**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #9 - Design-CNMP Revision

**Scenario Description:**

A Comprehensive Nutrient Management Plan (CNMP) will be revised to address changes in manure management, volume or analysis, plants and crops, or plant and crop management or to adjust the nutrient balance on an Animal Feeding Operation (AFO). No modifications are required to engineered practices in the farmstead/production area. This scenario is where the services of a professional engineer are typically not required. The producer may export manure or organic products from the farm. The producer has an animal production area and land applies nutrients.

**Before Situation:**

The owner/operator of an AFO has an existing written Comprehensive Nutrient Management Plan (CNMP) that addresses the current required resource concerns and client objectives present on the facility production area and land application areas. The CNMP is out of date or does not meet current needs or objectives. Various levels of management and conservation implementation have changed on the operation. Soil tests, manure analyses, or changes in cropping system require that the nutrient balance be adjusted to bring the CNMP up to date.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additional applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,844.20

**Scenario Cost/Unit:** $4,844.20

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 40 | $4,326.00 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 5 | $518.20 |

**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #25 - Design- Livestock Operations greater than 300 AU without Land Application and Minimal Engineering

**Scenario Description:**

Animal Feeding Operation (AFO) currently greater than 300 animal units (AU). The producer exports (material transferred to another owner with written documentation of the transfer) manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). No State requirement for Professional Engineer.

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additional applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,929.80

**Scenario Cost/Unit:** $4,929.80

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 36 | $3,893.40 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 10 | $1,036.40 |

**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #41 - Design- Dairy less than 300 AU Land Application

**Scenario Description:**

Dairy Animal Feeding Operation (AFO) currently less than 300 animal units (AU) land application. The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Job sheets and implementation requirement documents found in State's eFOTG Section IV Conservation practices may be used. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102) or Conservation Plan that address the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $10,634.60

**Scenario Cost/Unit:** $10,634.60

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 60 | $6,489.00 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 40 | $4,145.60 |

**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #57 - Design- Dairy greater than 300 AU and less than 700 AU with Land Application

**Scenario Description:**

Dairy Animal Feeding Operation (AFO) currently greater than 300 animal units (AU) and less than 700 AU with land application. The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Job sheets and implementation requirement documents found in State's eFOTG Section IV Conservation practices may be used. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102) or Conservation Plan that address the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $11,283.50

**Scenario Cost/Unit:** $11,283.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 66 | $7,137.90 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 40 | $4,145.60 |

**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #73 - Design- Non Dairy Operation greater than 300 AU and less than 700 AU with Land Application

**Scenario Description:**

Animal Feeding Operation (AFO) currently greater than 300 animal units (AU) and less than 700 AU with land application. The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Job sheets and implementation requirement documents found in State's eFOTG Section IV Conservation practices may be used. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102) or Conservation Plan that address the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $10,652.64

**Scenario Cost/Unit:** $10,652.64

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 64 | $6,921.60 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 36 | $3,731.04 |

**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #89 - Design- Non Dairy Operation Less than 300 AU with Land Application

**Scenario Description:**

Animal Feeding Operation (AFO) currently less than 300 animal units (AU) with land application. The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Job sheets and implementation requirement documents found in State's eFOTG Section IV Conservation practices may be used. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102) or Conservation Plan that address the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,503.58

**Scenario Cost/Unit:** $9,503.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 62 | $6,705.30 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 27 | $2,798.28 |

**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #105 - Design- Non Dairy Operation greater 700 AU with Land Application

**Scenario Description:**

Animal Feeding Operation (AFO) currently greater than 700 animal units (AU) with land application. The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Job sheets and implementation requirement documents found in State's eFOTG Section IV Conservation practices may be used. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102) or Conservation Plan that address the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $12,779.56

**Scenario Cost/Unit:** $12,779.56

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 76 | $8,219.40 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 44 | $4,560.16 |

**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #121 - Design- Small Livestock Operations less than 300 AU without Land Application

**Scenario Description:**

Animal Feeding Operation (AFO) currently less than 300 animal units (AU). The producer exports (material transferred to another owner with written documentation of the transfer) the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,867.39

**Scenario Cost/Unit:** $6,867.39

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 29 | $3,136.35 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 36 | $3,731.04 |

**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #137 - Design- Livestock Operations greater than 300 AU without Land Application

**Scenario Description:**

Animal Feeding Operation (AFO) currently greater than 300 animal units (AU). The producer exports (material transferred to another owner with written documentation of the transfer) manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additional applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7,475.70

**Scenario Cost/Unit:** $7,475.70

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 26 | $2,811.90 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 45 | $4,663.80 |

**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #153 - Design- Small Livestock Operations greater than 300 AU with Land Application and Minimal Engineering

**Scenario Description:**

Animal Feeding Operation (AFO) currently greater than 300 animal units (AU) with land application and minimal engineering. The producer exports (material transferred to another owner with written documentation of the transfer) modest amounts of manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). State laws do not require a PE.

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,728.58

**Scenario Cost/Unit:** $8,728.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 74 | $8,003.10 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 7 | $725.48 |

**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #169 - Design- Small Livestock Operations less than 300 AU with Land Application and Minimal Engineering

**Scenario Description:**

Animal Feeding Operation (AFO) currently less than 300 animal units (AU) with land application and minimal engineering. The producer exports (material transferred to another owner with written documentation of the transfer) modest amounts of manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). State laws do not require a PE.

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,876.50

**Scenario Cost/Unit:** $6,876.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 54 | $5,840.10 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 10 | $1,036.40 |

**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #185 - Design- Livestock Operations less than or equal to 300 AU without Land Application and Minimal Engineering

**Scenario Description:**

Animal Feeding Operation (AFO) currently less than or equal to 300 animal units (AU) with land application and minimal engineering. The producer exports (material transferred to another owner with written documentation of the transfer) modest amount of manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). No State requirement for Professional Engineer.

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,660.20

**Scenario Cost/Unit:** $6,660.20

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 52 | $5,623.80 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 10 | $1,036.40 |

**Practice:** 101 - CNMP Design and Implementation Activity

**Scenario** #201 - Design- Dairy greater than or equal to 700 AU with Land Application

**Scenario Description:**

Dairy Animal Feeding Operation (AFO) currently greater than or equal to 700 animal units (AU) with land application. The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested.

**After Situation:**

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Job sheets and implementation requirement documents found in State's eFOTG Section IV Conservation practices may be used. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102) or Conservation Plan that address the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $12,572.28

**Scenario Cost/Unit:** $12,572.28

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 76 | $8,219.40 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 42 | $4,352.88 |

**Practice:** 102 - Comprehensive Nutrient Management Plan

**Scenario** #355 - Planning Dairy Greater than 300 AU, less than 700 AU with Land

**Scenario Description:**

Dairy Animal Feeding Operation (AFO) greater than 300 but less than 700 animal units (AU) animal units (AU). The producer utilizes manure or organic products from the farm or may export. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current or do not exist. Manure or Organic products are not frequently tested. The production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. The owner/operator of a Dairy AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Resource concerns on the AFO production area and land application areas remain to be addressed through the development of a complete CPA-CNMP.

**After Situation:**

Utilize a CNMP certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,401.00

**Scenario Cost/Unit:** $9,401.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 50 | $5,182.00 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 50 | $4,219.00 |

**Practice:** 102 - Comprehensive Nutrient Management Plan

**Scenario** #371 - Planning Dairy Less than 300 AU with Land

**Scenario Description:**

Dairy Animal Feeding Operation (AFO) currently is less than 300 animal units (AU). The producer utilizes manure or organic products from the farm or may export. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current or do not exist. Manure or Organic products are not frequently tested. The production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. The owner/operator of a Dairy AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Resource concerns on the AFO production area and land application areas remain to be addressed through the development of a complete CPA-CNMP.

**After Situation:**

Utilize a CNMP Certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7,942.70

**Scenario Cost/Unit:** $7,942.70

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 40 | $4,145.60 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 45 | $3,797.10 |

**Practice:** 102 - Comprehensive Nutrient Management Plan

**Scenario** #387 - Planning Livestock Greater than 300 AU, No-Land

**Scenario Description:**

Animal Feeding Operation (AFO) currently greater than 300 animal units (AU). The producer exports (material transferred to another owner with written documentation of the transfer) all manure or organic products from the farm. The operation has an animal production area only.

**Before Situation:**

Currently the production area does not meet NRCS quality criteria for water quality. Manure or Organic products are not frequently tested. The production area does not meet NRCS quality criteria for water quality and soil erosion. The owner/operator of a livestock AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Resource concerns on the AFO production area remain to be addressed through the development of a complete CPA-CNMP.

**After Situation:**

Utilize a CNMP certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and transfer of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the AFO production area. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7,002.60

**Scenario Cost/Unit:** $7,002.60

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 35 | $3,627.40 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 40 | $3,375.20 |

**Practice:** 102 - Comprehensive Nutrient Management Plan

**Scenario** #403 - Planning Livestock Less than 300 AU, No-Land

**Scenario Description:**

Animal Feeding Operation (AFO) currently less than 300 animal units (AU). The producer exports (material transferred to another owner with written documentation of the transfer) all manure or organic products from the farm. The operation has an animal production area only.

**Before Situation:**

Currently the production area does not meet NRCS quality criteria for water quality. Manure or Organic products are not frequently tested. The production area does not meet NRCS quality criteria for water quality and soil erosion. The owner/operator of a livestock AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Resource concerns on the AFO production area remain to be addressed through the development of a complete CPA-CNMP.

**After Situation:**

Utilize a CNMP certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and transfer of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the AFO production area. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,122.40

**Scenario Cost/Unit:** $5,122.40

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 25 | $2,591.00 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 30 | $2,531.40 |

**Practice:** 102 - Comprehensive Nutrient Management Plan

**Scenario** #419 - Planning Livestock Greater than 700 AU with Land

**Scenario Description:**

Animal Feeding Operation (AFO) currently is greater than 700 animal units (AU). The producer utilizes manure or organic products from the farm or may export. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current or do not exist. Manure or Organic products are not frequently tested. The production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. The owner/operator of a livestock AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Resource concerns on the AFO production area and land waste application areas remain to be addressed through the development of a complete CPA-CNMP.

**After Situation:**

Utilize a CNMP Certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $10,666.70

**Scenario Cost/Unit:** $10,666.70

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 50 | $5,182.00 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 65 | $5,484.70 |

**Practice:** 102 - Comprehensive Nutrient Management Plan

**Scenario** #435 - Planning Livestock Greater than 300 AU, less than 700 AU with Land

**Scenario Description:**

Animal Feeding Operation (AFO) currently is greater than 300 but less than 700 animal units (AU). The producer utilizes manure or organic products from the farm or may export. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current or do not exist. Manure or Organic products are not frequently tested. The production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. The owner/operator of a livestock AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Resource concerns on the AFO production area and land waste application areas remain to be addressed through the development of a complete CPA-CNMP.

**After Situation:**

Utilize a CNMP Certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,786.50

**Scenario Cost/Unit:** $8,786.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 40 | $4,145.60 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 55 | $4,640.90 |

**Practice:** 102 - Comprehensive Nutrient Management Plan

**Scenario** #451 - Planning Livestock Less than 300 AU with Land

**Scenario Description:**

Animal Feeding Operation (AFO) currently is less than 300 animal units (AU). The producer utilizes manure or organic products from the farm or may export. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current or do not exist. Manure or Organic products are not frequently tested. The production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. The owner/operator of a livestock AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Resource concerns on the AFO production area and land waste application areas remain to be addressed through the development of a complete CPA-CNMP.

**After Situation:**

Utilize a CNMP Certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP identifies the conservation practice solutions to all identified resource concerns on the AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,530.26

**Scenario Cost/Unit:** $6,530.26

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 28 | $2,901.92 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 43 | $3,628.34 |

**Practice:** 102 - Comprehensive Nutrient Management Plan

**Scenario** #467 - Planning Dairy Greater than 700 AU with Land

**Scenario Description:**

Dairy Animal Feeding Operation (AFO) greater than 700 animal units (AU). The producer utilizes manure or organic products from the farm or may export. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

**Before Situation:**

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current or do not exist. Manure or Organic products are not frequently tested. The production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. The owner/operator of a Dairy AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Resource concerns on the AFO production area and land application areas remain to be addressed through the development of a complete CPA-CNMP.

**After Situation:**

Utilize a CNMP certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $11,799.40

**Scenario Cost/Unit:** $11,799.40

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 65 | $6,736.60 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 60 | $5,062.80 |

**Practice:** 106 - Forest Management Plan

**Scenario** #74 - FMP Less Than or Equal to 20 acres

**Scenario Description:**

Nonindustrial Private Forest Land typically unmanaged or limited management activities. Typical site is approximately 1 to 20 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands without an existing forest management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan. A Forest Management Plan or Conservation Plan Activities (CPA), as defined by EQIP regulation, is needed to allow the producer to apply for financial assistance through EQIP or other programs to help implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Conservation Plan Activities (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Forest Management CPA is not considered a Forest Harvest Plan, but should complement the needs for harvest if desired by the land user. Additional CPA plan criteria is detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,596.00

**Scenario Cost/Unit:** $1,596.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 19 | $1,596.00 |

**Practice:** 106 - Forest Management Plan

**Scenario** #75 - FMP 21 to 100 acres

**Scenario Description:**

Nonindustrial Private Forest Land typically unmanaged or limited management activities. Typical site is approximately 21 to 100 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands without an existing forest management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan. A Forest Management Plan or Conservation Plan Activities (CPA), as defined by EQIP regulation, is needed to allow the producer to apply for financial assistance through EQIP or other programs to help implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Conservation Plan Activities (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Forest Management CPA is not considered a Forest Harvest Plan, but should complement the needs for harvest if desired by the land user. Additional CPA plan criteria is detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,352.00

**Scenario Cost/Unit:** $2,352.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 28 | $2,352.00 |

**Practice:** 106 - Forest Management Plan

**Scenario** #76 - FMP 101 to 250 acres

**Scenario Description:**

Nonindustrial Private Forest Land typically unmanaged or limited management activities. Typical site is approximately 101 to 250 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands without an existing forest management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan. A Forest Management Plan or Conservation Plan Activities (CPA), as defined by EQIP regulation, is needed to allow the producer to apply for financial assistance through EQIP or other programs to help implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Conservation Plan Activities (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Forest Management CPA is not considered a Forest Harvest Plan, but should complement the needs for harvest if desired by the land user. Additional CPA plan criteria is detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,864.00

**Scenario Cost/Unit:** $3,864.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 46 | $3,864.00 |

**Practice:** 106 - Forest Management Plan

**Scenario** #77 - FMP Greater Than 1000 acres

**Scenario Description:**

Nonindustrial Private Forest Land typically unmanaged or limited management activities. Typical site is approximately 1001 acres or greater in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands without an existing forest management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan. A Forest Management Plan or Conservation Plan Activities (CPA), as defined by EQIP regulation, is needed to allow the producer to apply for financial assistance through EQIP or other programs to help implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Conservation Plan Activities (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Forest Management CPA is not considered a Forest Harvest Plan, but should complement the needs for harvest if desired by the land user. Additional CPA plan criteria is detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,072.00

**Scenario Cost/Unit:** $9,072.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 108 | $9,072.00 |

**Practice:** 106 - Forest Management Plan

**Scenario** #78 - FMP 501 to 1000 acres

**Scenario Description:**

Nonindustrial Private Forest Land typically unmanaged or limited management activities. Typical site is approximately 501 to 1000 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands without an existing forest management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan. A Forest Management Plan or Conservation Plan Activities (CPA), as defined by EQIP regulation, is needed to allow the producer to apply for financial assistance through EQIP or other programs to help implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Conservation Plan Activities (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Forest Management CPA is not considered a Forest Harvest Plan, but should complement the needs for harvest if desired by the land user. Additional CPA plan criteria is detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,972.00

**Scenario Cost/Unit:** $6,972.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 83 | $6,972.00 |

**Practice:** 106 - Forest Management Plan

**Scenario** #79 - FMP 251 to 500 acres

**Scenario Description:**

Nonindustrial Private Forest Land typically unmanaged or limited management activities. Typical site is approximately 251 to 500 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands without an existing forest management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan. A Forest Management Plan or Conservation Plan Activities (CPA), as defined by EQIP regulation, is needed to allow the producer to apply for financial assistance through EQIP or other programs to help implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Conservation Activity Plan (CPA). The CPA requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Forest Management CPA is not considered a Forest Harvest Plan, but should complement the needs for harvest if desired by the land user. Additional CPA plan requirements are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,712.00

**Scenario Cost/Unit:** $5,712.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 68 | $5,712.00 |

**Practice:** 110 - Grazing Management Plan

**Scenario** #75 - Conservation Plan for Grazed Lands 101 to 500 acres

**Scenario Description:**

Site specific conservation plan for grazed lands for an agricultural operation with 101 to 500 acres grazed land. Natural Resource Concern: Soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

**Before Situation:**

Producer has no plan or limited knowledge of management of livestock or other animals on grazed land resources. The producer currently manages animals without a plan to address identified natural resource concerns. Producer is interested in management of animals to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan and idenify problems and opportunities, determine objectives, inventory resources, analyze resource data, formulate alternatives, evaluate alternatives, and make decisions to meet objectives.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Conservation Planning Activity (CPA) plan for grazing lands. The CPA requires the plan to meet the General Requirements (steps 1-7) of the planning process. Step 1- Identify Problems and Opportunities, Step 2- Determine Objectives, Step 3-Inventory Resources, Step 4-Analyze Resource Data, Step 5-Formulate Alternatives, Step 6-Evaluate Alternatives, and Step 7-Make Decisions (Select Preferrred Alternative).

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,068.40

**Scenario Cost/Unit:** $3,068.40

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, range conservation | 1299 | Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price). | Hours | $102.28 | 30 | $3,068.40 |

**Practice:** 110 - Grazing Management Plan

**Scenario** #91 - Conservation Plan for Grazed Lands <100 acres.

**Scenario Description:**

Site specific conservation plan for agricultural operation with less than 100 acres grazed land. The plan will address the following natural resource concerns: soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

**Before Situation:**

Producer has no plan or limited knowledge of management of livestock or other animals on grazed land resources. The producer currently manages animals without a plan to address identified natural resource concerns. Producer is interested in management of animals to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan and identify problems and opportunities, determine objectives, inventory resources, analyze resource data, formulate alternatives, evaluate alternatives, and make decisions to meet objectives.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Conservation Planning Activity (CPA) plan for grazing lands. The CPA requires the plan to meet the General Requirements (steps 1-7) of the planning process. Step 1- Identify Problems and Opportunities, Step 2- Determine Objectives, Step 3-Inventory Resources, Step 4-Analyze Resource Data, Step 5-Formulate Alternatives, Step 6-Evaluate Alternatives, and Step 7-Make Decisions (Select Preferred Alternative). The plan may include recommendations for associated conservation practices which address other related resource concerns. The CPA meets the basic quality criteria for the CPA 110 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,454.72

**Scenario Cost/Unit:** $2,454.72

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, range conservation | 1299 | Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price). | Hours | $102.28 | 24 | $2,454.72 |

**Practice:** 110 - Grazing Management Plan

**Scenario** #107 - Conservation Plan for Grazed Lands 501 to 1,500 acres

**Scenario Description:**

Site specific conservation plan for grazed lands for an agricultural operation with 501 to 1,500 acres of grazed land. The plan will address the following natural resource concerns: soil erosion, water quality, fish and wildlife, plant condition and all other appropriate resource concerns.

