice Situation	Installation of edge feathering enhances the overall habitat needs of quail and other small game species. These structures/features enhance habitat and improve species survivability.
Scenario Feature Measure	area covered by edgefeathering
Scenario Unit	Acres
Scenario Typical Size	1

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$11.04	\$11.04
Equipment/Installation	\$396.62	\$396.62
Labor	\$414.90	\$414.90
Mobilization	\$39.80	\$39.80
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$862.36	\$862.36

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	334	Herbicide, Glyphosate	A broad-spectrum, non-selective systemic herbicide. Product is typically used in these practices 340, 645, 314, 666, and 512. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$11.04	1	\$11.04
Equipment/Installation	939	Truck, Pickup	Equipment and power unit costs. Labor not included.	Hour	\$25.51	2	\$51.02
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	6	\$282.36
Equipment/Installation	937	Chainsaw	Equipment and power unit costs. Labor not included.	Hour	\$5.27	12	\$63.24
Labor	231	General Labor	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	19.92	14	\$278.88
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.67	6	\$136.02
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.90	2	\$39.80

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	645 - Upland Wildlife Habitat Management
Scenario ID	6
Scenario Name	Permanent Forest Opening
Scenario Description	Permanent forest openings will be created by removing ALL trees and stumps AND going from an existing basal area of 60 sq ft/acre or more to a basal area of 0. This practice will create a minimum of 1/4 ac to a maximum of 3 acre clearing within a stand of timber. Openings will be created using heavy equipment and chainsaws. Openings serve as a valuable source for wildlife including brood habitat for forest birds as well as browse for deer and turkey. Creation of forest openings improves habitat for forest edge species, and these areas also serve as sunning and singing grounds for young birds. Facilitating practices may include but not limited to: Wetland Creation (658), Wetland Restoration (657), Wetland Enhancement (659), Early Successional Habitat Management/Development (647), Prescribed Burning (338), Restoration and Management of Rare and Declining Habitats (643), and Conservation Cover (327).
Before Practice Situation	A 100 acre woodlot lacking diversity in stand structure resulting in limited habitat for forest edge wildlife species. Resource concerns include inadequate species composition, food, and nesting areas. Consideration should be given to avoid placing openings on erodible slopes or soil types.
After Practice Situation	Installation of a permanent opening brings the identified deficient habitat limiting factors up to planning criteria.
Scenario Feature Measure	area of opening
Scenario Unit	Acres
Scenario Typical Size	2

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$22.08	\$11.04
Equipment/Installation	\$2,254.05	\$1,127.03
Labor	\$481.53	\$240.77
Mobilization	\$432.86	\$216.43
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$3,190.52	\$1,595.26

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	334	Herbicide, Glyphosate	A broad-spectrum, non-selective systemic herbicide. Product is typically used in these practices 340, 645, 314, 666, and 512. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$11.04	2	\$22.08
Equipment/Installation	928	Dozer, 200 HP	Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included.	Hour	\$150.27	15	\$2,254.05
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.79	15	\$401.85
Labor	231	General Labor	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	\$19.92	4	\$79.68
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.54	2	\$53.08
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	\$379.78	1	\$379.78

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	645 - Upland Wildlife Habitat Management
Scenario ID	8
Scenario Name	Wildlife Watering
Scenario Description	Establishment of a topographic feature on the landscape consisting of a small dam and pool or small excavated dugout that will hold water to provide a source of drinking water for wildlife, and habitat for reptiles and amphibians. Payment includes the equipment and labor associated with establishing the watering feature.
Before Practice Situation	This practice will be installed on any area where drinking water for wildlife is inadequate, or a water feature will improve habitat and existence of reptiles and amphibians in an identified area. The resource concerns to be addressed by this practice are inadequate water supply and moist habitat for wildlife that results in poor animal health and populations.
After Practice Situation	This practice consists of an excavated pool to collect water for wildlife to access and drink from safely. Excavated pools are typically 1000 ft <sup>2</sup> and 3 feet deep in center with 4:1 side slopes around edge. Associated practices: Critical Area Planting (342), Conservation Cover (327)
Scenario Feature Measure	Each watering feature
Scenario Unit	Each
Scenario Typical Size	1

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$213.92	\$213.92
Labor	\$107.16	\$107.16
Mobilization	\$432.86	\$432.86
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$753.94</b>	<b>\$753.94</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	929	Dozer, 80 HP	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$53.48	4	\$213.92
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.79	4	\$107.16
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	\$379.78	1	\$379.78
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.54	2	\$53.08

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	646 - Shallow Water Development and Management
Scenario ID	1
Scenario Name	Shallow Water Management
<b>Scenario Description</b>	This scenario addresses inadequate habitat for fish and wildlife on cropland. The resource concern is addressed by providing shallow water habitat for wildlife such as shorebirds, waterfowl, wading birds, mammals, fish, reptiles, amphibians, and other species that require shallow water for at least part of their life cycle. Sites are flooded up to a depth of 18" with an average depth of 9". Water is provided by natural flooding and/or precipitation.
<b>Before Practice Situation</b>	There is inadequate habitat to provide optimum resting, nesting, and feeding habitat for waterfowl, shorebirds, and other wildlife (amphibians, reptiles, mammals, invertebrates, etc.).
<b>After Practice Situation</b>	A single or series of shallow water areas that are managed per standard and specification. Water levels are regulated to maintain temporary wildlife habitat. Timing and duration of flooding and de-watering is dependent on specific species requirements. Water is pumped into area to be flooded. Flooded sites vary from mudflats to water depths of 18" with an average depth of 9". The hydrologic conditions of ponding and saturation (frequency, depth, duration, timing) provides optimum seasonal habitat for waterfowl, shorebirds, and other wildlife (amphibians, reptiles, mammals, invertebrates, etc.). If needed and dikes or water control structures are not currently present on the fields planned to be flooded, these practices may be planned for the same fields and cost shared under Structure for Water Control (587) and Dike (356). If a natural water source (i.e. precipitation or flooding) is not available, Pumping Plant (533) may be cost shared to provide a water source. Depending on local conditions, other Conservation Practices may also be required.
<b>Scenario Feature Measure</b>	Acre of shallow water
<b>Scenario Unit</b>	Acre
<b>Scenario Typical Size</b>	2

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$0.00	\$0.00
Labor	\$19.92	\$9.96
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$116.67	\$58.34
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$136.59</b>	<b>\$68.30</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Labor	231	General Labor	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	\$19.92	1	\$19.92
Acquisition of Technical Knowledge	294	Training, Workshops	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	\$116.67	1	\$116.67