**Before Situation:**

Producer has no plan or limited knowledge of management of livestock or other animals on grazed land resources. The producer currently manages animals without a plan to address identified natural resource concerns. Producer is interested in management of animals to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan and idenify problems and opportunities, determine objectives, inventory resources, analyze resource data, formulate alternatives, evaluate alternatives, and make decisions to meet objectives.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Conservation Planning Activity (CPA) plan for grazing lands. The CPA requires the plan to meet the General Requirements (steps 1-7) of the planning process. Step 1- Identify Problems and Opportunities, Step 2- Determine Objectives, Step 3-Inventory Resources, Step 4-Analyze Resource Data, Step 5-Formulate Alternatives, Step 6-Evaluate Alternatives, and Step 7-Make Decisions (Select Preferrred Alternative). The plan may include recommendations for associated conservation practices which address other related resource concerns. The CPA meets the basic quality criteria for the CPA 110 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,682.08

**Scenario Cost/Unit:** $3,682.08

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, range conservation | 1299 | Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price). | Hours | $102.28 | 36 | $3,682.08 |

**Practice:** 110 - Grazing Management Plan

**Scenario** #123 - Conservation Plan for Grazed Lands 1,501 to 5,000 acres

**Scenario Description:**

Site specific conservation plan for grazed lands for an agricultural operation with 1,501 to 5,000 acres grazed land. The following natural resource concerns will be addressed: soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

**Before Situation:**

Producer has no plan or limited knowledge of management of livestock or other animals on grazed land resources. The producer currently manages animals without a plan to address identified natural resource concerns. Producer is interested in management of animals to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan and idenify problems and opportunities, determine objectives, inventory resources, analyze resource data, formulate alternatives, evaluate alternatives, and make decisions to meet objectives.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Conservation Planning Activity (CPA) plan for grazing lands. The CPA requires the plan to meet the General Requirements (steps 1-7) of the planning process. Step 1- Identify Problems and Opportunities, Step 2- Determine Objectives, Step 3-Inventory Resources, Step 4-Analyze Resource Data, Step 5-Formulate Alternatives, Step 6-Evaluate Alternatives, and Step 7-Make Decisions (Select Preferrred Alternative). The plan may include recommendations for associated conservation practices which address other related resource concerns. The CPA meets the basic quality criteria for the CPA 110 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,295.76

**Scenario Cost/Unit:** $4,295.76

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, range conservation | 1299 | Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price). | Hours | $102.28 | 42 | $4,295.76 |

**Practice:** 110 - Grazing Management Plan

**Scenario** #139 - Conservation Plan for Grazed Lands 5,001 to 10,000 acres

**Scenario Description:**

Site specific conservation plan for grazed lands for an agricultural operation with 5,001 to 10,000 acres grazed land. The following natural resource concerns will be addressed: soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

**Before Situation:**

Producer has no plan or limited knowledge of management of livestock or other animals on grazed land resources. The producer currently manages animals without a plan to address identified natural resource concerns. Producer is interested in management of animals to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan and idenify problems and opportunities, determine objectives, inventory resources, analyze resource data, formulate alternatives, evaluate alternatives, and make decisions to meet objectives.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Conservation Planning Activity (CPA) plan for grazing lands. The CPA requires the plan to meet the General Requirements (steps 1-7) of the planning process. Step 1- Identify Problems and Opportunities, Step 2- Determine Objectives, Step 3-Inventory Resources, Step 4-Analyze Resource Data, Step 5-Formulate Alternatives, Step 6-Evaluate Alternatives, and Step 7-Make Decisions (Select Preferrred Alternative). The plan may include recommendations for associated conservation practices which address other related resource concerns. The CPA meets the basic quality criteria for the CPA 110 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,909.44

**Scenario Cost/Unit:** $4,909.44

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, range conservation | 1299 | Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price). | Hours | $102.28 | 48 | $4,909.44 |

**Practice:** 110 - Grazing Management Plan

**Scenario** #155 - Conservation Plan for Grazed Lands >10,000 acres

**Scenario Description:**

Site specific conservation plan for grazed lands for an agricultural operation with greater than 10,000 acres grazed land. The following natural resource concerns will be addressed: soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

**Before Situation:**

Producer has no plan or limited knowledge of management of livestock or other animals on grazed land resources. The producer currently manages animals without a plan to address identified natural resource concerns. Producer is interested in management of animals to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan and identify problems and opportunities, determine objectives, inventory resources, analyze resource data, formulate alternatives, evaluate alternatives, and make decisions to meet objectives.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Conservation Planning Activity (CPA) plan for grazing lands. The CPA requires the plan to meet the General Requirements (steps 1-7) of the planning process. Step 1- Identify Problems and Opportunities, Step 2- Determine Objectives, Step 3-Inventory Resources, Step 4-Analyze Resource Data, Step 5-Formulate Alternatives, Step 6-Evaluate Alternatives, and Step 7-Make Decisions (Select Preferred Alternative). The plan may include recommendations for associated conservation practices which address other related resource concerns. The CPA meets the basic quality criteria for the CPA 110 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,523.12

**Scenario Cost/Unit:** $5,523.12

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, range conservation | 1299 | Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price). | Hours | $102.28 | 54 | $5,523.12 |

**Practice:** 116 - Soil Health Management Plan

**Scenario** #89 - Organic Crops + Livestock, <5

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for organic crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,868.92

**Scenario Cost/Unit:** $2,868.92

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 34 | $2,868.92 |

**Practice:** 116 - Soil Health Management Plan

**Scenario** #105 - Organic Crops, 5 or more

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for 5 or more Soil Health Management Units (SHMU) for organic crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,700.16

**Scenario Cost/Unit:** $2,700.16

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 32 | $2,700.16 |

**Practice:** 116 - Soil Health Management Plan

**Scenario** #121 - Small Farm

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for a small farm (<10 acres).

**Before Situation:**

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,687.60

**Scenario Cost/Unit:** $1,687.60

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 20 | $1,687.60 |

**Practice:** 116 - Soil Health Management Plan

**Scenario** #137 - Organic Crops + Livestock, 5 or more

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for 5 or more Soil Health Management Units (SHMU) for organic crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,037.68

**Scenario Cost/Unit:** $3,037.68

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 36 | $3,037.68 |

**Practice:** 116 - Soil Health Management Plan

**Scenario** #153 - Crops+Livestock, 5 or more

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for 5 or more Soil Health Management Units (SHMU) for crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,531.40

**Scenario Cost/Unit:** $2,531.40

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 30 | $2,531.40 |

**Practice:** 116 - Soil Health Management Plan

**Scenario** #169 - Crops+Livestock, <5

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,025.12

**Scenario Cost/Unit:** $2,025.12

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 24 | $2,025.12 |

**Practice:** 116 - Soil Health Management Plan

**Scenario** #185 - Organic Crops, <5

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for organic crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,193.88

**Scenario Cost/Unit:** $2,193.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 26 | $2,193.88 |

**Practice:** 116 - Soil Health Management Plan

**Scenario** #201 - Crops, 5 or more

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for 5 or more Soil Health Management Units (SHMU) for crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,362.64

**Scenario Cost/Unit:** $2,362.64

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 28 | $2,362.64 |

**Practice:** 116 - Soil Health Management Plan

**Scenario** #217 - Crops, <5

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,856.36

**Scenario Cost/Unit:** $1,856.36

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 22 | $1,856.36 |

**Practice:** 120 - Agricultural Energy Design

**Scenario** #9 - High Complexity, 6+ Designs

**Scenario Description:**

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for retrofits that impose several variables in the design process. The scenarios may involve a change in service levels that cannot be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a "High Complexity" system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 30% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to two or more of the electrical, mechanical, plumbing, or structural systems. 4) Complex analysis to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a detailed simulation is required to determine systems sizing and layout.) "High Complexity" practice scenarios include but are not limited to: comprehensive lighting system redesign; radiant heating systems; convert to tunnel ventilation; or convert to bench heating. Each "Design" indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than five practices are contracted, then, at a minimum, "6+ Designs" shall be contracted for the Ag Energy DIA. Use this scenario if at least one design is deemed high complexity. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client's final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client's decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $10,762.74

**Scenario Cost/Unit:** $10,762.74

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 78 | $8,083.92 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 15 | $757.50 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 6 | $198.12 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 24 | $1,723.20 |

**Practice:** 120 - Agricultural Energy Design

**Scenario** #25 - Medium Complexity, 6+ Designs

**Scenario Description:**

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for retrofits that impose some variables in the design process. The scenarios may involve a change in service levels that can be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “Medium Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 10% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to either electrical, mechanical, plumbing, or structural systems. 4) Analysis beyond the scope of NRCS methodology to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a simplified heat transfer model to determine heating, ventilation, and cooling loads may be required if existing device capacity cannot be estimated.) “Medium Complexity” practice scenarios include but are not limited to: change of lighting fixture counts or layout; wall insulation; grain dryers; add reverse osmosis to syrup production; or add evaporative cooling systems (cooling cells). Each “Design” indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than five practices are contracted, then, at a minimum, “6+ Designs” shall be contracted for the Ag Energy DIA. If at least 1 scenario is more complex than indicated herein, use an alternate scenario for contracting. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,291.94

**Scenario Cost/Unit:** $9,291.94

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 66 | $6,840.24 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 14 | $707.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 5 | $165.10 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 22 | $1,579.60 |

**Practice:** 120 - Agricultural Energy Design

**Scenario** #41 - Low Complexity, 6+ Designs

**Scenario Description:**

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for one-to-one device retrofits. The scenario(s) may provide for a new component to modify the operation of an existing device (e.g., timer to reduce run-time). Three factors typically indicate a "Low Complexity" system, as follows. 1) New devices maintain output (hp, Btu/hr, lux, etc.) of the old devices within a roughly 10% range. 2) New devices are installed in the same location as the old devices. 3) The retrofit does not require substantive changes to electrical, mechanical, plumbing, or structural systems. "Low Complexity" practice scenarios include but are not limited to: lamp or fixture upgrades; attic insulation; fans; or washer-extractors. Each "Design" indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than five practices are contracted, then, at a minimum, "6+ Designs" shall be contracted for the Ag Energy DIA. If at least 1 scenario is more complex than indicated herein, use an alternate scenario for contracting. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client's final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client's decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7,821.14

**Scenario Cost/Unit:** $7,821.14

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 54 | $5,596.56 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 13 | $656.50 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 4 | $132.08 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 20 | $1,436.00 |

**Practice:** 120 - Agricultural Energy Design

**Scenario** #57 - High Complexity, 4-5 Designs

**Scenario Description:**

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for retrofits that impose several variables in the design process. The scenarios may involve a change in service levels that cannot be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a "High Complexity" system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 30% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to two or more of the electrical, mechanical, plumbing, or structural systems. 4) Complex analysis to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a detailed simulation is required to determine systems sizing and layout.) "High Complexity" practice scenarios include but are not limited to: comprehensive lighting system redesign; radiant heating systems; convert to tunnel ventilation; or convert to bench heating. Each "Design" indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than three practices are contracted, then, at a minimum, "4-5 Designs" shall be contracted for the Ag Energy DIA. Use this scenario if at least one design is deemed high complexity. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client's final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client's decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,148.34

**Scenario Cost/Unit:** $9,148.34

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 66 | $6,840.24 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 14 | $707.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 5 | $165.10 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 20 | $1,436.00 |

**Practice:** 120 - Agricultural Energy Design

**Scenario** #73 - Medium Complexity, 4-5 Designs

**Scenario Description:**

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for retrofits that impose some variables in the design process. The scenarios may involve a change in service levels that can be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “Medium Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 10% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to either electrical, mechanical, plumbing, or structural systems. 4) Analysis beyond the scope of NRCS methodology to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a simplified heat transfer model to determine heating, ventilation, and cooling loads may be required if existing device capacity cannot be estimated.) “Medium Complexity” practice scenarios include but are not limited to: change of lighting fixture counts or layout; wall insulation; grain dryers; add reverse osmosis to syrup production; or add evaporative cooling systems (cooling cells). Each “Design” indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than three practices are contracted, then, at a minimum, “4-5 Designs” shall be contracted for the Ag Energy DIA. If at least 1 scenario is more complex than indicated herein, use an alternate scenario for contracting. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7,677.54

**Scenario Cost/Unit:** $7,677.54

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 54 | $5,596.56 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 13 | $656.50 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 4 | $132.08 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 18 | $1,292.40 |

**Practice:** 120 - Agricultural Energy Design

**Scenario** #89 - Low Complexity, 4-5 Designs

**Scenario Description:**

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for one-to-one device retrofits. The scenario(s) may provide for a new component to modify the operation of an existing device (e.g., timer to reduce run-time). Three factors typically indicate a "Low Complexity" system, as follows. 1) New devices maintain output (hp, Btu/hr, lux, etc.) of the old devices within a roughly 10% range. 2) New devices are installed in the same location as the old devices. 3) The retrofit does not require substantive changes to electrical, mechanical, plumbing, or structural systems. "Low Complexity" practice scenarios include but are not limited to: lamp or fixture upgrades; attic insulation; fans; or washer-extractors. Each "Design" indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than three practices are contracted, then, at a minimum, "4-5 Designs" shall be contracted for the Ag Energy DIA. If at least 1 scenario is more complex than indicated herein, use an alternate scenario for contracting. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client's final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client's decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,206.74

**Scenario Cost/Unit:** $6,206.74

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 42 | $4,352.88 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 12 | $606.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 16 | $1,148.80 |

**Practice:** 120 - Agricultural Energy Design

**Scenario** #105 - High Complexity, 2-3 Designs

**Scenario Description:**

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for retrofits that impose several variables in the design process. The scenarios may involve a change in service levels that cannot be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a "High Complexity" system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 30% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to two or more of the electrical, mechanical, plumbing, or structural systems. 4) Complex analysis to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a detailed simulation is required to determine systems sizing and layout.) "High Complexity" practice scenarios include but are not limited to: comprehensive lighting system redesign; radiant heating systems; convert to tunnel ventilation; or convert to bench heating. Each "Design" indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than one practice is contracted, then, at a minimum, "2-3 Designs" shall be contracted for the Ag Energy DIA. Use this scenario if at least one design is deemed high complexity. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client's final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client's decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7,533.94

**Scenario Cost/Unit:** $7,533.94

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 54 | $5,596.56 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 13 | $656.50 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 4 | $132.08 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 16 | $1,148.80 |

**Practice:** 120 - Agricultural Energy Design

**Scenario** #121 - Medium Complexity, 2-3 Designs

**Scenario Description:**

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for retrofits that impose some variables in the design process. The scenarios may involve a change in service levels that can be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “Medium Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 10% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to either electrical, mechanical, plumbing, or structural systems. 4) Analysis beyond the scope of NRCS methodology to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a simplified heat transfer model to determine heating, ventilation, and cooling loads may be required if existing device capacity cannot be estimated.) “Medium Complexity” practice scenarios include but are not limited to: change of lighting fixture counts or layout; wall insulation; grain dryers; add reverse osmosis to syrup production; or add evaporative cooling systems (cooling cells). Each “Design” indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than one practice is contracted, then, at a minimum, “2-3 Designs” shall be contracted for theAg Energy DIA. If at least 1 scenario is more complex than indicated herein, use an alternate scenario for contracting. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,063.14

**Scenario Cost/Unit:** $6,063.14

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 42 | $4,352.88 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 12 | $606.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 14 | $1,005.20 |

**Practice:** 120 - Agricultural Energy Design

**Scenario** #137 - Low Complexity, 2-3 Designs

**Scenario Description:**

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for one-to-one device retrofits. The scenario(s) may provide for a new component to modify the operation of an existing device (e.g., timer to reduce run-time). Three factors typically indicate a "Low Complexity" system, as follows. 1) New devices maintain output (hp, Btu/hr, lux, etc.) of the old devices within a roughly 10% range. 2) New devices are installed in the same location as the old devices. 3) The retrofit does not require substantive changes to electrical, mechanical, plumbing, or structural systems. "Low Complexity" practice scenarios include but are not limited to: lamp or fixture upgrades; attic insulation; fans; or washer-extractors. Each "Design" indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than one practice is contracted, then, at a minimum, "2-3 Designs" shall be contracted for the Ag Energy DIA. If at least 1 scenario is more complex than indicated herein, use an alternate scenario for contracting. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client's final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client's decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,592.34

**Scenario Cost/Unit:** $4,592.34

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 30 | $3,109.20 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 11 | $555.50 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 2 | $66.04 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 12 | $861.60 |

**Practice:** 120 - Agricultural Energy Design

**Scenario** #153 - High Complexity, 1 Design

**Scenario Description:**

An agricultural producer wishes to conserve energy through an EQIP contract with at least one (1) energy practice scenario. Associated scenario(s) provide for retrofits that impose several variables in the design process. The scenarios may involve a change in service levels that cannot be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “High Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 30% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to two or more of the electrical, mechanical, plumbing, or structural systems. 4) Complex analysis to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a detailed simulation is required to determine systems sizing and layout.) “High Complexity” practice scenarios include but are not limited to: comprehensive lighting system redesign; radiant heating systems; convert to tunnel ventilation; or convert to bench heating. “One Design” indicates that each new device or component is closely related to other devices or components even if numerous scenarios are contracted. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,919.54

**Scenario Cost/Unit:** $5,919.54

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 42 | $4,352.88 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 12 | $606.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 12 | $861.60 |

**Practice:** 120 - Agricultural Energy Design

**Scenario** #169 - Medium Complexity, 1 Design

**Scenario Description:**

An agricultural producer wishes to conserve energy through an EQIP contract with at least one (1) energy practice scenario. Associated scenario(s) provide for retrofits that impose some variables in the design process. The scenarios may involve a change in service levels that can be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “Medium Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 10% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to either electrical, mechanical, plumbing, or structural systems. 4) Analysis beyond the scope of NRCS methodology to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a simplified heat transfer model to determine heating, ventilation, and cooling loads may be required if existing device capacity cannot be estimated.) “Medium Complexity” practice scenarios include but are not limited to: change of lighting fixture counts or layout; wall insulation; grain dryers; add reverse osmosis to syrup production; or add evaporative cooling systems (cooling cells). “One Design” indicates that each new device or component is closely related to other devices or components even if numerous scenarios are contracted. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,448.74

**Scenario Cost/Unit:** $4,448.74

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 30 | $3,109.20 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 11 | $555.50 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 2 | $66.04 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 10 | $718.00 |

**Practice:** 120 - Agricultural Energy Design

**Scenario** #185 - Low Complexity, 1 Design

**Scenario Description:**

An agricultural producer wishes to conserve energy through an EQIP contract with at least one (1) energy practice scenario. Associated scenario(s) provide for one-to-one device retrofits. The scenario(s) may provide for a new component to modify the operation of an existing device (e.g., timer to reduce run-time). Three factors typically indicate a "Low Complexity" system, as follows. 1) New devices maintain output (hp, Btu/hr, lux, etc.) of the old devices within a roughly 10% range. 2) New devices are installed in the same location as the old devices. 3) The retrofit does not require substantive changes to electrical, mechanical, plumbing, or structural systems. "Low Complexity" practice scenarios include but are not limited to: lamp or fixture upgrades; attic insulation; fans; or washer-extractors. "One Design" indicates that each new device or component is closely related to other devices or components even if numerous scenarios are contracted. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client's final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client's decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,977.94

**Scenario Cost/Unit:** $2,977.94

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 18 | $1,865.52 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 10 | $505.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 1 | $33.02 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 8 | $574.40 |

**Practice:** 138 - Conservation Plan Supporting Organic Transition

**Scenario** #24 - Conservation Plan Supporting Organic Transition CAP Crops and Livestock

**Scenario Description:**

Agricultural operation where producer will transition from conventional to organic to meet USDA National Organic Program (NOP) requirements. Natural Resource Concern: Soil Erosion, Water Quality, Plant Condition, and other identified natural resource concerns.

**Before Situation:**

Agricultural operation currently managed using traditional and conventional methods for farming and/or ranching mixed operation of crops and livestock. The producer currently manages the operation based upon personal knowledge, or other local criteria. The producer is interested in transitioning part or all of the management unit to meet national USDA requirements for a certified operation. The producer is willing to collaborate with a certified TSP to develop a plan and collect/coordinate data recording to monitor per requirements of plan. Associated Practices: Refer to the NRCS Plan Criteria for conservation practices associated with operations transitioning to organic certification and typically needed to address identified natural resource concerns.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP to develop the Conservation Plan Supporting Organic Transition Conservation Activity Plan (CAP) The CAP criteria requires the plan to meet quality criteria for applicable resource concerns and provides for opportunities to implement a system of conservation practices which assist the producer to transition from conventional farming or ranching to an organic production system with crops and livestock. The CAP plan will include conservation practices which address related resource concerns. The CAP meets the basic quality criteria for the 138 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,328.50

**Scenario Cost/Unit:** $6,328.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 75 | $6,328.50 |

**Practice:** 138 - Conservation Plan Supporting Organic Transition

**Scenario** #25 - Conservation Plan Supporting Organic Transition CAP Crops or Livestock

**Scenario Description:**

Agricultural operation where producer will transition from conventional to organic to meet USDA National Organic Program (NOP) requirements. Natural Resource Concern: Soil Erosion, Water Quality, Plant Condition, and other identified natural resource concerns.