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	647 - Early Successional Habitat Development and Management
Scenario ID	2
Scenario Name	Disking
Scenario Description	This practice addresses inadequate wildlife habitat for species requiring early successional habitat. This scenario provides early successional habitat by setting back succession and manipulating species composition by disking vegetation and exposing bare ground. The typical setting for this scenario is at the edge of crop fields, in pastures, and in odd areas such as pivot corners. This scenario is applicable nationwide. Where the management of woody plants is require to create or maintain early successional habitat conservation practice 314 brush management should be used. Where chemical control of weeds, including invasives, is required to reduce competition for the desired plant community conservation practice 315 herbaceous weed control should be used. Where the seedbank is inadequate for natural regeneration and seeding is required, use conservation practice 327 Conservation Cover. Where the need is to create early successional habitat within or at the edge of woodland or forest use conservation practice 645 Upland Wildlife Habitat Management (edge feathering).
Before Practice Situation	The site is static or trending to higher successional plant species. The disturbance regeme to maintain a lower successional stage is lacking. Pastures are often monotypic, lacking in diversity. Bare ground for seedling establishment is absent. Stands are often dense and inhibit the movements of younger wildlife species suchh as game bird chicks.
After Practice Situation	The application of this scenario improves wildlife habitat for species requiring early successional plant communities by reducing competition and creating bare ground for the establishment of early successional plants. Additionally, brood rearing habitat is improved both by the resultant food resources and the increased openness of the plant community that allows chicks to negotiate the terrain and exploit those food resources.
Scenario Feature Measure	width and length of treated area
Scenario Unit	Acres
Scenario Typical Size	2

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$19.26	\$9.63
Labor	\$0.00	\$0.00
Mobilization	\$138.58	\$69.29
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$157.84	\$78.92

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	945	Tillage, Light	Includes light disking (tandem) or field cultivator. Equipment and power unit costs. Labor is included.	Acre	\$9.63	2	\$19.26
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	\$138.58	1	\$138.58

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	647 - Early Successional Habitat Development and Management
Scenario ID	3
Scenario Name	Mowing and Disking
Scenario Description	This practice addresses inadequate wildlife habitat for species requiring early successional habitat. This scenario provides early successional habitat by setting back succession and manipulating species composition by mowing tall dense vegetation and then a light disking to expose bare ground. The typical setting for this scenario is at the edge of crop fields, in pastures, and in odd areas such as pivot corners. Where the management of woody plants is require to create or maintain early successional habitat conservation practice 314 brush management should be used. Where chemical control of weeds, including invasives, is required to reduce competition for the desired plant community conservation practice 315 herbaceous weed control should be used. Where the seedbank is inadequate for natural regeneration and seeding is required, use conservation practice 327 Conservation Cover. Where the need is to create early successional habitat within or at the edge of woodland or forest use conservation practice 645 Upland Wildlife Habitat Management (edge feathering).
Before Practice Situation	The site is static or trending to higher successional plant species. The disturbance regeme to maintain a lower successional stage is lacking. Pastures are often monotypic, lacking in diversity. Bare ground for seedling establishment is absent. Stands are often dense and inhibit the movements of younger wildlife species suchh as game bird chicks.
After Practice Situation	The application of this scenario improves wildlife habitat for species requiring early successional plant communities by reducing competition and creating bare ground for the establishment of early successional plants. Additionally, brood rearing habitat is improved both by the resultant food resources and the increased openness of the plant community that allows chicks to negotiate the terrain and exploit those food resources.
Scenario Feature Measure	
Scenario Unit	Acre
Scenario Typical Size	2

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$185.34	\$92.67
Labor	\$136.02	\$68.01
Mobilization	\$138.58	\$69.29
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$459.94	\$229.97

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	940	Mower, Bush Hog	Equipment and power unit costs. Labor not included.	Hour	\$41.52	4	\$166.08
Equipment/Installation	945	Tillage, Light	Includes light disking (tandem) or field cultivator. Equipment and power unit costs. Labor is included.	Acre	\$9.63	2	\$19.26
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.67	6	\$136.02
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	\$138.58	1	\$138.58

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	647 - Early Successional Habitat Development and Management
Scenario ID	4
Scenario Name	Mowing and Heavy Disking
Scenario Description	This practice addresses inadequate wildlife habitat for species requiring early successional habitat. This scenario provides early successional habitat by setting back succession and manipulating species composition by mowing tall dense vegetation and then a heavy disking (multiple passes) to expose bare ground. The typical setting for this scenario is at the edge of crop fields, in pastures, and in odd areas such as pivot corners. This scenario is applicable nationwide. Where the management of woody plants is required to create or maintain early successional habitat conservation practice 314 brush management should be used. Where chemical control of weeds, including invasives, is required to reduce competition for the desired plant community conservation practice 315 herbaceous weed control should be used. Where the seedbank is inadequate for natural regeneration and seeding is required 327 Conservation Cover. Where the need is to create early successional habitat within or at the edge of woodland or forest use conservation practice 645 Upland Wildlife Habitat Management (edge feathering).
Before Practice Situation	The site is static or trending to higher successional plant species. The disturbance regime to maintain a lower successional stage is lacking. Pastures are often monotypic, lacking in diversity. Bare ground for seedling establishment is absent. Stands are often dense and inhibit the movements of younger wildlife species suchh as game bird chicks.
After Practice Situation	The application of this scenario improves wildlife habitat for species requiring early successional plant communities by reducing competition and creating bare ground for the establishment of early successional plants. Additionally, brood rearing habitat is improved both by the resultant food resources and the increased openness of the plant community that allows chicks to negotiate the terrain and exploit those food resources.
Scenario Feature Measure	
Scenario Unit	Acre
Scenario Typical Size	2

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$204.60	\$102.30
Labor	\$181.36	\$90.68
Mobilization	\$138.58	\$69.29
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$524.54	\$262.27

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	940	Mower, Bush Hog	Equipment and power unit costs. Labor not included.	Hour	\$41.52	4	\$166.08
Equipment/Installation	945	Tillage, Light	Includes light disking (tandem) or field cultivator. Equipment and power unit costs. Labor is included.	Acre	\$9.63	4	\$38.52
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.67	8	\$181.36
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	\$138.58	1	\$138.58

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Forestry
Practice Code/Name	650 - Windbreak/Shelterbelt Renovation
Scenario ID	2
Scenario Name	Tree/Shrub Removal with Chain Saw
Scenario Description	Windbreak renovation requires the removal of degraded or inappropriate trees or shrubs within a windbreak. This may include removal of entire rows, including stumps or roots, or selected trees/shrubs in order to prepare for the necessary planting of a replacement row within the windbreak, improve the health of the remaining rows, and/or allow for supplemental planting to expand the windbreak. Resource concerns: Degrade plant condition- undesirable plant productivity and health; Livestock Production-Inadequate livestock shelter, Soil erosion-wind.
Before Practice Situation	Plant (trees and/or shrubs) health has degraded decreasing the effectiveness of the original windbreak design. Plants lack leaf cover, have dead branches, gaps of no live green material and some are completely dead. Wind now moves freely thru areas that lack any leaves.
After Practice Situation	Integrity and function of windbreak restored. 1,000 feet of windbreak/shelterbelt renovated.
Scenario Feature Measure	Length of Renovation
Scenario Unit	Linear Feet
Scenario Typical Size	1000

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$46.16	\$0.05
Labor	\$349.32	\$0.35
Mobilization	\$153.41	\$0.15
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$548.89	\$0.55

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	937	Chainsaw	Equipment and power unit costs. Labor not included.	Hour	\$5.27	8	\$42.16
Equipment/Installation	1318	Pruning tools, hand tools	Pruning tools, hand tools, shears, loppers, pole saw, handsaw Equipment costs only. Labor not included.	Hour	\$2.00	2	\$4.00
Labor	231	General Labor	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	\$19.92	10	\$199.20
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	\$75.06	2	\$150.12
Mobilization	1146	Mobilization, Specialist Labor	Mobilization of Specialist Labor. Includes Agronomists, Foresters, Biologists, etc.	Hour	\$77.29	1	\$77.29
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.90	1	\$19.90
Mobilization	1137	Mobilization, very small equipment	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	\$56.22	1	\$56.22

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Forestry
Practice Code/Name	650 - Windbreak/Shelterbelt Renovation
Scenario ID	1
Scenario Name	Thinning
Scenario Description	Windbreak is thinned by hand w/chainsaw and cut stumps have herbicide applied to prevent undesirable sprouting.
Before Practice Situation	Windbreak functionality has decreased. Windbreak tree and/or shrub species are overly dense and do not provide the desired wind protection. Resource concern is Degrade plant condition- undesirable plant productivity and health.
After Practice Situation	Integrity of windbreak restored, function and health improved.
Scenario Feature Measure	Length of Renovation
Scenario Unit	Linear Feet
Scenario Typical Size	1000

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$61.01	\$0.06
Equipment/Installation	\$164.44	\$0.16
Labor	\$349.32	\$0.35
Mobilization	\$153.41	\$0.15
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$728.18	\$0.73

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	338	Herbicide, Triclopyr	Triclopyr butoxyethyl ester (BEE) is a selective foliar and root absorbed, translocated herbicide used for control of woody and broadleaf plants. Product is typically used in these practices 595, 314, 645 and 666. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$61.01	1	\$61.01
Equipment/Installation	937	Chainsaw	Equipment and power unit costs. Labor not included.	Hour	\$5.27	10	\$52.70
Equipment/Installation	964	Chemical, spot treatment, single stem application	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	\$55.87	2	\$111.74
Labor	231	General Labor	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	\$19.92	10	\$199.20
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	\$75.06	2	\$150.12
Mobilization	1146	Mobilization, Specialist Labor	Mobilization of Specialist Labor. Includes Agronomists, Foresters, Biologists, etc.	Hour	\$77.29	1	\$77.29
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.90	1	\$19.90
Mobilization	1137	Mobilization, very small equipment	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	\$56.22	1	\$56.22

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Forestry
Practice Code/Name	650 - Windbreak/Shelterbelt Renovation
Scenario ID	4
Scenario Name	Within Row Replacement - Bare-root Planting Stock
Scenario Description	Parts of the windbreak being renovated have died. Supplemental plantings of bare-root trees/shrubs within existing rows or establishment of an additional row will improve the effectiveness and longevity of the windbreak. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition -Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter.
Before Practice Situation	Sections of the windbreak had dead trees/shrubs that were inhibiting windbreak effectiveness. The dead plants have been removed and the site has been prepared for planting.
After Practice Situation	The integrity and function of the windbreak is restored by hand planting bare-root trees/shrubs in gaps created through previous plant mortality.
Scenario Feature Measure	Length of Renovation
Scenario Unit	Linear Foot
Scenario Typical Size	500

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$78.75	\$0.16
Equipment/Installation	\$9.44	\$0.02
Labor	\$94.98	\$0.19
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$183.17	\$0.37

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1594	Fertilizer, tree, slow release, premix packet or spike	Slow release fertilizer to gradually apply nutrients over time for tree establishment. 2.0 Oz Packet (Premixed: 16-16-16 or 16-8-8) or Fertilizer Spike	Each	\$0.75	50	\$37.50
Materials	1586	Wire flags	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	\$0.08	50	\$4.00
Materials	1510	Tree, hardwood, seedling or transplant, bare root, 16-36"	Bare root hardwood trees 18-36" tall. Materials only.	Each	\$0.80	25	\$20.00
Materials	1514	Tree, conifer, seedling, bare root, 2-1	Bare root conifer trees, 2-1 (3 years old). Materials only.	Each	\$0.69	25	\$17.25
Equipment/Installation	1590	Hand tools, tree planting	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only.	Hour	\$9.44	1	\$9.44
Labor	231	General Labor	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	\$19.92	1	\$19.92
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	\$75.06	1	\$75.06

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Forestry
Practice Code/Name	650 - Windbreak/Shelterbelt Renovation
Scenario ID	3
Scenario Name	Within Row Replacement - Containerized Planting Stock
Scenario Description	Parts of the windbreak being renovated have died. Supplemental plantings of containerized trees/shrubs within existing rows or establishment of an additional row will improve the effectiveness and longevity of the windbreak. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition -Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter.
Before Practice Situation	Sections of the windbreak had dead trees/shrubs that were inhibiting windbreak effectiveness. The dead plants have been removed and the site has been prepared for planting.
After Practice Situation	The integrity and function of the windbreak is restored by hand planting containerized trees/shrubs in gaps created through previous plant mortality.
Scenario Feature Measure	Length of Renovation
Scenario Unit	Linear Foot
Scenario Typical Size	500

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$716.25	\$1.43
Equipment/Installation	\$28.32	\$0.06
Labor	\$284.94	\$0.57
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,029.51	\$2.06

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1537	Tree, conifer, seedling or transplant, potted or B&B, 2-3 gal.	Potted or balled and burlapped conifer tree, 2-3 gal. Materials only.	Each	\$13.57	25	\$339.25
Materials	1532	Tree, hardwood, seedling or transplant, potted or B&B, 2-3 gal.	Potted or balled and burlapped hardwood tree, 2-3 gal. Materials only.	Each	\$13.42	25	\$335.50
Materials	1594	Fertilizer, tree, slow release, premix packet or spike	Slow release fertilizer to gradually apply nutrients over time for tree establishment. 2.0 Oz Packet (Premixed: 16-16-16 or 16-8-8 ) or Fertilizer Spike	Each	\$0.75	50	\$37.50
Materials	1586	Wire flags	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	\$0.08	50	\$4.00
Equipment/Installation	1590	Hand tools, tree planting	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only.	Hour	\$9.44	3	\$28.32
Labor	231	General Labor	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	\$19.92	3	\$59.76
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	\$75.06	3	\$225.18

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	656 - Constructed Wetland
Scenario ID	1
Scenario Name	Constructed Wetland, Dense Planting
Scenario Description	This practice scenario includes the basic earthwork and native and/or organic wetland vegetation needed to create a constructed wetland to treat contaminated agricultural runoff or effluent from a drainage system high in nutrients. All other components, such as water control structures, dikes or upstream sediment basins, must be paid for under facilitating practices. Soil, water and tissue sampling are required. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrients and pathogens. Associated practices: Structure for Water Control (587); Sediment Basin (350); Dike (356); Pond Sealing or Lining, Compacted Clay Treatment (521D); Pond Sealing or Lining, Flexible Membrane (521A); Fence (382); Grade Stabilization Structure (410); Pumping Plant (533); Waste Transfer (634); Critical Area Planting (342); Filter Strip (393).
Before Practice Situation	Degraded water quality and/or ponding due to the nutrient content and/or sediment of agricultural runoff.
After Practice Situation	A 1 acre constructed wetland (measured by the size of the treatment pool suitable for wetland vegetation) will be constructed with an average 18" depth. Only the earthwork and wetland vegetation are considered in this scenario. Vegetation is planted at a spacing of 3 by 3 feet. Any structures or sediment basins will be designed under a separate practice. The constructed wetland is sited near the property boundary, but still takes cropland out of production (1/2 wetland acreage). The constructed wetland treats the effluent by creating conditions at the plant/soil/water interface for biochemical nutrient removal before the effluent is transported to a waste storage facility or discharged off site if permitted by regulation.
Scenario Feature Measure	Area of Constructed Wetland
Scenario Unit	Acre
Scenario Typical Size	1