**Before Situation:**

Agricultural operation currently managed using traditional and conventional methods for farming with only crops. The producer currently manages the operation based upon personal knowledge, or other local criteria. The producer is interested in transitioning part or all of the management unit to meet national USDA requirements for certified operation. The producer is willing to collaborate with a certified TSP to develop a plan and collect/coordinate data recording to monitor per requirements of plan. Associated Practices: Refer to the NRCS Plan Criteria for conservation practices associated with operations transitioning to organic certification and typically needed to address identified natural resource concerns.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP to develop the Conservation Plan Supporting Organic Transition Conservation Activity Plan (CAP) The CAP criteria requires the plan to meet quality criteria for applicable resource concerns and provides for opportunities to implement a system of conservation practices which assist the producer to transition from conventional farming or ranching to an organic production system with crops and livestock. The CAP plan will include conservation practices which address related resource concerns. The CAP meets the basic quality criteria for the 138 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,400.32

**Scenario Cost/Unit:** $5,400.32

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 64 | $5,400.32 |

**Practice:** 138 - Conservation Plan Supporting Organic Transition

**Scenario** #41 - Transition to Organic- Crop, Low Complexity

**Scenario Description:**

A site specific conservation plan that contains planned conservation treatment activities for resource concerns resulting from the transition of conventional to organic production systems. At a minimum two alternatives will be developed. The first will be a no-action alternative in which current management activities are assumed to continue. The second will be an action alternative identifying a conservation practice or a system of conservation practices and management activities to address CPA identified resource concern(s). Additional action alternatives may be developed to identify different ways of achieving client objectives.

**Before Situation:**

Current crops and rotation, farming practices (tillage, nutrient application methods, timing, source, and rate), soils, and equipment and technology utilized are not considered as Organic. The producer objectives are to become organic. The effect of changes to the current cropping system are not known and new resource concerns may emerge.

**After Situation:**

When evaluating conservation practice effects, the short term and long term effect on natural resources and the applicability and effect on special environmental concerns identified in Step-3 (Resource Inventory) must be documented. Include recommendations that will avoid or mitigate any adverse effects on soil, water, air, plants, animals (including livestock, fish, and wildlife), energy, or human concerns; as well as on special environmental concerns. The Organic System Plan Template supplements are completed as part of NRCS Conservation Planning Activity (CPA) 138 that helps farmers who are interested in transitioning from conventional farming practices to organic production by addressing the natural resource concerns on their operation.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,484.70

**Scenario Cost/Unit:** $5,484.70

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 65 | $5,484.70 |

**Practice:** 138 - Conservation Plan Supporting Organic Transition

**Scenario** #57 - Transition to Organic- Crop, High Complexity

**Scenario Description:**

A site specific conservation plan that contains planned conservation treatment activities for resource concerns resulting from the transition of conventional to organic production systems. Crop production system is more complex based on site features, large acreage, specialty crops, irrigation, orchard and vineyards. At a minimum two alternatives will be developed. The first will be a no-action alternative in which current management activities are assumed to continue. The second will be an action alternative identifying a conservation practice or a system of conservation practices and management activities to address CPA identified resource concern(s). Additional action alternatives may be developed to identify different ways of achieving client objectives.

**Before Situation:**

Current crops and rotation, farming practices (tillage, nutrient application methods, timing, source, and rate), soils, and equipment and technology utilized are not considered as Organic. The producer objectives are to become organic. The effect of changes to the current cropping system are not known and new resource concerns may emerge.

**After Situation:**

When evaluating conservation practice effects, the short term and long term effect on natural resources and the applicability and effect on special environmental concerns identified in Step-3 (Resource Inventory) must be documented. Include recommendations that will avoid or mitigate any adverse effects on soil, water, air, plants, animals (including livestock, fish, and wildlife), energy, or human concerns; as well as on special environmental concerns. The Organic System Plan Template supplements are completed as part of NRCS Conservation Planning Activity (CPA) 138 that helps farmers who are interested in transitioning from conventional farming practices to organic production by addressing the natural resource concerns on their operation.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,328.50

**Scenario Cost/Unit:** $6,328.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 75 | $6,328.50 |

**Practice:** 138 - Conservation Plan Supporting Organic Transition

**Scenario** #73 - Transition to Organic-Livestock, Low Complexity

**Scenario Description:**

A site specific conservation plan that contains planned conservation treatment activities for resource concerns resulting from the transition of conventional to organic livestock systems. At a minimum two alternatives will be developed. The first will be a no-action alternative in which current management activities are assumed to continue. The second will be an action alternative identifying a conservation practice or a system of conservation practices and management activities to address CPA identified resource concern(s). Additional action alternatives may be developed to identify different ways of achieving client objectives.

**Before Situation:**

Current livestock production, housing, feed, equipment and technology utilized are not considered as Organic. The producer objectives are to become organic. The effect of changes to the current system are not known and new resource concerns may emerge.

**After Situation:**

When evaluating conservation practice effects, the short term and long term effect on natural resources and the applicability and effect on special environmental concerns identified in Step-3 (Resource Inventory) must be documented. Include recommendations that will avoid or mitigate any adverse effects on soil, water, air, plants, animals (including livestock, fish, and wildlife), energy, or human concerns; as well as on special environmental concerns. The Organic System Plan Template supplements are completed as part of NRCS Conservation Planning Activity (CPA) 138 that helps farmers who are interested in transitioning from conventional farming practices to organic production by addressing the natural resource concerns on their operation.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,906.60

**Scenario Cost/Unit:** $5,906.60

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 70 | $5,906.60 |

**Practice:** 138 - Conservation Plan Supporting Organic Transition

**Scenario** #89 - Transition to Organic-Livestock, High Complexity

**Scenario Description:**

A site specific conservation plan that contains planned conservation treatment activities for resource concerns resulting from the transition of conventional to organic livestock systems. System is high complexity based on conditions such as large Animal Units, multiple production locations, age segregation and similar management. At a minimum two alternatives will be developed. The first will be a no-action alternative in which current management activities are assumed to continue. The second will be an action alternative identifying a conservation practice or a system of conservation practices and management activities to address CPA identified resource concern(s). Additional action alternatives may be developed to identify different ways of achieving client objectives.

**Before Situation:**

Current livestock production, housing, feed, equipment and technology utilized are not considered as Organic. The producer objectives are to become organic. The effect of changes to the current system are not known and new resource concerns may emerge.

**After Situation:**

When evaluating conservation practice effects, the short term and long term effect on natural resources and the applicability and effect on special environmental concerns identified in Step-3 (Resource Inventory) must be documented. Include recommendations that will avoid or mitigate any adverse effects on soil, water, air, plants, animals (including livestock, fish, and wildlife), energy, or human concerns; as well as on special environmental concerns. The Organic System Plan Template supplements are completed as part of NRCS Conservation Planning Activity (CPA) 138 that helps farmers who are interested in transitioning from conventional farming practices to organic production by addressing the natural resource concerns on their operation.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,823.20

**Scenario Cost/Unit:** $8,823.20

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 20 | $2,072.80 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 80 | $6,750.40 |

**Practice:** 138 - Conservation Plan Supporting Organic Transition

**Scenario** #105 - Transition to Organic- Crop and Livestock, Low Complexity

**Scenario Description:**

A site specific conservation plan that contains planned conservation treatment activities for resource concerns resulting from the transition of conventional to organic crop and livestock production systems. At a minimum two alternatives will be developed. The first will be a no-action alternative in which current management activities are assumed to continue. The second will be an action alternative identifying a conservation practice or a system of conservation practices and management activities to address CPA identified resource concern(s). Additional action alternatives may be developed to identify different ways of achieving client objectives.

**Before Situation:**

Current crops and rotation, livestock management and feeding, farming practices (tillage, nutrient application methods, timing, source, and rate), soils, and equipment and technology utilized are not considered as Organic. The producer objectives are to become organic. The effect of changes to the current cropping system are not known and new resource concerns may emerge.

**After Situation:**

When evaluating conservation practice effects, the short term and long term effect on natural resources and the applicability and effect on special environmental concerns identified in Step-3 (Resource Inventory) must be documented. Include recommendations that will avoid or mitigate any adverse effects on soil, water, air, plants, animals (including livestock, fish, and wildlife), energy, or human concerns; as well as on special environmental concerns. The Organic System Plan Template supplements are completed as part of NRCS Conservation Planning Activity (CPA) 138 that helps farmers who are interested in transitioning from conventional farming practices to organic production by addressing the natural resource concerns on their operation.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,328.50

**Scenario Cost/Unit:** $6,328.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 75 | $6,328.50 |

**Practice:** 138 - Conservation Plan Supporting Organic Transition

**Scenario** #121 - Transition to Organic- Crop and Livestock, High Complexity

**Scenario Description:**

A site specific conservation plan that contains planned conservation treatment activities for resource concerns resulting from the transition of conventional to organic crop and livestock production systems. Increased crop acreage, irrigation, specialty crops, orchards and vineyards, large AUs, age segregation management add complexity to the system. At a minimum two alternatives will be developed. The first will be a no-action alternative in which current management activities are assumed to continue. The second will be an action alternative identifying a conservation practice or a system of conservation practices and management activities to address CPA identified resource concern(s). Additional action alternatives may be developed to identify different ways of achieving client objectives.

**Before Situation:**

Current crops and rotation, livestock management and feeding, farming practices (tillage, nutrient application methods, timing, source, and rate), soils, and equipment and technology utilized are not considered as Organic. The producer objectives are to become organic. The effect of changes to the current cropping system are not known and new resource concerns may emerge.

**After Situation:**

When evaluating conservation practice effects, the short term and long term effect on natural resources and the applicability and effect on special environmental concerns identified in Step-3 (Resource Inventory) must be documented. Include recommendations that will avoid or mitigate any adverse effects on soil, water, air, plants, animals (including livestock, fish, and wildlife), energy, or human concerns; as well as on special environmental concerns. The Organic System Plan Template supplements are completed as part of NRCS Conservation Planning Activity (CPA) 138 that helps farmers who are interested in transitioning from conventional farming practices to organic production by addressing the natural resource concerns on their operation.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,245.10

**Scenario Cost/Unit:** $9,245.10

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 20 | $2,072.80 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 85 | $7,172.30 |

**Practice:** 140 - Transition to Organic Design

**Scenario** #9 - Low Complexity 1-4 CPS

**Scenario Description:**

Agricultural operation where producer will transition from conventional production to organic production. They will meet the USDA National Organic Program (NOP) requirements. All Natural resources will be addressed: Soil, Water, Air, Plants and Animals. Will address resource concerns with 1 - 4, low complexity conservation practices.

**Before Situation:**

Agricultural operation currently managed using conventional agricultural production methods. Producer will transition all or part of the farm operation to meet national USDA NOP requirements for organic certification. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. Low complexity conservation practices may include: cover crop, crop rotation, reduced tillage, conservation plantings and minor structural practices for erosion control such as grass waterways and diversions.

**After Situation:**

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. All practices installed according to field office technical guide requirements. Implementation requirements, designs and specifications all complete.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,837.78

**Scenario Cost/Unit:** $4,837.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 16 | $1,730.40 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 16 | $1,658.24 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 16 | $1,350.08 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |

**Practice:** 140 - Transition to Organic Design

**Scenario** #25 - Low Complexity, 5+ CPS

**Scenario Description:**

Agricultural operation where producer will transition from conventional production to organic production. They will meet the USDA National Organic Program (NOP) requirements. All Natural resources will be addressed: Soil, Water, Air, Plants and Animals. Will address resources concerns with 5 or more conservation practices with low complexity.

**Before Situation:**

Agricultural operation currently managed using conventional agricultural production methods. Producer will transition all or part of the farm operation to meet national USDA NOP requirements for organic certification. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. Low complexity conservation practices may include: cover crop, crop rotation, reduced tillage, conservation plantings and minor structural practices for erosion control such as grass waterways and diversions.

**After Situation:**

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. All practices installed according to field office technical guide requirements. Implementation requirements, designs and specifications all complete.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,609.52

**Scenario Cost/Unit:** $9,609.52

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 32 | $3,460.80 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 32 | $3,316.48 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 32 | $2,700.16 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 4 | $132.08 |

**Practice:** 140 - Transition to Organic Design

**Scenario** #41 - High Complexity, 1 -4 CPS

**Scenario Description:**

Agricultural operation where producer will transition from conventional production to organic production. They will meet the USDA National Organic Program (NOP) requirements. All Natural resources will be addressed: Soil, Water, Air, Plants, and Animals. Will address resource concerns with 1 - 4, high complexity conservation practices.

**Before Situation:**

Agricultural operation currently managed using conventional agricultural production methods. Producer will transition all or part of the farm operation to meet national USDA NOP requirements for organic certification. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. High complexity conservation practices may include: management practices for nutrients, pests, grazing, irrigation etc. and structural practices such as waste storage facility and wetland practices.

**After Situation:**

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. All practices installed according to field office technical guide requirements. Implementation requirements, designs and specifications all complete.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $12,437.62

**Scenario Cost/Unit:** $12,437.62

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 40 | $4,326.00 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 40 | $4,145.60 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 40 | $3,375.20 |
| Cap Labor, Survey and Mapping Technician | 1591 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. | Hours | $61.47 | 8 | $491.76 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |

**Practice:** 140 - Transition to Organic Design

**Scenario** #57 - High Complexity, 5+ CPS

**Scenario Description:**

Agricultural operation where producer will transition from conventional production to organic production. They will meet the USDA National Organic Program (NOP) requirements. All Natural resources will be addressed: Soil, Water, Air, Plants and Animals. Will address resource concerns with 5 or more, high complexity conservation practices.

**Before Situation:**

Agricultural operation currently managed using conventional agricultural production methods. Producer will transition all or part of the farm operation to meet national USDA NOP requirements for organic certification. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. High complexity conservation practices may include: management practices for nutrients, pests, grazing, irrigation etc. and structural practices such as waste storage facility and wetland practices.

**After Situation:**

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. All practices installed according to field office technical guide requirements. Implementation requirements, designs and specifications all complete.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $16,042.88

**Scenario Cost/Unit:** $16,042.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 56 | $6,056.40 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 40 | $4,145.60 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 56 | $4,725.28 |
| Cap Labor, Survey and Mapping Technician | 1591 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. | Hours | $61.47 | 16 | $983.52 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 4 | $132.08 |

**Practice:** 144 - Fish and Wildlife Habitat Design

**Scenario** #9 - Fish & Wildlife Habitat DIA

**Scenario Description:**

Various on-farm land uses. Natural Resource Concerns: Terrestrial Habitat and/or Aquatic Habitat on an agricultural operation. The Fish and Wildlife Habitat Design and Implementation Activity (DIA) addresses fish and wildlife habitat management relative to only one land use on the agricultural operation.

**Before Situation:**

Producer has no plan or knowledge of development or management of fish and/or wildlife habitat. The producer does not currently manage or enhance habitat to promote opportunities for fish and/or wildlife habitat. Within existing land uses, the producer is interested in management of land or water features for establishment of new habitat for benefit of appropriate fish or wildlife species. Associated Practices: Applicable conservation practices cited in the DIA criteria and NRCS Field Office Technical Guide.

**After Situation:**

After EQIP contract approval, the participant has obtained services from a certified TSP for development of the Fish and Wildlife Habitat DIA. The DIA criteria require the plan to meet quality criteria for the primary fish/wildlife habitat resource concern and provides for opportunities to improve, restore, or enhance habitat that supports native and/or managed species. The DIA may include recommendations for associated conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 144 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Design & Implementation Plan

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,201.84

**Scenario Cost/Unit:** $3,201.84

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, biologist | 1298 | Conservation Activity Plan labor to study the origins, behavior, diseases, genetics, and life processes of animals and wildlife. May specialize in wildlife research and management. May collect and analyze biological data to determine the environmental effects of present and potential use of land and water habitats. Cost associated with this component includes overhead and benefits (market price). | Hours | $88.94 | 36 | $3,201.84 |

**Practice:** 144 - Fish and Wildlife Habitat Design

**Scenario** #25 - Fish & Wildlife Habitat DIA (2 Land Uses)

**Scenario Description:**

Various on-farm land uses. Natural Resource Concerns: Terrestrial Habitat and/or Aquatic Habitat on an agricultural operation. The Fish and Wildlife Habitat Design and Implementation Activity (DIA) addresses fish and wildlife habitat management relative to two land uses on the agricultural operation of which each land use is at least 20 acres in size.

**Before Situation:**

Producer has no plan or knowledge of development or management of fish and/or wildlife habitat. The producer does not currently manage or enhance habitat to promote opportunities for fish and/or wildlife habitat. Within existing land uses, the producer is interested in management of land or water features for establishment of new habitat for benefit of appropriate fish or wildlife species. Associated Practices: Applicable conservation practices cited in the DIA criteria and NRCS Field Office Technical Guide.

**After Situation:**

After EQIP contract approval, the participant has obtained services from a certified TSP for development of the Fish and Wildlife Habitat DIA. The DIA criteria require the plan to meet quality criteria for the primary fish/wildlife habitat resource concern and provides for opportunities to improve, restore, or enhance habitat that supports native and/or managed species. The DIA may include recommendations for associated conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 144 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Fish and Wildlife Habitat DIA

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,913.36

**Scenario Cost/Unit:** $3,913.36

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, biologist | 1298 | Conservation Activity Plan labor to study the origins, behavior, diseases, genetics, and life processes of animals and wildlife. May specialize in wildlife research and management. May collect and analyze biological data to determine the environmental effects of present and potential use of land and water habitats. Cost associated with this component includes overhead and benefits (market price). | Hours | $88.94 | 44 | $3,913.36 |

**Practice:** 144 - Fish and Wildlife Habitat Design

**Scenario** #41 - Fish & Wildlife Habitat DIA (3 or More Land Uses)

**Scenario Description:**

Various on-farm land uses. Natural Resource Concerns: Terrestrial Habitat and/or Aquatic Habitat on an agricultural operation. The Fish and Wildlife Habitat Design and Implementation Activity (DIA) addresses fish and wildlife habitat management relative to three or more land uses on the agricultural operation of which at least three of the land uses are at least 20 acres in size.

**Before Situation:**

Producer has no plan or knowledge of development or management of fish and/or wildlife habitat. The producer does not currently manage or enhance habitat to promote opportunities for fish and/or wildlife habitat. Within existing land uses, the producer is interested in management of land or water features for establishment of new habitat for benefit of appropriate fish or wildlife species. Associated Practices: Applicable conservation practices cited in the DIA criteria and NRCS Field Office Technical Guide.

**After Situation:**

After EQIP contract approval, the participant has obtained services from a certified TSP for development of the Fish and Wildlife Habitat DIA. The DIA criteria require the plan to meet quality criteria for the primary fish/wildlife habitat resource concern and provides for opportunities to improve, restore, or enhance habitat that supports native and/or managed species. The DIA may include recommendations for associated conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 144 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Fish and Wildlife Habitat DIA

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,624.88

**Scenario Cost/Unit:** $4,624.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, biologist | 1298 | Conservation Activity Plan labor to study the origins, behavior, diseases, genetics, and life processes of animals and wildlife. May specialize in wildlife research and management. May collect and analyze biological data to determine the environmental effects of present and potential use of land and water habitats. Cost associated with this component includes overhead and benefits (market price). | Hours | $88.94 | 52 | $4,624.88 |

**Practice:** 148 - Pollinator Habitat Design

**Scenario** #9 - Pollinator Habitat Enhancement Plan CAP - No Local TSP

**Scenario Description:**

Various on-farm land uses, No qualified TSP within 300 miles. Natural Resource Concern: Fish and Wildlife, Plant Condition, Soil Erosion, Water Quality on an agricultural operation.

**Before Situation:**

Agricultural producer currently has no plan or knowledge of development or management of pollinator habitat. The producer does not currently manage or enhance habitat to promote opportunities for pollinator habitat. Within existing land uses, the producer may be interested in management of land or for establishment of new habitat for benefit of appropriate pollinator species. Associated Practices: 311, 327, 328, 656, 332, 340, 342, 647, 386, 393, 412, 422, 603, 379, 512, 595, 338, 528, 550, 329, 643, 391, 390, 381, 395, 580, 585, 612, 645, 601, 659, 657, 644, 380, 650.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Pollinator Habitat Enhancement Conservation Activity Plan (CAP). The CAP criteria requires the plan to meet quality criteria for applicable resource concerns and provides for opportunities to improve, restore, or enhance flower-rich habitat that supports native and/or managed pollinator species. The CAP plan may include recommendations for associated conservation practices which address other related resource concerns. The CAP meets the basic quality criteria for the 146 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,425.34

**Scenario Cost/Unit:** $5,425.34

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, biologist | 1298 | Conservation Activity Plan labor to study the origins, behavior, diseases, genetics, and life processes of animals and wildlife. May specialize in wildlife research and management. May collect and analyze biological data to determine the environmental effects of present and potential use of land and water habitats. Cost associated with this component includes overhead and benefits (market price). | Hours | $88.94 | 61 | $5,425.34 |

**Practice:** 148 - Pollinator Habitat Design

**Scenario** #25 - Pollinator Habitat Enhancement Plan CAP

**Scenario Description:**

Various on-farm land uses. Natural Resource Concern: Fish and Wildlife, Plant Condition, Soil Erosion, Water Quality on an agricultural operation.

**Before Situation:**

Agricultural producer currently has no plan or knowledge of development or management of pollinator habitat. The producer does not currently manage or enhance habitat to promote opportunities for pollinator habitat. Within existing land uses, the producer may be interested in management of land or for establishment of new habitat for benefit of appropriate pollinator species. Associated Practices: 311, 327, 328, 656, 332, 340, 342, 647, 386, 393, 412, 422, 603, 379, 512, 595, 338, 528, 550, 329, 643, 391, 390, 381, 395, 580, 585, 612, 645, 601, 659, 657, 644, 380, 650.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Pollinator Habitat Enhancement Conservation Activity Plan (CAP). The CAP criteria requires the plan to meet quality criteria for applicable resource concerns and provides for opportunities to improve, restore, or enhance flower-rich habitat that supports native and/or managed pollinator species. The CAP plan may include recommendations for associated conservation practices which address other related resource concerns. The CAP meets the basic quality criteria for the 146 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,735.48

**Scenario Cost/Unit:** $3,735.48

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, biologist | 1298 | Conservation Activity Plan labor to study the origins, behavior, diseases, genetics, and life processes of animals and wildlife. May specialize in wildlife research and management. May collect and analyze biological data to determine the environmental effects of present and potential use of land and water habitats. Cost associated with this component includes overhead and benefits (market price). | Hours | $88.94 | 42 | $3,735.48 |

**Practice:** 157 - Nutrient Management Design and Implementation Activity

**Scenario** #9 - Design Nutrient Management for greater than 101 Acres and less than or equal to 300 Acres Fertilizer and Manure

**Scenario Description:**

Various on-farm land uses where natural or artificial amendments are applied. Natural Resource Concern: Water Quality, Soil Erosion, Water Quantity, and other associated resource concerns. Manure may be imported.

**Before Situation:**

Agricultural producer has no plan or minimal knowledge for the application and management of nutrients. The producer currently manages nutrient application based upon personal knowledge, or other local criteria. Producer is interested in management of nutrients to maximize yields, improve profit margins, reduce costs, and for environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Nutrient Management conservation activity plan consistent with the criteria in DIA 157 and 590 Nutrient Management. The DIA criteria requires the plan to meet quality criteria for Soils, Water Quality and Air Quality resource concerns and other applicable resource concerns and provides for opportunities to manage nutrients for plant production and address offsite movement of nutrients. The design may include recommendations for associated conservation practices which address other related resource concerns. Meets the basic quality criteria for the DIA 157 as cited in the NRCS Field Office Technical Guide and CPS 590 Nutrient Management.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7,570.50

**Scenario Cost/Unit:** $7,570.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 70 | $7,570.50 |

**Practice:** 157 - Nutrient Management Design and Implementation Activity

**Scenario** #25 - Design Nutrient Management for 101 to less than 300 Acres and No Manure

**Scenario Description:**

Various on-farm land uses where natural or artificial amendments are applied. Natural Resource Concern: Water Quality, Soil Erosion, Water Quantity, and other associated resource concerns.

**Before Situation:**

Agricultural producer has no plan or minimal knowledge for the application and management of nutrients. The producer currently manages nutrient application based upon personal knowledge, or other local criteria. Producer is interested in management of nutrients to maximize yields, improve profit margins, reduce costs, and for environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Nutrient Management conservation activity plan consistent with the criteria in DIA 157 and 590 Nutrient Management. The DIA criteria requires the plan to meet quality criteria for Soils, Water Quality and Air Quality resource concerns and other applicable resource concerns and provides for opportunities to manage nutrients for plant production and address offsite movement of nutrients. The design may include recommendations for associated conservation practices which address other related resource concerns. Meets the basic quality criteria for the DIA 157 as cited in the NRCS Field Office Technical Guide and CPS 590 Nutrient Management.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,326.00

**Scenario Cost/Unit:** $4,326.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 40 | $4,326.00 |

**Practice:** 157 - Nutrient Management Design and Implementation Activity

**Scenario** #41 - Design Nutrient Management for greater than 300 Acres and No Manure

**Scenario Description:**

Various on-farm land uses where natural or artificial amendments are applied. Natural Resource Concern: Water Quality, Soil Erosion, Water Quantity, and other associated resource concerns.

**Before Situation:**

Agricultural producer has no plan or minimal knowledge for the application and management of nutrients. The producer currently manages nutrient application based upon personal knowledge, or other local criteria. Producer is interested in management of nutrients to maximize yields, improve profit margins, reduce costs, and for environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Nutrient Management conservation activity plan consistent with the criteria in DIA 157 and 590 Nutrient Management. The DIA criteria requires the plan to meet quality criteria for Soils, Water Quality and Air Quality resource concerns and other applicable resource concerns and provides for opportunities to manage nutrients for plant production and address offsite movement of nutrients. The design may include recommendations for associated conservation practices which address other related resource concerns. Meets the basic quality criteria for the DIA 157 as cited in the NRCS Field Office Technical Guide and CPS 590 Nutrient Management.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,407.50

**Scenario Cost/Unit:** $5,407.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 50 | $5,407.50 |

**Practice:** 157 - Nutrient Management Design and Implementation Activity

**Scenario** #57 - Design Nutrient Management for less than or equal to 100 Acres Fertilizer and Manure

**Scenario Description:**

Various on-farm land uses where natural or artificial amendments are applied. Natural Resource Concern: Water Quality, Soil Erosion, Water Quantity, and other associated resource concerns. Manure may be imported.

**Before Situation:**

Agricultural producer has no plan or minimal knowledge for the application and management of nutrients. The producer currently manages nutrient application based upon personal knowledge, or other local criteria. Producer is interested in management of nutrients to maximize yields, improve profit margins, reduce costs, and for environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Nutrient Management conservation activity plan consistent with the criteria in DIA 157 and 590 Nutrient Management. The DIA criteria requires the plan to meet quality criteria for Soils, Water Quality and Air Quality resource concerns and other applicable resource concerns and provides for opportunities to manage nutrients for plant production and address offsite movement of nutrients. The design may include recommendations for associated conservation practices which address other related resource concerns. Meets the basic quality criteria for the DIA 157 as cited in the NRCS Field Office Technical Guide and CPS 590 Nutrient Management.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,407.50

**Scenario Cost/Unit:** $5,407.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 50 | $5,407.50 |

**Practice:** 157 - Nutrient Management Design and Implementation Activity

**Scenario** #73 - Design Nutrient Management for less than or equal to 100 Acres and No Manure

**Scenario Description:**

Various on-farm land uses where natural or artificial amendments are applied. Natural Resource Concern: Water Quality, Soil Erosion, Water Quantity, and other associated resource concerns.

**Before Situation:**

Agricultural producer has no plan or minimal knowledge for the application and management of nutrients. The producer currently manages nutrient application based upon personal knowledge, or other local criteria. Producer is interested in management of nutrients to maximize yields, improve profit margins, reduce costs, and for environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Nutrient Management conservation activity plan consistent with the criteria in DIA 157 and 590 Nutrient Management. The DIA criteria requires the plan to meet quality criteria for Soils, Water Quality and Air Quality resource concerns and other applicable resource concerns and provides for opportunities to manage nutrients for plant production and address offsite movement of nutrients. The design may include recommendations for associated conservation practices which address other related resource concerns. Meets the basic quality criteria for the DIA 157 as cited in the NRCS Field Office Technical Guide and CPS 590 Nutrient Management.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,244.50

**Scenario Cost/Unit:** $3,244.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 30 | $3,244.50 |

**Practice:** 157 - Nutrient Management Design and Implementation Activity

**Scenario** #89 - Design Nutrient Management for greater than 300 Acres Fertilizer and Manure

**Scenario Description:**

Various on-farm land uses where natural or artificial amendments are applied. Natural Resource Concern: Water Quality, Soil Erosion, Water Quantity, and other associated resource concerns. Manure may be imported.

**Before Situation:**

Agricultural producer has no plan or minimal knowledge for the application and management of nutrients. The producer currently manages nutrient application based upon personal knowledge, or other local criteria. Producer is interested in management of nutrients to maximize yields, improve profit margins, reduce costs, and for environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Nutrient Management conservation activity plan consistent with the criteria in DIA 157 and 590 Nutrient Management. The DIA criteria requires the plan to meet quality criteria for Soils, Water Quality and Air Quality resource concerns and other applicable resource concerns and provides for opportunities to manage nutrients for plant production and address offsite movement of nutrients. The design may include recommendations for associated conservation practices which address other related resource concerns. Meets the basic quality criteria for the DIA 157 as cited in the NRCS Field Office Technical Guide and CPS 590 Nutrient Management.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,192.75

**Scenario Cost/Unit:** $9,192.75

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 85 | $9,192.75 |

**Practice:** 158 - Feed Management Design

**Scenario** #9 - Feed Management Plan

**Scenario Description:**

The owner/operator of an Animal Feeding Operation (AFO) has not received a written Feed Management Plan that addresses all resource concerns present on the facility. Various levels of management and conservation implementation has occurred in the operation. Little documentation of the methods of feed management used and practices installed exists, and the producer is not likely to developed a complete forage inventory or nutrient analysis. The producer may or may not have a conservation plan or a nutrient management plan. Nutrient management related resource concerns on the operation remain to be addressed through the development of a complete activity plan including management and conservation practices for proper quantity and quality of available nutrients, feedstuffs, and/or additives fed to livestock or poultry that may be present on the operation. Present operation and feed methodology poses risk of feeding excessive amounts of nutrients in animal manure which result in negative impacts to water quality and odor resource concerns. Negative water and air quality impacts as well as farmstead safety and security issues may remain on the AFO, and inadequate record-keeping nutrient, inspection and monitoring of the existing operation may need further improvement.

**Before Situation:**

Producer does not have a plan or has limited knowledge of management of feed, nutrients, feedstuffs, or nutritional additives provided to domestic livestock and poultry. The producer currently manages feed without a plan which would address livestock production limitations and water and air quality resource concern impacts. Producer currently lacks plan to provide proper balance of forage, grains or other feeds and supplements to assure domestic animal nutritional needs are met without negatively impacting water and air quality. Producer is interested in management of feed for domestic animals to maximize profit margin, reduce costs, improve or address livestock production opportunities, and for other environmental benefits. Producer is willing to collaborate with a certified Technical Service Provider (TSP) to develop a plan, and to collect/coordinate data and records to determine current nutritional needs. Associated Practice(s): 590-Nutrient Management

**After Situation:**

Participant has obtained services from a certified TSP for development of the Feed Management plan (CAP). The criteria requires the plan to meet quality criteria for applicable natural resource concerns and provides for opportunities to identify and implement conservation practices related to management of feed, forages, or delivery of supplements to maximize efficient feeding operations and livestock growth. The plan may serve as the basis for implementation of the primary conservation practice 592 - Feed Management. If applicable, the plan may also be developed to complement Comprehensive Nutrient Management Plans (CNMP) or to help meet requirements of NRCS practice standard 590 - Nutrient Management. The plan may include recommendations for addressing associated natural resource concerns with other conservation practices.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,326.00

**Scenario Cost/Unit:** $4,326.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 40 | $4,326.00 |

**Practice:** 159 - Grazing Management Design

**Scenario** #105 - Design and Implementation Activities for Grazed Lands <100 acres

**Scenario Description:**

Design and implementation activities for agricultural operation with less than 100 acres grazed land. The following natural resource concerns will be addressed: Soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

**Before Situation:**

Producer has no plan or limited knowledge of conservation practices to effectively manage livestock or other animals on grazed land resources. The producer currently manages animals without a plan or implemented conservation practices to address identified natural resource concerns. Producer is interested in management of animals and implementing conservation practices to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to design and implement a plan and/or conservation practices to meet resource concerns. In addition to the Prescribed Grazing Plan (CPS 528) practice, other associated conservation practices standards maybe designed and implemented to meet resource concerns identified in the Conservation Planning Activity (CPA) for grazed lands.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Grazing Management DIA. The DIA criteria requires the design and implementation of grazing activities as a component of the CPA to address resouce concerns and to meet criteria for applicable conservation practices including practices such as: Prescribed Grazing Management (528), Brush Management (314), Fencing (382), Forage Harvest Management (511), Grazing Land Mechanical Treatment (548), Herbaceous Weed Treatment (315), Pasture and Hay Planting (512), Range Planting (550), and any additional conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 159 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,636.48

**Scenario Cost/Unit:** $1,636.48

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, range conservation | 1299 | Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price). | Hours | $102.28 | 16 | $1,636.48 |

**Practice:** 159 - Grazing Management Design

**Scenario** #121 - Design and Implementation Activities for Grazed Lands 101 to 500 acres

**Scenario Description:**

Design and implementation activities for an agricultural operation with 101 to 500 acres grazed land. The following natural resource concerns will be addressed: soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

**Before Situation:**

Producer has no plan or limited knowledge of conservation practices to effectively manage livestock or other animals on grazed land resources. The producer currently manages animals without a plan or implemented conservation practices to address identified natural resource concerns. Producer is interested in management of animals and implementing conservation practices to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to design and implement a plan and/or conservation practices to meet resource concerns. In addition to the Prescribed Grazing Plan (CPS 528) practice, other associated conservation practices standards maybe designed and implemented to meet resource concerns identified in the Conservation Planning Activity (CPA) for grazed lands.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Grazing Management DIA. The DIA criteria requires the design and implementation of grazing activities as a component of the CPA to address resouce concerns and to meet criteria for applicable conservation practices including practices such as: Prescribed Grazing Management (528), Brush Management (314), Fencing (382), Forage Harvest Management (511), Grazing Land Mechanical Treatment (548), Herbaceous Weed Treatment (315), Pasture and Hay Planting (512), Range Planting (550), and any additional conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 159 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,045.60

**Scenario Cost/Unit:** $2,045.60

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, range conservation | 1299 | Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price). | Hours | $102.28 | 20 | $2,045.60 |

**Practice:** 159 - Grazing Management Design

**Scenario** #137 - Design and Implementation Activities for Grazed Lands 501 to 1,500 acres

**Scenario Description:**

Design and implementation activities for agricultural operation with 501 to 1,500 acres grazed land. The following natural resource concerns will be addressed: soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

**Before Situation:**

Producer has no plan or limited knowledge of conservation practices to effectively manage livestock or other animals on grazed land resources. The producer currently manages animals without a plan or implemented conservation practices to address identified natural resource concerns. Producer is interested in management of animals and implementing conservation practices to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to design and implement a plan and/or conservation practices to meet resource concerns. In addition to the Prescribed Grazing Plan (CPS 528) practice, other associated conservation practices standards maybe designed and implemented to meet resource concerns identified in the Conservation Planning Activity (CPA) for grazed lands.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Grazing Management DIA. The DIA criteria requires the design and implementation of grazing activities as a component of the CPA to address resource concerns and to meet criteria for applicable conservation practices including practices such as: Prescribed Grazing Management (528), Brush Management (314), Fencing (382), Forage Harvest Management (511), Grazing Land Mechanical Treatment (548), Herbaceous Weed Treatment (315), Pasture and Hay Planting (512), Range Planting (550), and any additional conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 159 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,454.72

**Scenario Cost/Unit:** $2,454.72

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, range conservation | 1299 | Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price). | Hours | $102.28 | 24 | $2,454.72 |

**Practice:** 159 - Grazing Management Design

**Scenario** #153 - Design and Implementation Activities for Grazed Lands 1,501 to 5,000 acres

**Scenario Description:**

Design and implementation activity for an agricultural operation with 1,501 to 5,000 acres grazed land. The following natural resource concerns will be addressed: Soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

**Before Situation:**

Producer has no plan or limited knowledge of conservation practices to effectively manage livestock or other animals on grazed land resources. The producer currently manages animals without a plan or implemented conservation practices to address identified natural resource concerns. Producer is interested in management of animals and implementing conservation practices to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to design and implement a plan and/or conservation practices to meet resource concerns. In addition to the Prescribed Grazing Plan (CPS 528) practice, other associated conservation practices standards maybe designed and implemented to meet resource concerns identified in the Conservation Planning Activity (CPA) for grazed lands.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Grazing Management DIA. The DIA criteria requires the design and implementation of grazing activities as a component of the CPA to address resource concerns and to meet criteria for applicable conservation practices including practices such as: Prescribed Grazing Management (528), Brush Management (314), Fencing (382), Forage Harvest Management (511), Grazing Land Mechanical Treatment (548), Herbaceous Weed Treatment (315), Pasture and Hay Planting (512), Range Planting (550), and any additional conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 159 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,863.84

**Scenario Cost/Unit:** $2,863.84

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, range conservation | 1299 | Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price). | Hours | $102.28 | 28 | $2,863.84 |

**Practice:** 159 - Grazing Management Design

**Scenario** #169 - Design and Implementation Activities for Grazed Lands 5,001 to 10,000 acres

**Scenario Description:**

Design and implementation activities for an agricultural operation with 5,001 to 10,000 acres grazed land. The following natural resource concerns will be addressed: soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

**Before Situation:**

Producer has no plan or limited knowledge of conservation practices to effectively manage livestock or other animals on grazed land resources. The producer currently manages animals without a plan or implemented conservation practices to address identified natural resource concerns. Producer is interested in management of animals and implementing conservation practices to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to design and implement a plan and/or conservation practices to meet resource concerns. In addition to the Prescribed Grazing Plan (CPS 528) practice, other associated conservation practices standards maybe designed and implemented to meet resource concerns identified in the Conservation Planning Activity (CPA) for grazed lands.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Grazing Management DIA. The DIA criteria requires the design and implementation of grazing activities as a component of the CPA to address resouce concerns and to meet criteria for applicable conservation practices including practices such as: Prescribed Grazing Management (528), Brush Management (314), Fencing (382), Forage Harvest Management (511), Grazing Land Mechanical Treatment (548), Herbaceous Weed Treatment (315), Pasture and Hay Planting (512), Range Planting (550), and any additional conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 159 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,272.96

**Scenario Cost/Unit:** $3,272.96

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, range conservation | 1299 | Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price). | Hours | $102.28 | 32 | $3,272.96 |

**Practice:** 159 - Grazing Management Design

**Scenario** #185 - Design and Implementation Activities for Grazed Lands >10,000 acres

**Scenario Description:**

Design and implementation activities for an agricultural operation with greater than 10,000 acres grazed land. The following natural resource concerns will be addressed: soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

**Before Situation:**

Producer has no plan or limited knowledge of conservation practices to effectively manage livestock or other animals on grazed land resources. The producer currently manages animals without a plan or implemented conservation practices to address identified natural resource concerns. Producer is interested in management of animals and implementing conservation practices to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to design and implement a plan and/or conservation practices to meet resource concerns. In addition to the Prescribed Grazing Plan (CPS 528) practice, other associated conservation practices standards maybe designed and implemented to meet resource concerns identified in the Conservation Planning Activity (CPA) for grazed lands.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Grazing Management DIA. The DIA criteria requires the design and implementation of grazing activities as a component of the CPA to address resource concerns and to meet criteria for applicable conservation practices including practices such as: Prescribed Grazing Management (528), Brush Management (314), Fencing (382), Forage Harvest Management (511), Grazing Land Mechanical Treatment (548), Herbaceous Weed Treatment (315), Pasture and Hay Planting (512), Range Planting (550), and any additional conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 159 plan as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,682.08

**Scenario Cost/Unit:** $3,682.08

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, range conservation | 1299 | Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price). | Hours | $102.28 | 36 | $3,682.08 |

**Practice:** 160 - Prescribed Burning Design

**Scenario** #9 - Prescribed Burning Plan DIA less than or equal to 20 acres

**Scenario Description:**

Non Industrial Private Forest Land, Pasture or Range Land typically less than or equal to 20 acres in size and is dominated by fire tolerant species that are competing with undesirable vegetation and accumulating fuel load. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition.