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$5,275.60	\$5,275.60
Equipment/Installation	\$4,464.25	\$4,464.25
Labor	\$964.13	\$964.13
Mobilization	\$445.90	\$445.90
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$389.06	\$389.06
Total	\$11,538.94	\$11,538.94

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1729	Common Cattail (Typha latifolia)	Wetland plants such as cat tails. Materials and shipping.	Each	\$1.09	4840	\$5,275.60
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.21	1613	\$3,564.73
Equipment/Installation	1199	Stripping and stockpiling, topsoil	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yard	\$0.77	807	\$621.39
Equipment/Installation	40	Clearing and Grubbing	Clearing and Grubbing, includes materials, equipment and labor	Acre	\$278.13	1	\$278.13
Labor	231	General Labor	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	\$19.92	48.4	\$964.13
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.90	2	\$39.80
Foregone Income	1961	FI, Soybeans Dryland	Dryland Soybeans is Primary Crop	Acre	\$385.53	0.5	\$192.77
Foregone Income	1959	FI, Corn Dryland	Dryland Corn is Primary Crop	Acre	\$392.59	0.5	\$196.30

## Scenario Worksheet

## Practice and Scenario Description:

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Environmental Engineering
Practice Code/Name	656 - Constructed Wetland
Scenario ID	2
Scenario Name	Constructed Wetland, Light Planting
Scenario Description	This practice scenario includes the basic earthwork and native and/or organic wetland vegetation needed to create a constructed wetland to treat contaminated agricultural runoff or effluent from a drainage system high in nutrients. All other components, such as water control structures, dikes or upstream sediment basins, must be paid for under facilitating practices. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrients and pathogens. Associated practices: Structure for Water Control (587); Sediment Basin (350); Dike (356); Pond Sealing or Lining, Compacted Clay Treatment (521D); Pond Sealing or Lining, Flexible Membrane (521A); Fence (382); Grade Stabilization Structure (410); Pumping Plant (533); Waste Transfer (634); Critical Area Planting (342); Filter Strip (393).
Before Practice Situation	Degraded water quality and/or ponding due to the nutrient content and/or sediment of agricultural runoff.
After Practice Situation	A 1 acre constructed wetland (measured by the size of the treatment pool suitable for wetland vegetation) will be constructed with an average 18" depth. Only the earthwork and wetland vegetation are considered in this scenario. Vegetation is planted at a wide spacing of 4 by 4 feet. Any structures or sediment basins will be designed under a separate practice. The constructed wetland is sited near the property boundary, but still takes cropland out of production (1/2 wetland acreage). The constructed wetland treats the effluent by creating conditions at the plant/soil/water interface for biochemical nutrient removal before the effluent is transported to a waste storage facility or discharged off site if permitted by regulation.
Scenario Feature Measure	Area of Constructed Wetland
Scenario Unit	Acre
Scenario Typical Size	1

## Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,968.07	\$2,968.07
Equipment/Installation	\$4,464.25	\$4,464.25
Labor	\$541.82	\$541.82
Mobilization	\$445.90	\$445.90
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$389.06	\$389.06
Total	\$8,809.10	\$8,809.10

## Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1729	Common Cattail (Typha latifolia)	Wetland plants such as cat tails. Materials and shipping.	Each	\$1.09	2723	\$2,968.07
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.21	1613	\$3,564.73
Equipment/Installation	1199	Stripping and stockpiling, topsoil	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yard	\$0.77	807	\$621.39
Equipment/Installation	40	Clearing and Grubbing	Clearing and Grubbing, includes materials, equipment and labor	Acre	\$278.13	1	\$278.13
Labor	231	General Labor	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	\$19.92	27.2	\$541.82
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.90	2	\$39.80
Foregone Income	1961	FI, Soybeans Dryland	Dryland Soybeans is Primary Crop	Acre	\$385.53	0.5	\$192.77
Foregone Income	1959	FI, Corn Dryland	Dryland Corn is Primary Crop	Acre	\$392.59	0.5	\$196.30

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	657 - Wetland Restoration
Scenario ID	3
Scenario Name	Depression Sediment Removal and Ditch Plug
Scenario Description	A Depressional HGM class wetland is to be restored. The tract size is 15 acres, and the actual wetland size is 10 acres. The site is a recharge depression, fed only from surface runoff. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.
Before Practice Situation	The wetland has been converted to agricultural production, and the tract drained with a surface ditch. The ditch is 4' average depth, and 12 feet average width. The wetland receives surface runoff from an adjacent upland watershed, and ponds water on a shallow perched layer. The watershed has been converted from native to agricultural landuse, and the resultant soil erosion has deposited 6" of sediment in the bottom of the depression.
After Practice Situation	The ditch has been plugged by the installation of a 50' long section of compacted clay fill, and the deposition has been removed down to the original topsoil layer. A herbaceous plant community has been seeded. Facilitative practices include Conservation Cover. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.
Scenario Feature Measure	Acres of Tract
Scenario Unit	Acre
Scenario Typical Size	15

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$17,450.92	\$1,163.39
Labor	\$0.00	\$0.00
Mobilization	\$759.56	\$50.64
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$5,835.90	\$389.06
Total	\$24,046.38	\$1,603.09

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	49	Earthfill, Roller Compacted	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.92	89	\$348.88
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.12	8067	\$17,102.04
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	\$379.78	2	\$759.56
Foregone Income	1959	FI, Corn Dryland	Dryland Corn is Primary Crop	Acre	\$392.59	7.5	\$2,944.43
Foregone Income	1961	FI, Soybeans Dryland	Dryland Soybeans is Primary Crop	Acre	\$385.53	7.5	\$2,891.48

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	657 - Wetland Restoration
Scenario ID	1
Scenario Name	Mineral Flat Tile Removal
Scenario Description	A Mineral Flat wetland is to be restored. The tract size is 40 Acres consists of surface saturated soils interspersed with shallow depressions that are not depressional class HGM wetlands. The wetland size is also 40 acres. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.
Before Practice Situation	The site has been drained with a tile drain system. A suitable seed bank exists for natural regeneration to re-establish hydrophytic vegetation. The site is in agricultural production.
After Practice Situation	The drain tiles have been rendered non-functional by excavating 50 foot lengths of tile mains and laterals in 6 separate locations, and backfilling with excavated earth, which is compacted with the excavator bucket. There are no facilitating practices. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.
Scenario Feature Measure	Acres of Tract
Scenario Unit	Acre
Scenario Typical Size	40

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$359.20	\$8.98
Labor	\$181.36	\$4.53
Mobilization	\$203.05	\$5.08
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$15,562.40	\$389.06
Total	\$16,306.01	\$407.65

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	930	Hydraulic Excavator, .5 CY	Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included.	Hour	\$44.90	8	\$359.20
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.67	8	\$181.36
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05
Foregone Income	1959	FI, Corn Dryland	Dryland Corn is Primary Crop	Acre	\$392.59	20	\$7,851.80
Foregone Income	1961	FI, Soybeans Dryland	Dryland Soybeans is Primary Crop	Acre	\$385.53	20	\$7,710.60

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	657 - Wetland Restoration
Scenario ID	4
Scenario Name	Riverine Channel and Floodplain Restoration
Scenario Description	A Riverine HGM landscape on a small stream on a low stream order riparian landscape has been converted to agricultural production. The stream channel has degraded. The reach is 1500 feet in length, and the tract size is 15 acres. The wetland area is 10 acres. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.
Before Practice Situation	Channel incision has broken the lateral connectivity between the stream and floodplain. The conversion to cropland was accompanied by filling and leveling of backswamp, side channel, and oxbow features which formerly ponded water or exposed the floodplain groundwater table. The site no longer has access to floodwater or water surface profile supported groundwater. No suitable seed bank exists for natural regeneration of the original hydrophytic plant community, either in the channel, or on the floodplain.
After Practice Situation	The hydrology of the site is restored by the installation of a series of rock check structures to raise the stream water surface profile. Floodplain macrotopographic features replicating the original side channels, oxbows, and backswamps are constructed by excavation. Spoil is placed adjacent to the excavations to replicate natural depositional features. The average depth of the excavated features is 0.5 feet, and the surface area of the excavations is 25% of the tract size. The eroding stream bank is stabilized with soil bio-engineering features, and fish habitat improvement measures are installed in the channel. The tract is seeded to appropriate hydrophytic and upland vegetation, both woody and herbaceous. Facilitating practices are Streambank and Shoreline protection, Structure for Water Control, Conservation Cover, Tree/Shrub Establishment, and Stream Habitat Improvement and Management. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.
Scenario Feature Measure	Acres of Tract
Scenario Unit	Acre
Scenario Typical Size	15

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$14,841.00	\$989.40
Labor	\$0.00	\$0.00
Mobilization	\$1,139.34	\$75.96
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$5,835.90	\$389.06
Total	\$21,816.24	\$1,454.42

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	49	Earthfill, Roller Compacted	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.92	2150	\$8,428.00
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.12	3025	\$6,413.00
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	\$379.78	3	\$1,139.34
Foregone Income	1959	Fl, Corn Dryland	Dryland Corn is Primary Crop	Acre	\$392.59	7.5	\$2,944.43
Foregone Income	1961	Fl, Soybeans Dryland	Dryland Soybeans is Primary Crop	Acre	\$385.53	7.5	\$2,891.48

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	657 - Wetland Restoration
Scenario ID	5
Scenario Name	Vernal Pool
Scenario Description	Restoration of vernal pools on suitable sites within areas of hardwood forest. This involves restoration of hydrology to a vernal pool site that provides season shallow surface water. Resource concerns include INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.
Before Practice Situation	The site has mature trees and vegetation typical to vernal pools but the hydrology of the site has been altered such that the site no longer is inundated seasonally which is required for wildlife that are dependent on vernal pools for part of their life cycle. The existing native vegetation precludes the use of standard wetland restoration construction methods.
After Practice Situation	Seasonal inundation of the site has been restored to the site without significant disturbance to the native vegetation. Wildlife habitat for species that utilize vernal pools has been restored to the site.
Scenario Feature Measure	Area of pool
Scenario Unit	Acre
Scenario Typical Size	0.25

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$975.60	\$3,902.40
Labor	\$862.80	\$3,451.20
Mobilization	\$406.10	\$1,624.40
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$2,244.50</b>	<b>\$8,978.00</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	926	Backhoe, 80 HP	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$43.98	16	\$703.68
Equipment/Installation	933	Skidsteer, 80 HP	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$33.99	8	\$271.92
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.67	24	\$544.08
Labor	231	General Labor	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	\$19.92	16	\$318.72
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	658 - Wetland Creation
Scenario ID	2
Scenario Name	Embankment Wetland Creation
Scenario Description	A wetland is created on a flat mineral upland at a location where surface runoff may be intercepted and ponded by excavation and with an embankment. Facilitating practices may include Structure for Water Control (587). Resource concerns are 22 - INEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.
Before Practice Situation	The site is in cropland on an upland, non floodplain site (interfluv).
After Practice Situation	An excavation/embankment with an average depth of 12" has created a shallow depression in a broad swale which intercepts surface runoff. The excavated material has been spread on adjacent areas and used to compact the embankment. The INADEQUATE HABITAT FOR FISH AND WILDLIFE resource concern has been addressed with the provision of seasonal open water for terrestrial, aquatic, and waterfowl species.
Scenario Feature Measure	
Scenario Unit	Acre
Scenario Typical Size	5

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$12,352.50	\$2,470.50
Labor	\$3,348.75	\$669.75
Mobilization	\$379.78	\$75.96
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$1,945.30	\$389.06
Total	\$18,026.33	\$3,605.27

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	927	Dozer, 140 HP	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$98.82	125	\$12,352.50
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$26.79	125	\$3,348.75
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	\$379.78	1	\$379.78
Foregone Income	1959	FI, Corn Dryland	Dryland Corn is Primary Crop	Acre	\$392.59	2.5	\$981.48
Foregone Income	1961	FI, Soybeans Dryland	Dryland Soybeans is Primary Crop	Acre	\$385.53	2.5	\$963.83

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	658 - Wetland Creation
Scenario ID	1
Scenario Name	Excavated Wetland Creation
Scenario Description	A wetland is created on a flat mineral upland at a location where surface runoff may be intercepted and ponded by excavation. Resource concerns are 22 - INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.
Before Practice Situation	The site is in cropland on an upland, non floodplain site (interfluvie).
After Practice Situation	An excavation with an average depth of 12" has created a shallow depression in a broad swale which intercepts surface runoff. The excavated material has been spread on adjacent areas. The INADEQUATE HABITAT FOR FISH AND WILDLIFE resource concern has been addressed with the provision of seasonal open water for terrestrial, aquatic, and waterfowl species.
Scenario Feature Measure	Acres of Wetland
Scenario Unit	Acre
Scenario Typical Size	5

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$17,102.04	\$3,420.41
Labor	\$0.00	\$0.00
Mobilization	\$379.78	\$75.96
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$1,945.30	\$389.06
<b>Total</b>	<b>\$19,427.12</b>	<b>\$3,885.42</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.12	8067	\$17,102.04
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	\$379.78	1	\$379.78
Foregone Income	1959	FI, Corn Dryland	Dryland Corn is Primary Crop	Acre	\$392.59	2.5	\$981.48
Foregone Income	1961	FI, Soybeans Dryland	Dryland Soybeans is Primary Crop	Acre	\$385.53	2.5	\$963.83

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	659 - Wetland Enhancement
Scenario ID	3
Scenario Name	Depression Sediment Removal and Ditch Plug
Scenario Description	A Depressional HGM class wetland is to be enhanced. The tract size is 15 acres, and the actual wetland size is 10 acres. The site is a recharge depression, fed only from surface runoff. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.
Before Practice Situation	The wetland has been converted to agricultural production, and the tract drained with a surface ditch. The ditch is 4' average depth, and 12 feet average width. The wetland receives surface runoff from an adjacent upland watershed, and ponds water on a shallow perched layer. The watershed has been converted from native to agricultural landuse, and the resultant soil erosion has deposited 6" of sediment in the bottom of the depression.
After Practice Situation	The ditch has been plugged by the installation of a 50' long section of compacted clay fill, and the deposition has been removed down to the original topsoil layer. A herbaceous plant community has been seeded. Facilitative practices include Conservation Cover. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.
Scenario Feature Measure	Acres of Tract
Scenario Unit	Acre
Scenario Typical Size	15