**Before Situation:**

Producer has no existing plan or an obsolete plan that is insufficient for current stand condition. A Prescribed Burning Plan or DIA is needed to enable the producer to apply for financial assistance through EQIP or other financial assistance programs in order to implement needed conservation practices. Associated Practices: 394, 383, 384, 528, 314, 315, 550, 644, 645, 659, 342, 647, 460, 643, 666, 595

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified Technical Service Provider (TSP) for development of the Prescribed Burning DIA. The DIA criteria require the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Prescribed Burning Plan DIA is not considered a Forest Management Plan, a Reforestation Plan, a Forest Harvest Plan, or a Prescribed Grazing Plan, but should complement the needs of those plans if they exist and if desired by the decision maker. The DIA plan will fully describe all aspects of the prescribed burn including, but not limited to objectives of the burn (i.e., site preparation, wildlife habitat, etc.), site conditions (i.e., fuel load, fuel type, etc.), implementation strategies (i.e., method of ignition, number of persons required, equipment needs, etc.), tolerable weather parameters (i.e., wind direction, relative humidity, mixing height, etc.) and identification of Smoke Sensitive Areas. Additional DIA plan criteria are detailed in the Field Office Technical Guide and potentially state developed technical criteria.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,260.00

**Scenario Cost/Unit:** $1,260.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 15 | $1,260.00 |

**Practice:** 160 - Prescribed Burning Design

**Scenario** #25 - Prescribed Burning Plan (DIA) greater than 1,000 acres

**Scenario Description:**

Non Industrial Private Forest Land, Pasture or Range Land typically greater than 1,000 acres in size and is dominated by fire tolerant species that are competing with undesirable vegetation and accumulating fuel load. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition.

**Before Situation:**

Producer has no existing plan or an obsolete plan that is insufficient for current stand condition. A Prescribed Burning Plan or DIA is needed to enable the producer to apply for financial assistance through EQIP or other financial assistance programs in order to implement needed conservation practices. Associated Practices: 394, 383, 384, 528, 314, 315, 550, 644, 645, 659, 342, 647, 460, 643, 666, 595

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified Technical Service Provider (TSP) for development of the Prescribed Burning Plan (DIA). The DIA criteria require the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Prescribed Burning Plan DIA is not considered a Forest Management Plan, a Reforestation Plan, a Forest Harvest Plan, or a Prescribed Grazing Plan, but should complement the needs of those plans if they exist and if desired by the decision maker. The DIA plan will fully describe all aspects of the prescribed burn including, but not limited to objectives of the burn (i.e., site preparation, wildlife habitat, etc.), site conditions (i.e., fuel load, fuel type, etc.), implementation strategies (i.e., method of ignition, number of persons required, equipment needs, etc.), tolerable weather parameters (i.e., wind direction, relative humidity, mixing height, etc.) and identification of Smoke Sensitive Areas. Additional DIA plan criteria are detailed in the Field Office Technical Guide and potentially state developed technical criteria.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,040.00

**Scenario Cost/Unit:** $5,040.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 60 | $5,040.00 |

**Practice:** 160 - Prescribed Burning Design

**Scenario** #41 - Prescribed Burning Plan-DIA greater than 501 acres and less than 1,000 acres

**Scenario Description:**

Non Industrial Private Forest Land, Pasture or Range Land typically greater than 501 acres and less than 1,000 acres in size and is dominated by fire tolerant species that are competing with undesirable vegetation and accumulating fuel load. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition.

**Before Situation:**

Producer has no existing plan or an obsolete plan that is insufficient for current stand condition. A Prescribed Burning Plan or DIA is needed to enable the producer to apply for financial assistance through EQIP or other financial assistance programs in order to implement needed conservation practices. Associated Practices: 394, 383, 384, 528, 314, 315, 550, 644, 645, 659, 342, 647, 460, 643, 666, 595

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified Technical Service Provider (TSP) for development of the Prescribed Burning Plan DIA. The DIA criteria require the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Prescribed Burning Plan DIA is not considered a Forest Management Plan, a Reforestation Plan, a Forest Harvest Plan, or a Prescribed Grazing Plan, but should complement the needs of those plans if they exist and if desired by the decision maker. The DIA plan will fully describe all aspects of the prescribed burn including, but not limited to objectives of the burn (i.e., site preparation, wildlife habitat, etc.), site conditions (i.e., fuel load, fuel type, etc.), implementation strategies (i.e., method of ignition, number of persons required, equipment needs, etc.), tolerable weather parameters (i.e., wind direction, relative humidity, mixing height, etc.) and identification of Smoke Sensitive Areas. Additional DIA plan criteria are detailed in the Field Office Technical Guide and potentially state developed technical criteria.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,360.00

**Scenario Cost/Unit:** $3,360.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 40 | $3,360.00 |

**Practice:** 160 - Prescribed Burning Design

**Scenario** #57 - Prescribed Burning Plan -DIA greater than 251 acres and less than 500 acres

**Scenario Description:**

Non Industrial Private Forest Land, Pasture or Range Land typically greater than 251 acres and less than 500 acres in size and is dominated by fire tolerant species that are competing with undesirable vegetation and accumulating fuel load. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition.

**Before Situation:**

Producer has no existing plan or an obsolete plan that is insufficient for current stand condition. A Prescribed Burning Plan or DIA is needed to enable the producer to apply for financial assistance through EQIP or other financial assistance programs in order to implement needed conservation practices. Associated Practices: 394, 383, 384, 528, 314, 315, 550, 644, 645, 659, 342, 647, 460, 643, 666, 595

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified Technical Service Provider (TSP) for development of the Prescribed Burning Plan or DIA. The DIA criteria require the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Prescribed Burning Plan DIA is not considered a Forest Management Plan, a Reforestation Plan, a Forest Harvest Plan, or a Prescribed Grazing Plan, but should complement the needs of those plans if they exist and if desired by the decision maker. The DIA plan will fully describe all aspects of the prescribed burn including, but not limited to objectives of the burn (i.e., site preparation, wildlife habitat, etc.), site conditions (i.e., fuel load, fuel type, etc.), implementation strategies (i.e., method of ignition, number of persons required, equipment needs, etc.), tolerable weather parameters (i.e., wind direction, relative humidity, mixing height, etc.) and identification of Smoke Sensitive Areas. Additional DIA plan criteria are detailed in the Field Office Technical Guide and potentially state developed technical criteria.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,520.00

**Scenario Cost/Unit:** $2,520.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 30 | $2,520.00 |

**Practice:** 160 - Prescribed Burning Design

**Scenario** #73 - Prescribed Burning Plan (DIA) greater than 101 acres and less than 250 acres

**Scenario Description:**

Non Industrial Private Forest Land, Pasture or Range Land typically greater that 101 acres in size and less than 250 acres and is dominated by fire tolerant species that are competing with undesirable vegetation and accumulating fuel load. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition.

**Before Situation:**

Producer has no existing plan or an obsolete plan that is insufficient for current stand condition. A Prescribed Burning Plan or DIA is needed to enable the producer to apply for financial assistance through EQIP or other financial assistance programs in order to implement needed conservation practices. Associated Practices: 394, 383, 384, 528, 314, 315, 550, 644, 645, 659, 342, 647, 460, 643, 666, 595

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified Technical Service Provider (TSP) for development of the Prescribed Burning Plan DIA. The DIA criteria require the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Prescribed Burning Plan DIA is not considered a Forest Management Plan, a Reforestation Plan, a Forest Harvest Plan, or a Prescribed Grazing Plan, but should complement the needs of those plans if they exist and if desired by the decision maker. The DIA plan will fully describe all aspects of the prescribed burn including, but not limited to objectives of the burn (i.e., site preparation, wildlife habitat, etc.), site conditions (i.e., fuel load, fuel type, etc.), implementation strategies (i.e., method of ignition, number of persons required, equipment needs, etc.), tolerable weather parameters (i.e., wind direction, relative humidity, mixing height, etc.) and identification of Smoke Sensitive Areas. Additional DIA plan criteria are detailed in the Field Office Technical Guide and potentially state developed technical criteria.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,100.00

**Scenario Cost/Unit:** $2,100.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 25 | $2,100.00 |

**Practice:** 160 - Prescribed Burning Design

**Scenario** #89 - Prescribed Burning Plan (DIA) greater than 21 acres and less than 100 acres

**Scenario Description:**

Non Industrial Private Forest Land, Pasture or Range Land typically greater than 21 acres and less than 100 acres in size and is dominated by fire tolerant species that are competing with undesirable vegetation and accumulating fuel load. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition.

**Before Situation:**

Producer has no existing plan or an obsolete plan that is insufficient for current stand condition. A Prescribed Burning Plan or DIA is needed to enable the producer to apply for financial assistance through EQIP or other financial assistance programs in order to implement needed conservation practices. Associated Practices: 394, 383, 384, 528, 314, 315, 550, 644, 645, 659, 342, 647, 460, 643, 666, 595

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified Technical Service Provider (TSP) for development of the Prescribed Burning Plan or DIA. The DIA criteria require the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Prescribed Burning Plan DIA is not considered a Forest Management Plan, a Reforestation Plan, a Forest Harvest Plan, or a Prescribed Grazing Plan, but should complement the needs of those plans if they exist and if desired by the decision maker. The DIA plan will fully describe all aspects of the prescribed burn including, but not limited to objectives of the burn (i.e., site preparation, wildlife habitat, etc.), site conditions (i.e., fuel load, fuel type, etc.), implementation strategies (i.e., method of ignition, number of persons required, equipment needs, etc.), tolerable weather parameters (i.e., wind direction, relative humidity, mixing height, etc.) and identification of Smoke Sensitive Areas. Additional DIA plan criteria are detailed in the Field Office Technical Guide and potentially state developed technical criteria.

**Feature Measure:** 1

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,680.00

**Scenario Cost/Unit:** $1,680.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 20 | $1,680.00 |

**Practice:** 161 - Pest Management Conservation System Design

**Scenario** #9 - High Complexity, 5+ CPS

**Scenario Description:**

Agricultural operation where producer will implement high complexity conservation practices and PAMS activities as part of an overall Pest Management Conservation System. Natural resources relating to CPS 595 Pest Management Conservation System will be addressed. Will address resource concerns with 5 or more, high complexity conservation practices and/or PAMS activities.

**Before Situation:**

Agricultural operation currently managed using few pest management strategies. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices and PAMS activities to address resource concerns. High complexity conservation practices may include: prescribed grazing, irrigation water management, diverse conservation plantings and complex practices for such as Agrichemical Handling Facility and Vegetated Treatment Area . High Complexity PAMS activities include: field sanitation , intensive scouting etc.

**After Situation:**

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to address resource concerns. All practices installed according to field office technical guide requirements. PAMS activities according to IPM plan and Land Grant University guidelines. Implementation requirements, designs and specifications all complete.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,325.04

**Scenario Cost/Unit:** $8,325.04

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 40 | $4,326.00 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 40 | $3,375.20 |
| Cap Labor, Survey and Mapping Technician | 1591 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. | Hours | $61.47 | 8 | $491.76 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 4 | $132.08 |

**Practice:** 161 - Pest Management Conservation System Design

**Scenario** #25 - High Complexity, 1 -4 CPS

**Scenario Description:**

Agricultural operation where producer will implement high complexity conservation practices and PAMS activities as part of an overall Pest Management Conservation System. Natural resources relating to CPS 595 Pest Management Conservation System will be addressed. Will address resource concerns with 1 - 4, high complexity conservation practices and/or PAMS activities.

**Before Situation:**

Agricultural operation currently managed using few pest management strategies. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices and PAMS activities to address resource concerns. High complexity conservation practices may include: prescribed grazing, irrigation water management, diverse conservation plantings and complex practices for such as Agrichemical Handling Facility and Vegetated Treatment Area . High Complexity PAMS activities include: field sanitation , intensive scouting etc.

**After Situation:**

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to address resource concerns. All practices installed according to field office technical guide requirements. PAMS activities according to IPM plan and Land Grant University guidelines. Implementation requirements, designs and specifications all complete.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,751.78

**Scenario Cost/Unit:** $6,751.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 32 | $3,460.80 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 32 | $2,700.16 |
| Cap Labor, Survey and Mapping Technician | 1591 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. | Hours | $61.47 | 8 | $491.76 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |

**Practice:** 161 - Pest Management Conservation System Design

**Scenario** #41 - Low Complexity, 5+ CPS

**Scenario Description:**

Agricultural operation where producer will implement low complexity conservation practices and PAMS activities as part of an overall Pest Management Conservation System. Natural resources relating to CPS 595 Pest Management Conservation System will be addressed. Will address resource concerns with 5 or more, low complexity conservation practices.

**Before Situation:**

Agricultural operation currently managed using few pest management strategies. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices and PAMS activities to address resource concerns. Low complexity conservation practices may include: cover crop, crop rotation, reduced tillage, conservation plantings and minor structural practices for erosion control such as grass waterways and diversions. Low Complexity PAMS activities include: using pest resistant varieties, trap crops, scouting etc.

**After Situation:**

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to address resource concerns. All practices installed according to field office technical guide requirements. PAMS activities according to IPM plan and Land Grant University guidelines. Implementation requirements, designs and specifications all complete.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,752.80

**Scenario Cost/Unit:** $4,752.80

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 24 | $2,595.60 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 24 | $2,025.12 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 4 | $132.08 |

**Practice:** 161 - Pest Management Conservation System Design

**Scenario** #57 - Low Complexity 1-4 CPS

**Scenario Description:**

Agricultural operation where producer will implement low complexity conservation practices and PAMS activities as part of an overall Pest Management Conservation System. Natural resources relating to CPS 595 Pest Management Conservation System will be addressed. Will address resource concerns with 1 - 4, low complexity conservation practices.

**Before Situation:**

Agricultural operation currently managed using few pest management strategies. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices and PAMS activities to address resource concerns. Low complexity conservation practices may include: cover crop, crop rotation, reduced tillage, conservation plantings and minor structural practices for erosion control such as grass waterways and diversions. Low Complexity PAMS activities include: using pest resistant varieties, trap crops, scouting etc.

**After Situation:**

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to address resource concerns. All practices installed according to field office technical guide requirements. PAMS activities according to IPM plan and Land Grant University guidelines. Implementation requirements, designs and specifications all complete.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,179.54

**Scenario Cost/Unit:** $3,179.54

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 16 | $1,730.40 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 16 | $1,350.08 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |

**Practice:** 162 - Soil Health Management System Design

**Scenario** #9 - Organic Crops + Livestock, <5

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for up to 5 Soil Health Management Units (SHMU) for organic crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU and can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has collaborated with a certified TSP to develop a written Soil Health Management Plan (116).

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

**Feature Measure:** each

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,921.60

**Scenario Cost/Unit:** $6,921.60

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 64 | $6,921.60 |

**Practice:** 162 - Soil Health Management System Design

**Scenario** #25 - Crops, 5 or more

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for more than 5 Soil Health Management Units (SHMU) for crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has a written conservation plan including core soil health practices or has collaborated with a certified TSP to develop a written Soil Health Management Plan (CPA 116).

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

**Feature Measure:** each

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,974.90

**Scenario Cost/Unit:** $4,974.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 46 | $4,974.90 |

**Practice:** 162 - Soil Health Management System Design

**Scenario** #41 - Crops + Livestock, 5 or more

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for 5 or more Soil Health Management Units (SHMU) for crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has a written conservation plan including core soil health practices or has collaborated with a certified TSP to develop a written Soil Health Management Plan (CPA 116).

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

**Feature Measure:** each

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,407.50

**Scenario Cost/Unit:** $5,407.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 50 | $5,407.50 |

**Practice:** 162 - Soil Health Management System Design

**Scenario** #57 - Small Farm

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for a small farm operation of less than 10 acres.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has collaborated with a certified TSP to develop a written Soil Health Management Plan (116).

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

**Feature Measure:** each

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,244.50

**Scenario Cost/Unit:** $3,244.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 30 | $3,244.50 |

**Practice:** 162 - Soil Health Management System Design

**Scenario** #73 - Crops, <5

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU and can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has collaborated with a certified TSP to develop a written Soil Health Management Plan (116).

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

**Feature Measure:** each

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,109.70

**Scenario Cost/Unit:** $4,109.70

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 38 | $4,109.70 |

**Practice:** 162 - Soil Health Management System Design

**Scenario** #89 - Organic Crops, <5

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for organic crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU and can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has collaborated with a certified TSP to develop a written Soil Health Management Plan (CPA 116).

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

**Feature Measure:** each

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,758.60

**Scenario Cost/Unit:** $4,758.60

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 44 | $4,758.60 |

**Practice:** 162 - Soil Health Management System Design

**Scenario** #105 - Crops + Livestock, <5

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has a written conservation plan including core soil health practices or has collaborated with a certified TSP to develop a written Soil Health Management Plan (CPA 116).

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

**Feature Measure:** each

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,326.00

**Scenario Cost/Unit:** $4,326.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 40 | $4,326.00 |

**Practice:** 162 - Soil Health Management System Design

**Scenario** #121 - Organic Crops, 5 or more

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for 5 or more Soil Health Management Units (SHMU) for organic crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has a written conservation plan including core soil health practices or has collaborated with a certified TSP to develop a written Soil Health Management Plan (CPA 116).

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

**Feature Measure:** each

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,489.00

**Scenario Cost/Unit:** $6,489.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 60 | $6,489.00 |

**Practice:** 162 - Soil Health Management System Design

**Scenario** #137 - Organic Crops + Livestock, 5 or more

**Scenario Description:**

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for 5 or more Soil Health Management Units (SHMU) for organic crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has a written conservation plan including core soil health practices or has collaborated with a certified TSP to develop a written Soil Health Management Plan (CPA 116).

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

**Feature Measure:** each

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,652.00

**Scenario Cost/Unit:** $8,652.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 80 | $8,652.00 |

**Practice:** 163 - Irrigation Water Management Design

**Scenario** #9 - 1-2 Designs - Without Pump Test

**Scenario Description:**

An agricultural producer wishes to address irrigation water use inefficiency and all other appropriate resource concerns through an EQIP contract with at least one (1) irrigation practice scenario. The pump for the irrigation system is of known performance and less then 3 years old. Each "Design" indicates that new devices or components is closely related to other devices or components of the irrigation water management system even if numerous practices are contracted. The Irrigation Water Management DIA includes reviewing, and when needed, revising alternatives to address the identified concern(s). The Irrigation Water Management DIA documents: a) the client's final decisions related to the associated irrigation practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Insufficient Water - Inefficient Irrigation Water Use; Water Quality Degradation - Excessive sediment in surface waters, Nutrients transported to surface and groundwater, pesticides transported to surface and groundwater, pathogens and chemicals from manure, and biosolids or compost applications transported to surface and groundwater, excess salts in surface and groundwater; Degraded Plant Condition - Undesirable plant productivity and health; Inefficient Energy Use - Equipment and facilities.

**Before Situation:**

Producer wants to improve irrigation water management on their agricultural operation to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Irrigation Water Management DIA. The DIA 163 criteria incorporates recommended measures to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. Associated Practices: Code 449-Irrigation Water Management, Code 441-Irrigation System, Microirrigation, Code 442-Sprinkler System, Code 443-Irrigation System, Surface and Subsurface, Code 430-Irrigation Pipeline, Code 428-Irrigation Ditch Lining, Code 388-Irrigation Field Ditch, Code 320-Irrigation Canal or Lateral, Code 587-Structure for Water Control, Code 436-Irrigation Reservoir, Code 447-Irrigation and Drainage Tailwater Recovery, Code 533-Pumping Plant, Code 464-Irrigation Land Leveling, Code 450-Anionic Polyacrylamide (PAM) Application, Code 610-Saline and Sodic Soil Management, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Irrigation Water Management DIA. The DIA 163 criteria include tasks needed to document the client's decisions and design of conservation practices which address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use. The Irrigation Water Management DIA meets the quality criteria for the DIA 164 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,841.56

**Scenario Cost/Unit:** $6,841.56

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, small surveying crew | 1296 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies. | Hours | $121.42 | 8 | $971.36 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 40 | $4,145.60 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 8 | $675.04 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Cap Labor, Survey and Mapping Technician | 1591 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. | Hours | $61.47 | 16 | $983.52 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 2 | $66.04 |

**Practice:** 163 - Irrigation Water Management Design

**Scenario** #25 - 3 or More Designs - Without Pump Test

**Scenario Description:**

An agricultural producer wishes to address irrigation water use inefficiency and all other appropriat resource concerns through an EQIP contract with multiple irrigation practice scenario. The pump for the irrigation system is of known performance and less then 3 years old. Each "Design" indicates that new devices or components is closely related to other decives or components of the irrigation water management system even if numerous practices are contracted. The Irrigation Water Management DIA includes reviewing, and, when needed, revising alternatives to address the identified concern(s). The Irrigation Water Management DIA documents: a) the client's final decisions related to the associated irrigation practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Insufficient Water - Inefficient Irrigation Water Use; Water Quality Degradation - Excessive sediment in surface waters, Nutrients transported to surface and groundwater, pesticides transported to surface and groundwater, pathogens and chemicals from manure, and biosolids or compost applications transported to surface and groundwater, excess salts in surface and groundwater; Degraded Plant Condition - Undesirable plant productivity and health; Inefficient Energy Use - Equipment and facilities.