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$17,450.92	\$1,163.39
Labor	\$0.00	\$0.00
Mobilization	\$759.56	\$50.64
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$5,835.90	\$389.06
Total	\$24,046.38	\$1,603.09

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.12	8067	\$17,102.04
Equipment/Installation	49	Earthfill, Roller Compacted	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.92	89	\$348.88
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	\$379.78	2	\$759.56
Foregone Income	1959	FI, Corn Dryland	Dryland Corn is Primary Crop	Acre	\$392.59	7.5	\$2,944.43
Foregone Income	1961	FI, Soybeans Dryland	Dryland Soybeans is Primary Crop	Acre	\$385.53	7.5	\$2,891.48

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	659 - Wetland Enhancement
Scenario ID	1
Scenario Name	Mineral Flat Tile Removal
Scenario Description	A Mineral Flat wetland is to be enhanced. The tract size is 40 Acres consists of surface saturated soils interspersed with shallow depressions that are not depressional class HGM wetlands. The wetland size is also 40 acres. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.
Before Practice Situation	The site has been drained with a tile drain system. A suitable seed bank exists for natural regeneration to re-establish hydrophytic vegetation. The site is in agricultural production.
After Practice Situation	The drain tiles have been rendered non-functional by excavating 50 foot lengths of tile mains and laterals in 6 separate locations, and backfilling with excavated earth, which is compacted with the excavator bucket. There are no facilitating practices. Enhancement of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.
Scenario Feature Measure	Acres of Tract
Scenario Unit	Acre
Scenario Typical Size	40

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$359.20	\$8.98
Labor	\$181.36	\$4.53
Mobilization	\$203.05	\$5.08
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$15,562.40	\$389.06
Total	\$16,306.01	\$407.65

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	930	Hydraulic Excavator, .5 CY	Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included.	Hour	\$44.90	8	\$359.20
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.67	8	\$181.36
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	1	\$203.05
Foregone Income	1959	FI, Corn Dryland	Dryland Corn is Primary Crop	Acre	\$392.59	20	\$7,851.80
Foregone Income	1961	FI, Soybeans Dryland	Dryland Soybeans is Primary Crop	Acre	\$385.53	20	\$7,710.60

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	659 - Wetland Enhancement
Scenario ID	4
Scenario Name	Riverine Channel and Floodplain Restoration
Scenario Description	A Riverine HGM landscape on a small stream on a low stream order riparian landscape has been converted to agricultural production. The stream channel has degraded. The reach is 1500 feet in length, and the tract size is 15 acres. The wetland area is 10 acres. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.
Before Practice Situation	Channel incision has broken the lateral connectivity between the stream and floodplain. The conversion to cropland was accompanied by filling and leveling of backswamp, side channel, and oxbow features which formerly ponded water or exposed the floodplain groundwater table. The site no longer has access to floodwater or water surface profile supported groundwater. No suitable seed bank exists for natural regeneration of the original hydrophytic plant community, either in the channel, or on the floodplain.
After Practice Situation	The hydrology of the site is restored by the installation of a series of rock check structures to raise the stream water surface profile. Floodplain macrotopographic features replicating the original side channels, oxbows, and backswamps are constructed by excavation. Spoil is placed adjacent to the excavations to replicate natural depositional features. The average depth of the excavated features is 2 feet, and the surface area of the excavations is 25% of the tract size. The eroding stream bank is stabilized with soil bio-engineering features, and fish habitat improvement measures are installed in the channel. The tract is seeded to appropriate hydrophytic and upland vegetation, both woody and herbaceous. Facilitating practices are Streambank and Shoreline protection, Structure for Water Control, Conservation Cover, Tree/Shrub Establishment, and Stream Habitat Improvement and Management. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.
Scenario Feature Measure	Acres of Tract
Scenario Unit	Acre
Scenario Typical Size	15

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$14,841.00	\$989.40
Labor	\$0.00	\$0.00
Mobilization	\$1,139.34	\$75.96
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$5,835.90	\$389.06
Total	\$21,816.24	\$1,454.42

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.12	3025	\$6,413.00
Equipment/Installation	49	Earthfill, Roller Compacted	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.92	2150	\$8,428.00
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	\$379.78	3	\$1,139.34
Foregone Income	1959	FI, Corn Dryland	Dryland Corn is Primary Crop	Acre	\$392.59	7.5	\$2,944.43
Foregone Income	1961	FI, Soybeans Dryland	Dryland Soybeans is Primary Crop	Acre	\$385.53	7.5	\$2,891.48

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Wildlife Wetland
Practice Code/Name	659 - Wetland Enhancement
Scenario ID	5
Scenario Name	Vernal Pool
Scenario Description	Wetland hardwood forest with sites that have potential to be enhanced with vernal pools. This involves enhancement of hydrology of a vernal pool site that provides season shallow surface water . Resource concerns include INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.
Before Practice Situation	The site has mature trees and vegetation typical to vernal pools but the site does not pond water seasonally which is required for wildlife that are dependent on vernal pools for part of their life cycle. The existing native vegetation precludes the use of standard wetland enhancement construction methods.
After Practice Situation	Seasonal inundation of the site has been enhanced on the site without significant disturbance to the native vegetation. Wildlife habitat for species that utilize vernal pools has been developed on the site.
Scenario Feature Measure	
Scenario Unit	Acre
Scenario Typical Size	0.25

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$975.60	\$3,902.40
Labor	\$862.80	\$3,451.20
Mobilization	\$406.10	\$1,624.40
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$2,244.50</b>	<b>\$8,978.00</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	926	Backhoe, 80 HP	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$43.98	16	\$703.68
Equipment/Installation	933	Skidsteer, 80 HP	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$33.99	8	\$271.92
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.67	24	\$544.08
Labor	231	General Labor	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	\$19.92	16	\$318.72
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$203.05	2	\$406.10

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Forestry
Practice Code/Name	666 - Forest Stand Improvement
Scenario ID	3
Scenario Name	Forest Stand Improvement - Heavy
Scenario Description	All materials and labor required to manipulate species composition, stand structure and stocking on forestland. Heavy forest stand improvement will: Reduce basal area by 41 or more square feet per acre (or) Cut and/or kill over 400 trees per acre (or) Release 41 or more crop trees per acre and kill any vines growing on crop trees by an approved method such as "cut stump" with herbicide to prevent resprouting. Use a current and approved Forest Management Plan for estimated basal area to be removed, number of trees needing to be cut and/or killed, crop trees needing to be released, and/or vines needing killed.
Before Practice Situation	Forest stand is heavily overstocked and/or composed of an unacceptable level of undesirable species due to lack of forest management. This has negatively impacted forest health, productivity, and/or sustainability. Wildlife habitat, such as hard and soft mast production, browse, nesting cover, bedding areas, etc. is lacking. Understory vegetation consists of mostly shade-tolerant species with little to no desirable regeneration present.
After Practice Situation	After adjusting the stocking to an acceptable level, stand growth, condition, and overall quality is improved. In addition, wildlife habitat is improved with the resulting increase of sunlight reaching the forest floor.
Scenario Feature Measure	Area Treated
Scenario Unit	Acre
Scenario Typical Size	55

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$694.65	\$12.63
Equipment/Installation	\$2,663.73	\$48.43
Labor	\$5,604.49	\$101.90
Mobilization	\$60.96	\$1.11
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$9,023.83</b>	<b>\$164.07</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	937	Chainsaw	Equipment and power unit costs. Labor not included.	Hour	\$5.27	145	\$764.15
Materials	337	Herbicide, Picloram	A systemic herbicide used for general woody plant control. Product is typically used in these practices 314, 595, 666, and 645. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$12.63	55	\$694.65
Equipment/Installation	964	Chemical, spot treatment, single stem application	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	\$55.87	34	\$1,899.58
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	\$31.31	179	\$5,604.49
Mobilization	1141	Mobilization, Skilled labor	Mobilization of skilled labor: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$30.48	2	\$60.96

## Scenario Worksheet

## Practice and Scenario Description:

Information Type	Data
Region	Corn Belt
State	Ohio
Discipline Group	Forestry
Practice Code/Name	666 - Forest Stand Improvement
Scenario ID	2
Scenario Name	Forest Stand Improvement - Medium
Scenario Description	All materials and labor required to manipulate species composition, stand structure and stocking on forestland. Medium forest stand improvement will: Reduce basal area by 30-40 square feet per acre (or) Cut and/or kill 200 - 400 trees per acre (or) Release 21 - 40 crop trees per acre and kill any vines growing on crop trees by an approved method such as "cut stump" with herbicide to prevent resprouting. Use a current and approved Forest Management Plan for estimated basal area to be removed, number of trees needing to be cut and/or killed, crop trees needing to be released, and/or vines needing killed.
Before Practice Situation	Forest stand is moderately overstocked and/or composed of an unacceptable level of undesirable species due to lack of forest management. This has negatively impacted forest health, productivity, and/or sustainability. Wildlife habitat, such as hard and soft mast production, browse, nesting cover, bedding areas, etc. is lacking.
After Practice Situation	After adjusting the stocking to an acceptable level, stand growth, condition, and overall quality is improved. In addition, wildlife habitat is improved with the resulting increase of sunlight reaching the forest floor.
Scenario Feature Measure	Area Treated
Scenario Unit	Acre
Scenario Typical Size	55

## Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$694.65	\$12.63
Equipment/Installation	\$2,042.86	\$37.14
Labor	\$4,320.78	\$78.56
Mobilization	\$60.96	\$1.11
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$7,119.25	\$129.44

## Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	937	Chainsaw	Equipment and power unit costs. Labor not included.	Hour	\$5.27	112	\$590.24
Materials	337	Herbicide, Picloram	A systemic herbicide used for general woody plant control. Product is typically used in these practices 314, 595, 666, and 645. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$12.63	55	\$694.65
Equipment/Installation	964	Chemical, spot treatment, single stem application	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	\$55.87	26	\$1,452.62
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	\$31.31	138	\$4,320.78
Mobilization	1141	Mobilization, Skilled labor	Mobilization of skilled labor: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$30.48	2	\$60.96

## Scenario Worksheet

## Practice and Scenario Description:

Information Type	Data
Region	Corn Belt
State	Ohio
Discipline Group	Forestry
Practice Code/Name	666 - Forest Stand Improvement
Scenario ID	1
Scenario Name	Forest Stand Improvement - Light
Scenario Description	All materials and labor required to manipulate species composition, stand structure and stocking on forestland. Light forest stand improvement will: Reduce basal area by 20 - 29 square feet per acre (or) Cut and/or kill 100 - 199 trees per acre (or) Release 10 - 20 crop trees per acre and/or kill any vines growing on crop trees by an approved method such as "cut stump" with herbicide to prevent resprouting. Use a current and approved Forest Management Plan for estimated basal area to be removed, number of trees needing to be cut and/or killed, crop trees needing to be released, and/or vines needing killed.
Before Practice Situation	Forest stand is slightly overstocked and/or composed of some undesirable species due to lack of forest management. This has negatively impacted forest health, productivity, and/or sustainability. Wildlife habitat, such as hard and soft mast production, browse, nesting cover, bedding areas, etc. is lacking.
After Practice Situation	After adjusting the stocking to an acceptable level, stand growth, condition, and overall quality is improved. In addition, wildlife habitat is improved with the resulting increase of sunlight reaching the forest floor.
Scenario Feature Measure	Area Treated
Scenario Unit	Acre
Scenario Typical Size	55

## Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$694.65	\$12.63
Equipment/Installation	\$1,591.70	\$28.94
Labor	\$3,444.10	\$62.62
Mobilization	\$60.96	\$1.11
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$5,791.41	\$105.30

## Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	937	Chainsaw	Equipment and power unit costs. Labor not included.	Hour	\$5.27	90	\$474.30
Materials	337	Herbicide, Picloram	A systemic herbicide used for general woody plant control. Product is typically used in these practices 314, 595, 666, and 645. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$12.63	55	\$694.65
Equipment/Installation	964	Chemical, spot treatment, single stem application	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	\$55.87	20	\$1,117.40
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	\$31.31	110	\$3,444.10
Mobilization	1141	Mobilization, Skilled labor	Mobilization of skilled labor: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$30.48	2	\$60.96

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Forestry
Practice Code/Name	666 - Forest Stand Improvement
Scenario ID	4
Scenario Name	Temporary Forest Openings (patch clearcuts)
Scenario Description	Creating 2 one acre patches in over-mature and/or degraded stands using hand tools such as chainsaws. Resource concerns include: Undesirable plant productivity and health, Inadequate structure and composition, and habitat degradation.
Before Practice Situation	The existing stand is overly mature and/or has been degraded in value by past harvesting practices. The level of acceptable growing stock is too low to justify managing this stand in its present condition. The present form, species composition and structure cannot meet the resource concerns and landowner objectives. Creating small openings by cutting all trees greater than 2" in diameter will foster the regeneration of high-value shade intolerant species. The work will be done with chainsaws.
After Practice Situation	A new, young stand of desirable species is established. In addition, early successional wildlife habitat as well as forest type diversity are created.
Scenario Feature Measure	Area treated
Scenario Unit	Acre
Scenario Typical Size	2

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$84.32	\$42.16
Labor	\$318.72	\$159.36
Mobilization	\$39.80	\$19.90
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$442.84</b>	<b>\$221.42</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	937	Chainsaw	Equipment and power unit costs. Labor not included.	Hour	\$5.27	16	\$84.32
Labor	231	General Labor	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	\$19.92	16	\$318.72
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.90	2	\$39.80

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	
Practice Code/Name	720 - Control Traffic Farming
Scenario ID	1
Scenario Name	25% or less Contolled Traffic
Scenario Description	This practice must be part of a conservation management system to: Improve soil health; Improve soil productivity; Improve water infiltration and reduce excessive runoff; And or reduce energy consumption. This practice payment considers the time needed to modify equipment, acquire the technical knowledge and skills necessary to effectively implement a controlled traffic farming system on a typical 200 cropland farm. Must utilizes RTK automatic steering technology for high load field traffic. Payment is based on the percentage of wheel traffic achieved. This scenario represents the costs associated with reducing the amount of surface area tracked to 25% or less. Cost represents typical situations for conventional, organic, and transitioning to organic producers.
Before Practice Situation	The typical scenario for this practice is a 200 acre row crop operation on high clay, poorly drained soils. Studies show that when high wheel load traffic is not contolled, up to 85% of the field is tracked causing significant long term compaction. Before the practice is installed traffic is uncontrolled tracking 85% of the field causing compaction, poor infiltration, and high runoff.
After Practice Situation	After the practice is installed, traffic is reduced to 25% of the field or less reducing compaction, increasing infiltration, and reducing runoff.
Scenario Feature Measure	Acre
Scenario Unit	Acre
Scenario Typical Size	200