**Before Situation:**

Producer wants to improve irrigation water management on their agricultural operation to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Irrigation Water Management DIA. The DIA 163 criteria incorporates recommended measures to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. Associated Practices: Associated Practices: Code 449-Irrigation Water Management, Code 441-Irrigation System, Microirrigation, Code 442-Sprinkler System, Code 443-Irrigation System, Surface and Subsurface, Code 430-Irrigation Pipeline, Code 428-Irrigation Ditch Lining, Code 388-Irrigation Field Ditch, Code 320-Irrigation Canal or Lateral, Code 587-Structure for Water Control, Code 436-Irrigation Reservoir, Code 447-Irrigation and Drainage Tailwater Recovery, Code 533-Pumping Plant, Code 464-Irrigation Land Leveling, Code 450-Anionic Polyacrylamide (PAM) Application, Code 610-Saline and Sodic Soil Management, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Drainage Water Management DIA. The DIA 164 criteria include tasks needed to document the client's decisions and design of conservation practices which address water quality, plant condition, or soil health. The Drainage Water Management DIA meets the quality criteria for the DIA 164 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $11,162.74

**Scenario Cost/Unit:** $11,162.74

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, small surveying crew | 1296 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies. | Hours | $121.42 | 16 | $1,942.72 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 56 | $5,803.84 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 16 | $1,350.08 |

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|---|---|---|---|---|---|---|
| Cap Labor, Survey and Mapping Technician | 1591 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. | Hours | $61.47 | 32 | $1,967.04 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |

**Practice:** 163 - Irrigation Water Management Design

**Scenario** #41 - 1-2 Designs - With Pump Test

**Scenario Description:**

An agricultural producer wishes to address irrigation water use inefficiency and all other appropriat resource concerns through an EQIP contract with multiple irrigation practice scenario through an EQIP contract with at least one (1) irrigation practice scenario. The pump for the irrigation system is of unknown performance and older than 3 years. Each "Design" indicates that new devices or components is closely related to other devices or components of the irrigation water managment system even if numerous practices are contracted. The Irrigation Water Management DIA includes reviewing, and, when needed, revising alternatives to address the identified concern(s). The Irrigation Water Management DIA documents: a) the client's final decisions related to the associated irrigation practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Insufficient Water - Inefficient Irrigation Water Use; Water Quality Degradation - Excessive sediment in surface waters, Nutrients transported to surface and groundwater, pesticides transported to surface and groundwater, pathogens and chemicals from manure, and biosolids or compost applications transported to surface and groundwater, excess salts in surface and groundwater; Degraded Plant Condition - Undesirable plant productivity and health; Inefficient Energy Use - Equipment and facilities.

**Before Situation:**

Producer wants to improve irrigation water management on their agricultural operation to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. The pump for the irrigation system is of unknown performance and older than 3 years. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Irrigation Water Management DIA. The DIA 163 criteria incorporates recommended measures to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. Associated Practices: Code 449-Irrigation Water Management, Code 441-Irrigation System, Microirrigation, Code 442-Sprinkler System, Code 443-Irrigation System, Surface and Subsurface, Code 430-Irrigation Pipeline, Code 428-Irrigation Ditch Lining, Code 388-Irrigation Field Ditch, Code 320-Irrigation Canal or Lateral, Code 587-Structure for Water Control, Code 436-Irrigation Reservoir, Code 447-Irrigation and Drainage Tailwater Recovery, Code 533-Pumping Plant, Code 464-Irrigation Land Leveling, Code 450-Anionic Polyacrylamide (PAM) Application, Code 610-Saline and Sodic Soil Management, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Irrigation Water Management DIA. The DIA 163 criteria include tasks needed to document the client's decisions and design of conservation practices which address address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use. The Irrigation Water Management DIA meets the quality criteria for the DIA 163 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,138.68

**Scenario Cost/Unit:** $8,138.68

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, small surveying crew | 1296 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies. | Hours | $121.42 | 8 | $971.36 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 48 | $4,974.72 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 8 | $675.04 |

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|---|---|---|---|---|---|---|
| Cap Labor, Survey and Mapping Technician | 1591 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. | Hours | $61.47 | 16 | $983.52 |
| CAP Labor, Skilled | 1604 | Conservation Activity Plan labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $39.00 | 12 | $468.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 2 | $66.04 |

**Practice:** 163 - Irrigation Water Management Design

**Scenario** #57 - 3 or More Designs - With Pump Test

**Scenario Description:**

An agricultural producer wishes to address irrigation water use inefficiency and all other appropriat resource concerns through an EQIP contract with multiple irrigation practice scenario through an EQIP contract with at least one (1) irrigation practice scenario. The pump for the irrigation system is of unknown performance and older than 3 years. Each "Design" indicates that new devices or components is closely related to other devices or components of the irrigation water management system even if numerous practices are contracted. The Irrigation Water Management DIA includes reviewing, and, when needed, revising alternatives to address the identified concern(s). The Irrigation Water Management DIA documents: a) the client's final decisions related to the associated irrigation practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Insufficient Water - Inefficient Irrigation Water Use; Water Quality Degradation - Excessive sediment in surface waters, Nutrients transported to surface and groundwater, pesticides transported to surface and groundwater, pathogens and chemicals from manure, and biosolids or compost applications transported to surface and groundwater, excess salts in surface and groundwater; Degraded Plant Condition - Undesirable plant productivity and health; Inefficient Energy Use - Equipment and facilities.

**Before Situation:**

Producer wants to improve irrigation water management on their agricultureal operation to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. The pump for the irrigation system is of unknown performance and older than 3 years. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Irrigation Water Management DIA. The DIA 163 criteria incorporates recommended measures toaddress insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. Associated Practices: Code 449-Irrigation Water Management, Code 441-Irrigation System, Microirrigation, Code 442-Sprinkler System, Code 443-Irrigation System, Surface and Subsurface, Code 430-Irrigation Pipeline, Code 428-Irrigation Ditch Lining, Code 388-Irrigation Field Ditch, Code 320-Irrigation Canal or Lateral, Code 587-Structure for Water Control, Code 436-Irrigation Reservoir, Code 447-Irrigation and Drainage Tailwater Recovery, Code 533-Pumping Plant, Code 464-Irrigation Land Leveling, Code 450-Anionic Polyacrylamide (PAM) Application, Code 610-Saline and Sodic Soil Management, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Irrigation Water Management DIA. The DIA 163 criteria include tasks needed to document the client's decisions and design of conservation practices which address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use. The Irrigation Water Management DIA meets the quality criteria for the DIA 163 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $12,927.86

**Scenario Cost/Unit:** $12,927.86

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, small surveying crew | 1296 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies. | Hours | $121.42 | 16 | $1,942.72 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 64 | $6,632.96 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 16 | $1,350.08 |

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|---|---|---|---|---|---|---|
| Cap Labor, Survey and Mapping Technician | 1591 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. | Hours | $61.47 | 32 | $1,967.04 |
| CAP Labor, Skilled | 1604 | Conservation Activity Plan labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $39.00 | 24 | $936.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |

**Practice:** 164 - Improved Management of Drainage Water Design

**Scenario** #9 - 1-2 Designs - Tile Map Available

**Scenario Description:**

An agricultural producer wishes to address water quality degradation, poor plant productivity and health, and/or oxidation of organic matter in soils on a relatively flat crop field with a patterned drainage system through an EQIP contract with at least one (1) drainage practice scenario. A map of the tile system is available. Each "Design" indicates that each new device or component is closely related to other devices or components of the drainage water management system even if numerous practices are contracted. The Drainage Water Management DIA includes reviewing, and when needed, revising alternatives to address the identified concern(s). The Drainage Water Management DIA documents: a) the client's final decisions related to the associated drainage practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Water Quality - Excess nutrients in surface and groundwaters, Plant Condition - Plant Productivity and Health, and Soil Health - Subsidence.

**Before Situation:**

Producer wants to improve drainage water management on their agricultural operation to address water quality, plant condition, or soil health concerns. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Drainage Water Management DIA. The DIA 164 criteria incorporates recommended measures to increase water quality, plant condition, or soil health. Associated Practices: 554-Drainage Water Management, 604-Saturated Buffer, 605-Denitrifying Bioreactor, 606-Subsurface Drain, 607-Surface Drain, Field Ditch, 608-Surface Drain, Main or Lateral, 587-Structure for Water Control, 590-Nutrient Management, 340-Cover Crop, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Drainage Water Management DIA. The DIA 164 criteria include tasks needed to document the client's decisions and design of conservation practices which address water quality, plant condition, or soil health. The Drainage Water Management DIA meets the quality criteria for the DIA 164 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,687.48

**Scenario Cost/Unit:** $6,687.48

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, small surveying crew | 1296 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies. | Hours | $121.42 | 8 | $971.36 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 32 | $3,316.48 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 16 | $1,350.08 |
| Cap Labor, Survey and Mapping Technician | 1591 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. | Hours | $61.47 | 16 | $983.52 |

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|---|---|---|---|---|---|---|
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 2 | $66.04 |

**Practice:** 164 - Improved Management of Drainage Water Design

**Scenario** #25 - 3 or More Designs - Tile Map Available

**Scenario Description:**

An agricultural producer wishes to address water quality degradation, poor plant productivity and health, and/or oxidation of organic matter in soils on a relatively flat crop field with a patterned drainage system through an EQIP contract with multiple drainage practice scenario. A map of the tile system is available. Each "Design" indicates that each new device or component is closely related to other devices or components of the drainage water management system even if numerous practices are contracted. The Drainage Water Management DIA includes reviewing, and when needed, revising alternatives to address the identified concern(s). The Drainage Water Management DIA documents: a) the client's final decisions related to the associated drainage practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Water Quality - Excess nutrients in surface and groundwaters, Plant Condition - Plant Productivity and Health, and Soil Health - Subsidence.

**Before Situation:**

Producer wants to improve drainage water management on their agricultural operation to address water quality, plant condition, or soil health concerns. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Drainage Water Management DIA. The DIA 164 criteria incorporates recommended measures to increase water quality, plant condition, or soil health. Associated Practices: 554-Drainage Water Management, 604-Saturated Buffer, 605-Denitrifying Bioreactor, 606-Subsurface Drain, 607-Surface Drain, Field Ditch, 608-Surface Drain, Main or Lateral, 587-Structure for Water Control, 590-Nutrient Management, 340-Cover Crop, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Drainage Water Management DIA. The DIA 164 criteria include tasks needed to document the client's decisions and design of conservation practices which address water quality, plant condition, or soil health. The Drainage Water Management DIA meets the quality criteria for the DIA 164 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $10,516.90

**Scenario Cost/Unit:** $10,516.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, small surveying crew | 1296 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies. | Hours | $121.42 | 16 | $1,942.72 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 48 | $4,974.72 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 24 | $2,025.12 |
| Cap Labor, Survey and Mapping Technician | 1591 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. | Hours | $61.47 | 24 | $1,475.28 |

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|---|---|---|---|---|---|---|
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |

**Practice:** 164 - Improved Management of Drainage Water Design

**Scenario** #41 - 1-2 Designs - No Tile Map Available

**Scenario Description:**

An agricultural producer wishes to address water quality degradation, poor plant productivity and health, and/or oxidation of organic matter in soils on a relatively flat crop field with a patterned drainage system through an EQIP contract with at least one (1) drainage practice scenario. A map of the tile system is not available. Each "Design" indicates that each new device or component is closely related to other devices or components of the drainage water management system even if numerous practices are contracted. The Drainage Water Management DIA includes reviewing, and when needed, revising alternatives to address the identified concern(s). The Drainage Water Management DIA documents: a) the client's final decisions related to the associated drainage practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Water Quality - Excess nutrients in surface and groundwaters, Plant Condition - Plant Productivity and Health, and Soil Health - Subsidence.

**Before Situation:**

Producer wants to improve drainage water management on their agricultural operation to address water quality, plant condition, or soil health concerns. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Drainage Water Management DIA. The DIA 164 criteria incorporates recommended measures to increase water quality, plant condition, or soil health. Associated Practices: 554-Drainage Water Management, 604-Saturated Buffer, 605-Denitrifying Bioreactor, 606-Subsurface Drain, 607-Surface Drain, Field Ditch, 608-Surface Drain, Main or Lateral, 587-Structure for Water Control, 590-Nutrient Management, 340-Cover Crop, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Drainage Water Management DIA. The DIA 164 criteria include tasks needed to document the client's decisions and design of conservation practices which address water quality, plant condition, or soil health. The Drainage Water Management DIA meets the quality criteria for the DIA 164 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,111.96

**Scenario Cost/Unit:** $9,111.96

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, small surveying crew | 1296 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies. | Hours | $121.42 | 16 | $1,942.72 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 40 | $4,145.60 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 16 | $1,350.08 |
| Cap Labor, Survey and Mapping Technician | 1591 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. | Hours | $61.47 | 16 | $983.52 |

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|---|---|---|---|---|---|---|
| CAP Labor, Skilled | 1604 | Conservation Activity Plan labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $39.00 | 16 | $624.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 2 | $66.04 |

**Practice:** 164 - Improved Management of Drainage Water Design

**Scenario** #57 - 3 or More Designs - No Tile Map Available

**Scenario Description:**

An agricultural producer wishes to address water quality degradation, poor plant productivity and health, and/or oxidation of organic matter in soils on a relatively flat crop field with a patterned drainage system through an EQIP contract with multiple drainage practice scenario. A map of the tile system is not available. Each "Design" indicates that new devices or components are closely related to other devices or components of the drainage water management system even if numerous designs are contracted. If more than one practice is contracted, then "2-5 Designs" shall be contracted for the Drainage Water Management DIA. The Drainage Water Management DIA includes reviewing, and, when needed, revising alternatives to address the identified concern(s). The Drainage Water Management DIA documents: a) the client's final decisions related to the associated drainage practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Water Quality - Excess nutrients in surface and groundwaters, Plant Condition - Plant Productivity and Health, and Soil Health - Subsidence.

**Before Situation:**

Producer wants to improve drainage water management on their agricultural operation to address water quality, plant condition, or soil health concerns. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Drainage Water Management DIA. The DIA 164 criteria incorporates recommended measures to increase water quality, plant condition, or soil health. Associated Practices: 554-Drainage Water Management, 604-Saturated Buffer, 605-Denitrifying Bioreactor, 606-Subsurface Drain, 607-Surface Drain, Field Ditch, 608-Surface Drain, Main or Lateral, 587-Structure for Water Control, 590-Nutrient Management, 340-Cover Crop, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop practice scenario designs using the Drainage Water Management DIA. The DIA 164 criteria include tasks needed to document the client's decisions and design of conservation practices which address water quality, plant condition, or soil health. The Drainage Water Management DIA meets the quality criteria for the DIA 164 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $11,452.90

**Scenario Cost/Unit:** $11,452.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, small surveying crew | 1296 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies. | Hours | $121.42 | 16 | $1,942.72 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 48 | $4,974.72 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 24 | $2,025.12 |
| Cap Labor, Survey and Mapping Technician | 1591 | Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. | Hours | $61.47 | 24 | $1,475.28 |

| | | | | | | |
|---|---|---|---|---|---|---|
| CAP Labor, Skilled | 1604 | Conservation Activity Plan labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $39.00 | 24 | $936.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |

**Practice:** 165 - Forest Management Practice Design

**Scenario** #9 - DIA Less Than or Equal to 20 acres

**Scenario Description:**

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 1 to 20 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Design and Implementation Activities is needed to allow the producer to apply for financial assistance through EQIP or other programs to develop implementation requirements for conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Design and Implementation Activities (DIA). The DIA criteria requires the design of site-specific forestry activities as a component of a forest management plan to address identified resource concerns. Additional DIA criteria are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $420.00

**Scenario Cost/Unit:** $420.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 5 | $420.00 |

**Practice:** 165 - Forest Management Practice Design

**Scenario** #25 - DIA 501 to 1000 acres

**Scenario Description:**

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 501 to 1000 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Design and Implementation Activities is needed to allow the producer to apply for financial assistance through EQIP or other programs to develop implementation requirements for conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Design and Implementation Activities (DIA). The DIA criteria requires the design of site-specific forestry activities as a component of a forest management plan to address identified resource concerns. Additional DIA criteria are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,596.00

**Scenario Cost/Unit:** $1,596.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 19 | $1,596.00 |

**Practice:** 165 - Forest Management Practice Design

**Scenario** #41 - DIA 101 to 250 acres

**Scenario Description:**

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 101 to 250 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Design and Implementation Activities is needed to allow the producer to apply for financial assistance through EQIP or other programs to develop implementation requirements for conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Design and Implementation Activities (DIA). The DIA criteria requires the design of site-specific forestry activities as a component of a forest management plan to address identified resource concerns. Additional DIA criteria are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,008.00

**Scenario Cost/Unit:** $1,008.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 12 | $1,008.00 |

**Practice:** 165 - Forest Management Practice Design

**Scenario** #57 - DIA Greater Than 1000 acres

**Scenario Description:**

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 1001 acres or greater in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Design and Implementation Activities is needed to allow the producer to apply for financial assistance through EQIP or other programs to develop implementation requirements for conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Design and Implementation Activities (DIA). The DIA criteria requires the design of site-specific forestry activities as a component of a forest management plan to address identified resource concerns. Additional DIA criteria are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,932.00

**Scenario Cost/Unit:** $1,932.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 23 | $1,932.00 |

**Practice:** 165 - Forest Management Practice Design

**Scenario** #73 - DIA 251 to 500 acres

**Scenario Description:**

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 251 to 500 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Design and Implementation Activities is needed to allow the producer to apply for financial assistance through EQIP or other programs to develop implementation requirements for conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Design and Implementation Activities (DIA). The DIA criteria requires the design of site-specific forestry activities as a component of a forest management plan to address identified resource concerns. Additional DIA criteria are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,344.00

**Scenario Cost/Unit:** $1,344.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 16 | $1,344.00 |

**Practice:** 165 - Forest Management Practice Design

**Scenario** #89 - DIA 21 to 100 acres

**Scenario Description:**

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 21 to 100 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Design and Implementation Activities is needed to allow the producer to apply for financial assistance through EQIP or other programs to develop implementation requirements for conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Design and Implementation Activities (DIA). The DIA criteria requires the design of site-specific forestry activities as a component of a forest management plan to address identified resource concerns. Additional DIA criteria are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $672.00

**Scenario Cost/Unit:** $672.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 8 | $672.00 |

**Practice:** 199 - Conservation Plan

**Scenario** #25 - Small Farm – less than or equal to 10 acres

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The small farm planning scenario involves combinations of various specialty crops, small fruits, tree and vine crops, and small livestock enterprises on less than or equal to 10 acres.

**Before Situation:**

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

**After Situation:**

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, or (if applicable to the enterprise) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,260.70

**Scenario Cost/Unit:** $3,260.70

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 10 | $1,081.50 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 8 | $829.12 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 16 | $1,350.08 |

**Practice:** 199 - Conservation Plan

**Scenario** #41 - Low Complexity Plan, <200 acres

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use and one agricultural enterprise covering up to less than 200 acres.

**Before Situation:**

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

**After Situation:**

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, or (if applicable to the enterprise) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,134.00

**Scenario Cost/Unit:** $4,134.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 8 | $865.20 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 12 | $1,243.68 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 24 | $2,025.12 |

**Practice:** 199 - Conservation Plan

**Scenario** #57 - Low Complexity Plan, 200-1,000 acres

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use and one agricultural enterprise covering 200-1,000 acres.

**Before Situation:**

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

**After Situation:**

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, or (if applicable to the enterprise) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,088.80

**Scenario Cost/Unit:** $6,088.80

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 16 | $1,730.40 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 16 | $1,658.24 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 32 | $2,700.16 |

**Practice:** 199 - Conservation Plan

**Scenario** #73 - Low Complexity Plan, >1,000 acres

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use and one agricultural enterprise covering more than 1,000 acres.

**Before Situation:**

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

**After Situation:**

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, or (if applicable to the enterprise) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,113.92

**Scenario Cost/Unit:** $8,113.92

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 16 | $1,730.40 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 16 | $1,658.24 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 56 | $4,725.28 |

**Practice:** 199 - Conservation Plan

**Scenario** #89 - Medium Complexity Plan, <200 acres

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use with two agricultural enterprises, or two land uses with one agricultural enterprise (ex. farmstead and cropland used for a dairy enterprise) covering less than 200 acres.

**Before Situation:**

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

**After Situation:**

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, and/or (if applicable to the enterprises) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,088.80

**Scenario Cost/Unit:** $6,088.80

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 16 | $1,730.40 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 16 | $1,658.24 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 32 | $2,700.16 |

**Practice:** 199 - Conservation Plan

**Scenario** #105 - Medium Complexity Plan, 200-1,000 acres

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use with two agricultural enterprises, or two land uses with one agricultural enterprise (ex. farmstead and cropland used for a dairy enterprise) covering 200-1000 acres.

**Before Situation:**

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

**After Situation:**

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, and/or (if applicable to the enterprises) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,113.92

**Scenario Cost/Unit:** $8,113.92

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 16 | $1,730.40 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 16 | $1,658.24 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 56 | $4,725.28 |

**Practice:** 199 - Conservation Plan

**Scenario** #121 - Medium Complexity Plan, >1,000 acres

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use with two agricultural enterprises, or two land uses with one agricultural enterprise (ex. farmstead and cropland used for a dairy enterprise) covering more than 1,000 acres.

**Before Situation:**

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

**After Situation:**

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, and/or (if applicable to the enterprises) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,887.58

**Scenario Cost/Unit:** $9,887.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 18 | $1,946.70 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 18 | $1,865.52 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 72 | $6,075.36 |

**Practice:** 199 - Conservation Plan

**Scenario** #137 - High Complexity Plan, <200 acres

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use supporting three or more agricultural enterprises, two land uses supporting two or more agricultural enterprises, or three or more land uses and any number of enterprises on up to less than 200 acres.

**Before Situation:**

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

**After Situation:**

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, and/or (if applicable to the enterprises) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,113.92

**Scenario Cost/Unit:** $8,113.92

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 16 | $1,730.40 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 16 | $1,658.24 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 56 | $4,725.28 |

**Practice:** 199 - Conservation Plan

**Scenario** #153 - High Complexity Plan, 200-1,000 acres

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves three or more agricultural enterprises, two land uses supporting two or more agricultural enterprises, or three or more land uses and any number of enterprises on 200-1000 acres.

**Before Situation:**

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

**After Situation:**

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, and/or (if applicable to the enterprises) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,887.58

**Scenario Cost/Unit:** $9,887.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 18 | $1,946.70 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 18 | $1,865.52 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 72 | $6,075.36 |

**Practice:** 199 - Conservation Plan

**Scenario** #169 - High Complexity Plan, >1,000 acres

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use supporting three or more agricultural enterprises, two land uses supporting two or more agricultural enterprises, or three or more land uses and any number of enterprises on more than 1,000 acres.

**Before Situation:**

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

**After Situation:**

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, and/or (if applicable to the enterprises) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $11,409.78

**Scenario Cost/Unit:** $11,409.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 22 | $2,379.30 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 22 | $2,280.08 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 80 | $6,750.40 |

**Practice:** 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

**Scenario** #1 - Data Collect Surface Year 1 plus - NO QAPP

**Scenario Description:**

This practice scenario provides for the use of an edge-of-field WQ monitoring station(s) for surface run-off for one control and one treatment site. The scenario requires the collection and analysis of edge-of-field water quality data with an average sample collection of 20 per year per station, with each sample analyzed for 6 separate parameters (2 sites x 20 samples x 6 parameters = 240 total water quality tests). The data will be transferred through semi-annual submittal and annual report which include some preliminary annual analysis. This scenario will normally be used in year 1 to next to the last year of monitoring of the contract when a monitoring plan and QAPP will be not prepared as this is for an existing monitoring system that has been accepted as meeting both Activity 201 and 202. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

**Before Situation:**

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

**After Situation:**

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and one treatment site. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared as part of an existing monitoring system installation where the QAPP and monitoring plan meets Activity 201 requirements and no major changes are needed to meet Activity 202 requirements. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

**Feature Measure:** Measuring Site

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $23,473.84

**Scenario Cost/Unit:** $23,473.84

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 130 | $3,952.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 60 | $7,173.00 |
| **Materials** | | | | | | |
| Testing, Blanks Samples | 2612 | Blanks or Duplicate Samples; Includes materials only. | Each | $50.61 | 4 | $202.44 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 240 | $12,146.40 |

**Practice:** 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

**Scenario** #142 - Data Collect Tile Year 1-QAPP

**Scenario Description:**

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for tile and subsurface drainage run-off for one control and one treatment site with an average of 40 samples per year per station, with each sample analyzed for 6 separate parameters (2 sites x 40 samples x 6 parameters = 480 total water quality tests). A subsurface system also requires the addition of a surface sampling system at the same outlet to capture overland flow with 20 samples per year, with each sample analyzed for 6 separate parameters (2 sites x 20 samples x 6 parameters = 240 total water quality tests). Without the surface system then not all runoff is captured for calculating a true event mean concentration as per the 201 Standard. The scenario requires the creation of a survey to site a monitoring station, preparation of monitoring plan and a quality assurance project plan to detail how data will be collected, handled and analyzed, provides for the data collection, analysis, semiannual report, and annual report. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP need to be prepared prior to installation under Edge-of-Field Water Quality Monitoring - System Installation (202). THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

**Before Situation:**

The agricultural operation prior to installing this practice will not have a plan or quality assurance project plan prepared for installing equipment nor collecting data for sediment and nutrients leaving the edge of field.

**After Situation:**

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual report, and annual report for one control and one treatment site. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared prior to installation under Edge-of-Field Water Quality Monitoring - System Installation (202). The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

**Feature Measure:** Measuring Site

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $66,376.62

**Scenario Cost/Unit:** $66,376.62

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 312 | $9,484.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 166 | $19,845.30 |
| **Materials** | | | | | | |
| Testing, Blanks Samples | 2612 | Blanks or Duplicate Samples; Includes materials only. | Each | $50.61 | 12 | $607.32 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 720 | $36,439.20 |

**Practice:** 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

**Scenario** #149 - Data Collect Tile Year 1+ less QAPP (pre-install information) with two treatment sites

**Scenario Description:**

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for tile and subsurface drainage run-off for one control and two treatment sites with an average of 40 samples per year per station, with each sample analyzed for 6 separate parameters (3 sites x 40 samples x 6 parameters = 720 total water quality tests). A subsurface system also requires the addition of a surface sampling system at the same outlet to capture overland flow with 20 samples per year, with each sample analyzed for 6 separate parameters (3 sites x 20 samples x 6 parameters = 360 total water quality tests). Without the surface system then not all runoff is captured for calculating a true event mean concentration as per the 201 Standard. The data will be transferred through semi-annual submittal and annual reports, which include some preliminary annual analysis. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP will not be prepared as this is for an existing monitoring system be accepted as meeting both Activity 201 and 202. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

**Before Situation:**

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

**After Situation:**

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and two treatment sites. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared as part of an existing monitoring system installation where the QAPP and monitoring plan meets Activity 201 requirements and no major changes are needed to meet Activity 202 requirements. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

**Feature Measure:** Measuring site

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $82,774.63

**Scenario Cost/Unit:** $82,774.63

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 364 | $11,065.60 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 135 | $16,139.25 |
| **Materials** | | | | | | |
| Testing, Blanks Samples | 2612 | Blanks or Duplicate Samples; Includes materials only. | Each | $50.61 | 18 | $910.98 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 1080 | $54,658.80 |

**Practice:** 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

**Scenario** #156 - Data Collect Tile Year 1 plus - NO QAPP

**Scenario Description:**

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for tile and subsurface drainage run-off for one control and one treatment site with an average of 40 samples per year per station, with each sample analyzed for 6 separate parameters (2 sites x 40 samples x 6 parameters = 480 total water quality tests). A subsurface system also requires the addition of a surface sampling system at the same outlet to capture overland flow with 20 samples per year, with each sample analyzed for 6 separate parameters (2 sites x 20 samples x 6 parameters = 240 total water quality tests). Without the surface system then not all runoff is captured for calculating a true event mean concentration as per the 201 Standard. The data will be transferred through semi-annual submittal and annual reports, which include some preliminary annual analysis. This scenario will normally be used in year 1 to next to the last year of monitoring of the contract when a monitoring plan and QAPP will be not prepared as this is for an existing monitoring system be accepted as meeting both Activity 201 and 202. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

**Before Situation:**

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

**After Situation:**

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and one treatment site. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared as part of an existing monitoring system installation where the QAPP and monitoring plan meets Activity 201 requirements and no major changes are needed to meet Activity 202 requirements. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

**Feature Measure:** Measuring Site

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $57,290.82

**Scenario Cost/Unit:** $57,290.82

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 312 | $9,484.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 90 | $10,759.50 |
| **Materials** | | | | | | |
| Testing, Blanks Samples | 2612 | Blanks or Duplicate Samples; Includes materials only. | Each | $50.61 | 12 | $607.32 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 720 | $36,439.20 |

**Practice:** 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

**Scenario** #163 - Data Collect Tile Last Year with two treatment sites

**Scenario Description:**

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for tile and subsurface drainage run-off for one control and two treatment sites with an average of 40 samples per year per station with each sample analyzed for 6 separate parameters (3 sites x 40 samples x 6 parameters = 720 total water quality tests). A subsurface system also requires the addition of a surface sampling system at the same outlet to capture overland flow with 20 samples per year with each sample analyzed for 6 separate parameters (3 sites x 20 samples x 6 parameters = 360 total water quality tests). Without the surface system then not all runoff is captured for calculating a true event mean concentration as per the 201 Standard. The scenario requires the collection and analysis of edge-of-field water quality data along with a comprehensive report to statistically prove relationship between select conservation practices and water quality. The data will be transferred through semi-annual submittal and annual report and a comprehensive report of practice effectiveness. This scenario will be used in the last year of monitoring. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

**Before Situation:**

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

**After Situation:**

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and two treatment sites. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201 to provide a comprehensive report of statistical testing of data collected during to complete monitoring period.

**Feature Measure:** Measuring site

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $89,947.63

**Scenario Cost/Unit:** $89,947.63

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 364 | $11,065.60 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 195 | $23,312.25 |
| **Materials** | | | | | | |
| Testing, Blanks Samples | 2612 | Blanks or Duplicate Samples; Includes materials only. | Each | $50.61 | 18 | $910.98 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 1080 | $54,658.80 |

**Practice:** 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

**Scenario** #170 - Data Collect Tile Last Year

**Scenario Description:**

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for tile and subsurface drainage run-off for one control and one treatment site with an average of 40 samples per year per station, with each sample analyzed for 6 separate parameters (2 sites x 40 samples x 6 parameters = 480 total water quality tests). A subsurface system also requires the addition of a surface sampling system at the same outlet to capture overland flow with 20 samples per year, with each sample analyzed for 6 separate parameters (2 sites x 20 samples x 6 parameters = 240 total water quality tests). Without the surface system then not all runoff is captured for calculating a true event mean concentration as per the 201 Standard. The scenario requires the collection and analysis of edge-of-field water quality data along with a comprehensive report to statistically prove relationship between select conservation practices and water quality. The data will be transferred through semi-annual submittal and annual report and a comprehensive report of practice effectiveness. This scenario will be used in the last year of monitoring. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

**Before Situation:**

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

**After Situation:**

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and one treatment site. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201 to provide a comprehensive report of statistical testing of data collected during to complete monitoring period.

**Feature Measure:** Measuring site

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $62,072.82

**Scenario Cost/Unit:** $62,072.82

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 312 | $9,484.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 130 | $15,541.50 |
| **Materials** | | | | | | |
| Testing, Blanks Samples | 2612 | Blanks or Duplicate Samples; Includes materials only. | Each | $50.61 | 12 | $607.32 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 720 | $36,439.20 |

**Practice:** 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

**Scenario** #177 - Data Collect Surface Year 1-QAPP with two treatment Sites

**Scenario Description:**

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for surface run-off for one control and two treatment sites with an average of 20 samples per year per station, with each sample analyzed for 6 separate parameters (3 sites x 20 samples x 6 parameters = 360 total water quality tests). The scenario requires the creation of a survey to site a monitoring station, preparation of monitoring plan and a quality assurance project plan to detail how data will be collected, handled and analyzed, provides for the data collection, analysis, semiannual report, and annual report. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP need to be prepared prior to installation under Edge-of-Field Water Quality Monitoring - System Installation (202). THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

**Before Situation:**

The agricultural operation prior to installing this practice will not have a plan or quality assurance project plan prepared for installing equipment nor collecting data for sediment and nutrients leaving the edge of field.

**After Situation:**

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual report, and annual report for one control and one treatment site. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared prior to installation under Edge-of-Field Water Quality Monitoring - System Installation (202). The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

**Feature Measure:** Measuring Sites

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $45,262.86

**Scenario Cost/Unit:** $45,262.86

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 156 | $4,742.40 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 184 | $21,997.20 |
| **Materials** | | | | | | |
| Testing, Blanks Samples | 2612 | Blanks or Duplicate Samples; Includes materials only. | Each | $50.61 | 6 | $303.66 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 360 | $18,219.60 |

**Practice:** 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

**Scenario** #184 - Data Collect Surface Year 1-QAPP

**Scenario Description:**

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for surface run-off for one control and one treatment site with an average of 20 samples per year per station, with each sample analyzed for 6 separate parameters (2 sites x 20 samples x 6 parameters = 240 total water quality tests). The scenario requires the creation of a survey to site a monitoring station, preparation of monitoring plan and a quality assurance project plan to detail how data will be collected, handled and analyzed, provides for the data collection, analysis, semiannual report, and annual report. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP need to be prepared prior to installation under Edge-of-Field Water Quality Monitoring - System Installation (202). THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

**Before Situation:**

The agricultural operation prior to installing this practice will not have a plan or quality assurance project plan prepared for installing equipment nor collecting data for sediment and nutrients leaving the edge of field.

**After Situation:**

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual report, and annual report for one control and one treatment site. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared prior to installation under Edge-of-Field Water Quality Monitoring - System Installation (202). The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

**Feature Measure:** Measuring Sites

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $32,559.64

**Scenario Cost/Unit:** $32,559.64

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 130 | $3,952.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 136 | $16,258.80 |
| **Materials** | | | | | | |
| Testing, Blanks Samples | 2612 | Blanks or Duplicate Samples; Includes materials only. | Each | $50.61 | 4 | $202.44 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 240 | $12,146.40 |

**Practice:** 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

**Scenario** #193 - Data Collect Surface Year 1+ less QAPP (pre-install information) with two treatment sites

**Scenario Description:**

This practice scenario provides for the use of an edge-of-field WQ monitoring station(s) for surface run-off for one control and two treatment sites. The scenario requires the collection and analysis of edge-of-field water quality data with an average sample collection of 20 per year for each surface system, with each sample analyzed for 6 separate parameters (3 sites x 20 samples x 6 parameters = 360 total water quality tests). The data will be transferred through semi-annual submittal and annual report, which include some preliminary annual analysis. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP will not be prepared as this is for an existing monitoring system be accepted as meeting both Activity 201 and 202. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

**Before Situation:**

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

**After Situation:**

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semi-annual submittal, and annual report for one control and two treatment sites. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared as part of an existing monitoring system installation where the QAPP and monitoring plan meets Activity 201 requirements and no major changes are needed to meet Activity 202 requirements. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

**Feature Measure:** Measuring site

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $34,025.16

**Scenario Cost/Unit:** $34,025.16

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 156 | $4,742.40 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 90 | $10,759.50 |
| **Materials** | | | | | | |
| Testing, Blanks Samples | 2612 | Blanks or Duplicate Samples; Includes materials only. | Each | $50.61 | 6 | $303.66 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 360 | $18,219.60 |

**Practice:** 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

**Scenario** #200 - Data Collect Surface Last Year

**Scenario Description:**

This practice scenario provides for the use of an edge-of-field WQ monitoring station(s) for surface run-off for one control and one treatment site with an average of 20 samples per year per station, with each sample analyzed for 6 separate parameters (2 sites x 20 samples x 6 parameters = 240 total water quality tests). The scenario requires the collection and analysis of edge-of-field water quality data along with a comprehensive report to statistically prove relationship between select conservation practices and water quality. The data will be transferred through semi-annual submittal and annual report and a comprehensive report of practice effectiveness. This scenario will be used in the last year of monitoring. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

**Before Situation:**

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

**After Situation:**

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and one treatment site. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201 to provide a comprehensive report of statistical testing of data collected to complete monitoring period.

**Feature Measure:** Measuring Site

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $28,255.84

**Scenario Cost/Unit:** $28,255.84

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 130 | $3,952.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 100 | $11,955.00 |
| **Materials** | | | | | | |
| Testing, Blanks Samples | 2612 | Blanks or Duplicate Samples; Includes materials only. | Each | $50.61 | 4 | $202.44 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 240 | $12,146.40 |

**Practice:** 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

**Scenario** #207 - Data Collect Surface Last Year with two treatment sites

**Scenario Description:**

This practice scenario provides for the use of an edge-of-field WQ monitoring station(s) for surface run-off for one control and two treatment sites with an average of 20 samples per year per station, with each sample analyzed for 6 separate parameters (3 sites x 20 samples x 6 parameters = 360 total water quality tests). The scenario requires the collection and analysis of edge-of-field water quality data along with a comprehensive report to statistically prove relationship between select conservation practices and water quality. The data will be transferred through semi-annual submittal and annual report and a comprehensive report of practice effectiveness. This scenario will be used in the last year of monitoring. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

**Before Situation:**

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

**After Situation:**

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and two treatment sites. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201 to provide a comprehensive report of statistical testing of data collected during to complete monitoring period.

**Feature Measure:** Measuring site

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $41,198.16

**Scenario Cost/Unit:** $41,198.16

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 156 | $4,742.40 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 150 | $17,932.50 |
| **Materials** | | | | | | |
| Testing, Blanks Samples | 2612 | Blanks or Duplicate Samples; Includes materials only. | Each | $50.61 | 6 | $303.66 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 360 | $18,219.60 |

**Practice:** 202 - Edge-of-Field Water Quality Monitoring-System Installation

**Scenario** #103 - System Installation-Tile Cold Climate

**Scenario Description:**

This edge-of-field water quality monitoring system is applicable to a single control or treatment site that has a field defined with tile or other subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The component monitoring equipment are associated with a typical system for northern latitudes where winter time heating is required for sampling. It will allow for installation of automated sampling data collection system for a subsurface collection and separate surface automated sample collection system with protective housing to reduce potential for vandalism, battery backup for operation during periods when electricity is down or solar panels are not creating an electrical current, an area velocity sensor for pipe flow and estimation of submerged flow, a calf hut or other structure with heat is required over the flume to allow sampling under northern latitude winter conditions and a berm or other directional flow structure to guide the runoff to a sampling flume.

**Before Situation:**

The agricultural operation prior to installing the monitoring equipment is guessing about the effects of the conservation system with regards to meeting practice intent of avoid, controlling, or trapping sediment and nutrients. Nothing is known about the volume or mass of sediment and nutrients leaving the edge of field through the tile or other subsurface drainage system.