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$3,800.00	\$19.00
Labor	\$8,303.62	\$41.52
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$771.26	\$3.86
Foregone Income	\$0.00	\$0.00
Total	\$12,874.88	\$64.37

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
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	\$75.06	55	\$4,128.30
Labor	231	General Labor	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	\$19.92	65	\$1,294.80
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	\$31.31	92	\$2,880.52
Acquisition of Technical Knowledge	294	Training, Workshops	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	\$116.67	3	\$350.01
Acquisition of Technical Knowledge	295	Lodging	Hotel Accommodations	Each	\$77.00	1	\$77.00
Acquisition of Technical Knowledge	296	Training, Registration Costs	Conference Registration Fees	Each	\$176.25	1	\$176.25
Acquisition of Technical Knowledge	297	Transportation	Mileage to attend a training conference, workshop, or TSP travel associated with developing Conservation Activity Plan.	Mile	\$0.56	300	\$168.00

## Scenario Worksheet

## Practice and Scenario Description:

Information Type	Data
Region	Corn Belt
State	Ohio
Discipline Group	
Practice Code/Name	720 - Control Traffic Farming
Scenario ID	2
Scenario Name	26% - 35% Controlled Traffic
Scenario Description	This practice must be part of a conservation management system to: Improve soil health; Improve soil productivity; Improve water infiltration and reduce excessive runoff; And or reduce energy consumption. This practice payment considers the time needed to modify equipment, acquire the technical knowledge and skills necessary to effectively implement a controlled traffic farming system on a typical 200 cropland farm. Must utilize RTK automatic steering technology for high load field traffic. Payment is based on the percentage of wheel traffic achieved. This scenario represents the costs associated with reducing the amount of surface area tracked to 26-35%. Cost represents typical situations for conventional, organic, and transitioning to organic producers.
Before Practice Situation	The typical scenario for this practice is a 200 acre row crop operation on high clay, poorly drained soils. Studies show that when high wheel load traffic is not controlled, up to 85% of the field is tracked causing significant long term compaction. Before the practice is installed traffic is uncontrolled tracking 85% of the field causing compaction, poor infiltration, and high runoff.
After Practice Situation	After the practice is installed, traffic is reduced to 26-35% of the field reducing compaction, increasing infiltration, and reducing runoff.
Scenario Feature Measure	
Scenario Unit	Acre
Scenario Typical Size	200

## Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$3,800.00	\$19.00
Labor	\$5,027.56	\$25.14
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$612.59	\$3.06
Foregone Income	\$0.00	\$0.00
Total	\$9,440.15	\$47.20

## Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
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	\$75.06	28	\$2,101.68
Labor	231	General Labor	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	\$19.92	40	\$796.80
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	\$31.31	68	\$2,129.08
Acquisition of Technical Knowledge	294	Training, Workshops	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	\$116.67	2	\$233.34
Acquisition of Technical Knowledge	295	Lodging	Hotel Accommodations	Each	\$77.00	1	\$77.00
Acquisition of Technical Knowledge	296	Training, Registration Costs	Conference Registration Fees	Each	\$176.25	1	\$176.25
Acquisition of Technical Knowledge	297	Transportation	Mileage to attend a training conference, workshop, or TSP travel associated with developing Conservation Activity Plan.	Mile	\$0.56	225	\$126.00

## Scenario Worksheet

## Practice and Scenario Description:

Information Type	Data
Region	Corn Belt
State	Ohio
Discipline Group	
Practice Code/Name	720 - Control Traffic Farming
Scenario ID	3
Scenario Name	36% - 50% Contolled Traffic
Scenario Description	This practice must be part of a conservation management system to: Improve soil health; Improve soil productivity; Improve water infiltration and reduce excessive runoff; And or reduce energy consumption. This practice payment considers the time needed to modify equipment, acquire the technical knowledge and skills necessary to effectively implement a controlled traffic farming system on a typical 200 cropland farm. Must utilizes RTK automatic steering technology for high load field traffic. Payment is based on the percentage of wheel traffic achieved. This scenario represents the costs associated with reducing the amount of surface area tracked to 36-50%. Cost represents typical situations for conventional, organic, and transitioning to organic producers.
Before Practice Situation	The typical scenario for this practice is a 200 acre row crop operation on high clay, poorly drained soils. Studies show that when high wheel load traffic is not contolled, up to 85% of the field is tracked causing significant long term compaction. Before the practice is installed traffic is uncontrolled tracking 85% of the field causing compaction, poor infiltration, and high runoff.
After Practice Situation	After the practice is installed, traffic is reduced to 36-50% of the field reducing compaction, increasing infiltration, and reducing runoff.
Scenario Feature Measure	
Scenario Unit	Acre
Scenario Typical Size	200

## Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$3,800.00	\$19.00
Labor	\$2,032.79	\$10.16
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$200.67	\$1.00
Foregone Income	\$0.00	\$0.00
Total	\$6,033.46	\$30.17

## Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
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	\$75.06	14	\$1,050.84
Labor	231	General Labor	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	\$19.92	10	\$199.20
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	\$31.31	25	\$782.75
Acquisition of Technical Knowledge	294	Training, Workshops	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	\$116.67	1	\$116.67
Acquisition of Technical Knowledge	297	Transportation	Mileage to attend a training conference, workshop, or TSP travel associated with developing Conservation Activity Plan.	Mile	\$0.56	150	\$84.00

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Corn Belt
State	Ohio
Discipline Group	Agronomy
Practice Code/Name	798 - Seasonal High Tunnel for Crops
Scenario ID	1
Scenario Name	Seasonal High Tunnel
Scenario Description	A manufactured frame of tubular steel (30 x 72 ft.) covered with 4-year 6mil plastic. Costs are based on purchase of manufactured kit and landowner installing the structure. Structure must be installed to manufacturer's specifications.
Before Practice Situation	Cropland where extension of the growing season is needed. Additional resource concerns that may need to be addressed include; soil erosion, soil condition, water quality, water quantity, plant condition, and energy use.
After Practice Situation	A seasonal high tunnel has been installed and the growing season has been extended for 1-4 months on average. Plant health and vigor is improved and there is decreased energy use by producing food locally.
Scenario Feature Measure	Area of Tunnel Installed
Scenario Unit	Square Foot
Scenario Typical Size	2160

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$6,177.60	\$2.86
Equipment/Installation	\$0.00	\$0.00
Labor	\$1,593.60	\$0.74
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$7,771.20</b>	<b>\$3.60</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1278	Hoop House, gothic style, base package	Includes heavy-duty, gothic framework complete with all predrilled steel, hardware and instructions. Includes 6 mil 4-year polyethylene film to cover tunnel, roll-up sides, lumber, and polylock for sides and ends for a gothic style (peaked top) hoop house. Materials and shipping only, does not include labor.	Square Foot	\$2.86	2160	\$6,177.60
Labor	231	General Labor	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	\$19.92	80	\$1,593.60