**After Situation:**

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

**Feature Measure:** System installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $39,473.52

**Scenario Cost/Unit:** $39,473.52

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 100 | $3,040.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 6 | $717.30 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.12 | $95.36 |
| Heater, high efficiency | 1165 | Natural gas, propane, or fuel oil unit heater or boiler and venting materials. Based on input kBTU/hour. Includes materials and shipping only. | 1,000 BTU/Hour | $24.24 | 1 | $24.24 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |
| Automated sampler with bottles and tubing | 2606 | Equipment used to collect the water samples on a flow weighted interval of 1.27 mm of runoff (volumetric depth) during a storm event. | Each | $2,462.76 | 2 | $4,925.52 |
| Connectors, cables, platform materials | 2607 | Miscellaneous (connectors, cables, berm, platform materials); Includes materials only. | Each | $9,836.48 | 1 | $9,836.48 |
| Depth (stage) sensor | 2608 | Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering | Each | $3,431.00 | 2 | $6,862.00 |
| Equipment shelter | 2609 | Building designed to house and reduce the risk of equipment damage from weather, animals, and vandalism. | Each | $1,514.32 | 2 | $3,028.64 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Pre-calibrated flow control structure-surface | 2610 | Pre-calibrated flow control structure-surface. Used for A202 water quality monitering | Each | $3,177.50 | 1 | $3,177.50 |
| Pre-calibrated flow control structure-subsurface (pipe flow) | 2615 | Equipment used to collect runoff for ease in measure of flow, sample collection and to reduce time in constructing and calibrating of a flow structure. | Each | $895.89 | 1 | $895.89 |
| Device, communications | 2616 | Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only. | Each | $2,306.00 | 1 | $2,306.00 |
| Equipment Shed | 2617 | Equipment shed (10 x 10 foot) made of steel applied over the sampling flume to allow collection of water samples during the winter in colder climates. | Each | $747.66 | 1 | $747.66 |

**Practice:** 202 - Edge-of-Field Water Quality Monitoring-System Installation

**Scenario** #112 - System Installation-Tile

**Scenario Description:**

This edge-of-field water quality monitoring system is applicable to a single control or treatment site that has a field defined with tile or other subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The component monitoring equipment are associated with a typical system for southern latitudes where winter time heating is not required for sampling. It will allow for installation of automated sampling data collection system for a subsurface collection and separate surface automated sample collection system with protective housing to reduce potential for vandalism, battery backup for operation during periods when electricity is down or solar panels are not creating an electrical current, an area velocity sensor for pipe flow and estimation of submerged flow, and a berm or other directional flow structure to guide the runoff to a sampling flume.

**Before Situation:**

The agricultural operation prior to installing the monitoring equipment is guessing about the effects of the conservation system with regards to meeting practice intent of avoid, controlling, or trapping sediment and nutrients. Nothing is known about the volume or mass of sediment and nutrients leaving the edge of field through the tile or other subsurface drainage system.

**After Situation:**

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

**Feature Measure:** System installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $39,473.52

**Scenario Cost/Unit:** $39,473.52

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 100 | $3,040.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 6 | $717.30 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.12 | $95.36 |
| Heater, high efficiency | 1165 | Natural gas, propane, or fuel oil unit heater or boiler and venting materials. Based on input kBTU/hour. Includes materials and shipping only. | 1,000 BTU/Hour | $24.24 | 1 | $24.24 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |
| Automated sampler with bottles and tubing | 2606 | Equipment used to collect the water samples on a flow weighted interval of 1.27 mm of runoff (volumetric depth) during a storm event. | Each | $2,462.76 | 2 | $4,925.52 |
| Connectors, cables, platform materials | 2607 | Miscellaneous (connectors, cables, berm, platform materials); Includes materials only. | Each | $9,836.48 | 1 | $9,836.48 |
| Depth (stage) sensor | 2608 | Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering | Each | $3,431.00 | 2 | $6,862.00 |
| Equipment shelter | 2609 | Building designed to house and reduce the risk of equipment damage from weather, animals, and vandalism. | Each | $1,514.32 | 2 | $3,028.64 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Pre-calibrated flow control structure-surface | 2610 | Pre-calibrated flow control structure-surface. Used for A202 water quality monitering | Each | $3,177.50 | 1 | $3,177.50 |
| Pre-calibrated flow control structure-subsurface (pipe flow) | 2615 | Equipment used to collect runoff for ease in measure of flow, sample collection and to reduce time in constructing and calibrating of a flow structure. | Each | $895.89 | 1 | $895.89 |
| Device, communications | 2616 | Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only. | Each | $2,306.00 | 1 | $2,306.00 |
| Equipment Shed | 2617 | Equipment shed (10 x 10 foot) made of steel applied over the sampling flume to allow collection of water samples during the winter in colder climates. | Each | $747.66 | 1 | $747.66 |

**Practice:** 202 - Edge-of-Field Water Quality Monitoring-System Installation

**Scenario** #119 - System Installation-Surface Cold Climate

**Scenario Description:**

This edge-of-field water quality monitoring system is applicable to a single control or treatment site that has a field defined with surface runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The component monitoring equipment are associated with a typical system for northern latitudes where winter time heating is required for sampling. It will allow for installation of automated sampling data collection system with protective housing to reduce potential for vandalism, battery backup for operation during periods when electricity is down or solar panels are not creating an electrical current, a calf hut or other structure with heat is required over the flume to allow sampling under northern latitude winter conditions, and a berm or other directional flow structure to guide the runoff to a sampling flume.

**Before Situation:**

The agricultural operation prior to installing the monitoring equipment is guessing about the effects of the conservation system with regards to meeting practice intent of avoid, controlling, or trapping sediment and nutrients. Nothing is known about the volume or mass of sediment and nutrients leaving the edge of field through the tile or other subsurface drainage system.

**After Situation:**

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

**Feature Measure:** System installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $29,834.00

**Scenario Cost/Unit:** $29,834.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 60 | $1,824.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.12 | $95.36 |
| Heater, high efficiency | 1165 | Natural gas, propane, or fuel oil unit heater or boiler and venting materials. Based on input kBTU/hour. Includes materials and shipping only. | 1,000 BTU/Hour | $24.24 | 1 | $24.24 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |
| Automated sampler with bottles and tubing | 2606 | Equipment used to collect the water samples on a flow weighted interval of 1.27 mm of runoff (volumetric depth) during a storm event. | Each | $2,462.76 | 1 | $2,462.76 |
| Connectors, cables, platform materials | 2607 | Miscellaneous (connectors, cables, berm, platform materials); Includes materials only. | Each | $9,836.48 | 1 | $9,836.48 |
| Depth (stage) sensor | 2608 | Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering | Each | $3,431.00 | 1 | $3,431.00 |
| Equipment shelter | 2609 | Building designed to house and reduce the risk of equipment damage from weather, animals, and vandalism. | Each | $1,514.32 | 1 | $1,514.32 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Pre-calibrated flow control structure-surface | 2610 | Pre-calibrated flow control structure-surface. Used for A202 water quality monitering | Each | $3,177.50 | 1 | $3,177.50 |
| Device, communications | 2616 | Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only. | Each | $2,306.00 | 1 | $2,306.00 |
| Equipment Shed | 2617 | Equipment shed (10 x 10 foot) made of steel applied over the sampling flume to allow collection of water samples during the winter in colder climates. | Each | $747.66 | 1 | $747.66 |

**Practice:** 202 - Edge-of-Field Water Quality Monitoring-System Installation

**Scenario** #126 - System Installation-Surface

**Scenario Description:**

This edge-of-field water quality monitoring system is applicable to a single control or treatment site that has a field defined with surface runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The component monitoring equipment are associated with a typical system for southern latitudes where winter time heating is not required for sampling. It will allow for installation of automated sampling data collection system with protective housing to reduce potential for vandalism, battery backup for operation during periods when electricity is down or solar panels are not creating an electrical current, and a berm or other directional flow structure to guide the runoff to a sampling flume.

**Before Situation:**

The agricultural operation prior to installing the monitoring equipment is guessing about the effects of the conservation system with regards to meeting practice intent of avoid, controlling, or trapping sediment and nutrients.

**After Situation:**

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

**Feature Measure:** System installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $29,062.10

**Scenario Cost/Unit:** $29,062.10

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 60 | $1,824.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.12 | $95.36 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |
| Automated sampler with bottles and tubing | 2606 | Equipment used to collect the water samples on a flow weighted interval of 1.27 mm of runoff (volumetric depth) during a storm event. | Each | $2,462.76 | 1 | $2,462.76 |
| Connectors, cables, platform materials | 2607 | Miscellaneous (connectors, cables, berm, platform materials); Includes materials only. | Each | $9,836.48 | 1 | $9,836.48 |
| Depth (stage) sensor | 2608 | Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering | Each | $3,431.00 | 1 | $3,431.00 |
| Equipment shelter | 2609 | Building designed to house and reduce the risk of equipment damage from weather, animals, and vandalism. | Each | $1,514.32 | 1 | $1,514.32 |
| Pre-calibrated flow control structure-surface | 2610 | Pre-calibrated flow control structure-surface. Used for A202 water quality monitering | Each | $3,177.50 | 1 | $3,177.50 |
| Device, communications | 2616 | Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only. | Each | $2,306.00 | 1 | $2,306.00 |

**Practice:** 202 - Edge-of-Field Water Quality Monitoring-System Installation

**Scenario** #134 - System Installation-Retrofit Above and Below 1

**Scenario Description:**

This edge-of-field water quality monitoring system is to retrofit an existing above and below monitoring designed system that is being used in associated with the 799 interim practice or comparable system. The retrofit is applicable to an above and below system that has a field defined with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The data represents the installation of an automated and manual backup rain gauge and two back-up/solar power supply be added to existing paired system.

**Before Situation:**

The agricultural operation prior to retrofit has an edge-of-field data collection system but it does not meet the present standards for accuracy or reliability as detailed in either or both of Activity 201 and Activity 202.

**After Situation:**

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

**Feature Measure:** System installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,578.20

**Scenario Cost/Unit:** $5,578.20

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 32 | $972.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.24 | $190.72 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |

**Practice:** 202 - Edge-of-Field Water Quality Monitoring-System Installation

**Scenario** #143 - System Installation-Retrofit Above 3

**Scenario Description:**

This edge-of-field water quality monitoring system is to retrofit an existing above and below monitoring designed system that is being used in associated with the 799 interim practice or comparable system. The retrofit is applicable to an above and below system that has a field defined with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The data represents the installation of an automated and manual backup rain gauge, two back-up/solar power supplies, two communications devices, two pre-calibrated flumes, and two depth (stage) sensors to be added to existing paired system.

**Before Situation:**

The agricultural operation prior to retrofit has an edge-of-field data collection system but it does not meet the present standards for accuracy or reliability as detailed in either or both of Activity 201 and Activity 202.

**After Situation:**

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

**Feature Measure:** System installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $23,769.95

**Scenario Cost/Unit:** $23,769.95

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 40 | $1,216.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 6 | $717.30 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.24 | $190.72 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |
| Depth (stage) sensor | 2608 | Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering | Each | $3,431.00 | 2 | $6,862.00 |
| Pre-calibrated flow control structure-surface | 2610 | Pre-calibrated flow control structure-surface. Used for A202 water quality monitering | Each | $3,177.50 | 2 | $6,355.00 |
| Device, communications | 2616 | Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only. | Each | $2,306.00 | 2 | $4,612.00 |

**Practice:** 202 - Edge-of-Field Water Quality Monitoring-System Installation

**Scenario** #151 - System Installation-Retrofit 3

**Scenario Description:**

This edge-of-field water quality monitoring system is to retrofit an existing system that is being used in associated with the 799 interim practice or comparable system. The retrofit is applicable to a single control or treatment site that has a field defined with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The data represents the installation of an automated and manual backup rain gauge, back-up/solar power supply, communications device, pre-calibrated flow control structure, and depth (stage) sensor to be added to existing system.

**Before Situation:**

The agricultural operation prior to retrofit has an edge-of-field data collection system but it does not meet the present standards for accuracy or reliability as detailed in either or both of Activity 201 and Activity 202.

**After Situation:**

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

**Feature Measure:** System installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $14,397.34

**Scenario Cost/Unit:** $14,397.34

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 32 | $972.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.12 | $95.36 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |
| Depth (stage) sensor | 2608 | Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering | Each | $3,431.00 | 1 | $3,431.00 |
| Pre-calibrated flow control structure-surface | 2610 | Pre-calibrated flow control structure-surface. Used for A202 water quality monitering | Each | $3,177.50 | 1 | $3,177.50 |
| Device, communications | 2616 | Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only. | Each | $2,306.00 | 1 | $2,306.00 |

**Practice:** 202 - Edge-of-Field Water Quality Monitoring-System Installation

**Scenario** #159 - System Installation-Retrofit 2

**Scenario Description:**

This edge-of-field water quality monitoring system is to retrofit an existing system that is being used in associated with the 799 interim practice or comparable system. The retrofit is applicable to a single control or treatment site that has a field defined with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The data represents the installation of an automated and manual backup rain gauge, back-up/solar power supply, communications device, and depth (stage) sensor to be added to existing system.

**Before Situation:**

The agricultural operation prior to retrofit has an edge-of-field data collection system but it does not meet the present standards for accuracy or reliability as detailed in either or both of Activity 201 and Activity 202.

**After Situation:**

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

**Feature Measure:** System installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $10,855.04

**Scenario Cost/Unit:** $10,855.04

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 20 | $608.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.12 | $95.36 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |
| Depth (stage) sensor | 2608 | Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering | Each | $3,431.00 | 1 | $3,431.00 |
| Device, communications | 2616 | Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only. | Each | $2,306.00 | 1 | $2,306.00 |

**Practice:** 202 - Edge-of-Field Water Quality Monitoring-System Installation

**Scenario** #167 - System Installation-Retrofit 1

**Scenario Description:**

This edge-of-field water quality monitoring system is to retrofit an existing system that is being used in associated with the 799 interim practice or comparable system. The retrofit is applicable to a single control or treatment site that has a field defined with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The data represents the installation of an automated and manual backup rain gauge and back-up/solar power supply be added to existing system.

**Before Situation:**

The agricultural operation prior to retrofit has an edge-of-field data collection system but it does not meet the present standards for accuracy or reliability as detailed in either or both of Activity 201 and Activity 202.

**After Situation:**

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

**Feature Measure:** System installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,996.44

**Scenario Cost/Unit:** $4,996.44

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 16 | $486.40 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.12 | $95.36 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |

**Practice:** 202 - Edge-of-Field Water Quality Monitoring-System Installation

**Scenario** #175 - System Installation-Above And Below cold climate

**Scenario Description:**

This edge-of-field water quality monitoring system is applicable where a conservation practice has a pre- and post treatment area in the same field drainage with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The component monitoring equipment are associated with a typical system for northern latitudes where winter time heating is required for sampling. It will allow for installation of automated sampling data collection system with protective housing to reduce potential for vandalism, battery backup for operation during periods when electricity is down or solar panels are not creating an electrical current, a calf hut or other structure with heat is required over the flume to allow sampling under northern latitude winter conditions, and a berm or other directional flow structure to guide the runoff to a sampling flume. The actual installation will different on the subsurface flow by allowing a smaller pre-calibrated flume with the addition of a velocity sensor meter as in the tile alternative.

**Before Situation:**

The agricultural operation prior to installing the monitoring equipment is guessing about the effects of the conservation system with regards to meeting practice intent of avoid, controlling, or trapping sediment and nutrients. Nothing is known about the volume or mass of sediment and nutrients leaving the edge of field through the tile or other subsurface drainage system.

**After Situation:**

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

**Feature Measure:** System installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $43,617.03

**Scenario Cost/Unit:** $43,617.03

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 60 | $1,824.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 6 | $717.30 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.12 | $95.36 |
| Heater, high efficiency | 1165 | Natural gas, propane, or fuel oil unit heater or boiler and venting materials. Based on input kBTU/hour. Includes materials and shipping only. | 1,000 BTU/Hour | $24.24 | 2 | $48.48 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |
| Automated sampler with bottles and tubing | 2606 | Equipment used to collect the water samples on a flow weighted interval of 1.27 mm of runoff (volumetric depth) during a storm event. | Each | $2,462.76 | 2 | $4,925.52 |
| Connectors, cables, platform materials | 2607 | Miscellaneous (connectors, cables, berm, platform materials); Includes materials only. | Each | $9,836.48 | 1 | $9,836.48 |
| Depth (stage) sensor | 2608 | Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering | Each | $3,431.00 | 2 | $6,862.00 |
| Equipment shelter | 2609 | Building designed to house and reduce the risk of equipment damage from weather, animals, and vandalism. | Each | $1,514.32 | 2 | $3,028.64 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Pre-calibrated flow control structure-surface | 2610 | Pre-calibrated flow control structure-surface. Used for A202 water quality monitering | Each | $3,177.50 | 2 | $6,355.00 |
| Device, communications | 2616 | Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only. | Each | $2,306.00 | 2 | $4,612.00 |
| Equipment Shed | 2617 | Equipment shed (10 x 10 foot) made of steel applied over the sampling flume to allow collection of water samples during the winter in colder climates. | Each | $747.66 | 2 | $1,495.32 |

**Practice:** 202 - Edge-of-Field Water Quality Monitoring-System Installation

**Scenario** #183 - System Installation-Above And Below

**Scenario Description:**

This edge-of-field water quality monitoring system is applicable where a conservation practice has a pre- and post treatment area in the same field drainage with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The component monitoring equipment are associated with a typical system for southern latitudes where winter time heating is not required for sampling. It will allow for installation of automated sampling data collection system with protective housing to reduce potential for vandalism, battery backup for operation during periods when electricity is down or solar panels are not creating an electrical current, and a berm or other directional flow structure to guide the runoff to a sampling flume. The actual installation will different on the subsurface flow by allowing a smaller precalibrated flume with the addition of a velocity sensor meter as in the tile alternative.

**Before Situation:**

The agricultural operation prior to installing the monitoring equipment is guessing about the effects of the conservation system with regards to meeting practice intent of avoid, controlling, or trapping sediment and nutrients.

**After Situation:**

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

**Feature Measure:** System installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $39,767.23

**Scenario Cost/Unit:** $39,767.23

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 60 | $1,824.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 6 | $717.30 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.12 | $95.36 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |
| Automated sampler with bottles and tubing | 2606 | Equipment used to collect the water samples on a flow weighted interval of 1.27 mm of runoff (volumetric depth) during a storm event. | Each | $2,462.76 | 2 | $4,925.52 |
| Connectors, cables, platform materials | 2607 | Miscellaneous (connectors, cables, berm, platform materials); Includes materials only. | Each | $9,836.48 | 1 | $9,836.48 |
| Depth (stage) sensor | 2608 | Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering | Each | $3,431.00 | 2 | $6,862.00 |
| Equipment shelter | 2609 | Building designed to house and reduce the risk of equipment damage from weather, animals, and vandalism. | Each | $1,514.32 | 2 | $3,028.64 |
| Pre-calibrated flow control structure-surface | 2610 | Pre-calibrated flow control structure-surface. Used for A202 water quality monitering | Each | $3,177.50 | 2 | $6,355.00 |
| Device, communications | 2616 | Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only. | Each | $2,306.00 | 1 | $2,306.00 |

**Practice:** 207 - Site Assessment and Soil Testing for Contaminants Activity

**Scenario** #9 - Site Evaluation for Potential Contaminants

**Scenario Description:**

This practice applies to urban sites where the desired land use is cropland. Sites may have been residential, industrial or commercial land use in the past and the risk for soil contaminants is unknown.

**Before Situation:**

Soil suitability for agricultural production is unknown with potential risk of contamination from prior land use activities.

**After Situation:**

Site history has been researched and findings indicate a potential for the presence of contaminants. Final report provides the landowner with the level of risk and recommendation for further testing. Reports may be used in the conservation planning process to explore non-remedial conservation practices to reduce risk of contaminants entering the food products.

**Feature Measure:** Each Site

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,782.00

**Scenario Cost/Unit:** $4,782.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 40 | $4,782.00 |

**Practice:** 207 - Site Assessment and Soil Testing for Contaminants Activity

**Scenario** #25 - Site Evaluation and Soil Testing for Contaminants

**Scenario Description:**
This practice applies to urban sites where the desired land use is cropland. Sites may have been residential, industrial or commercial land use in the past and the risk for soil contaminants is unknown.

**Before Situation:**
Soil suitability for agricultural production is unknown with potential risk of contamination from prior land use activities.

**After Situation:**
Site history has been researched and findings indicate a potential for the presence of contaminants. The soil has been collected and tested for heavy metals, VOCs and PAHs. Final reports provide the landowner with the level of risk. Reports may be used in the conservation planning process to explore non-remedial conservation practices to reduce risk of contaminants entering the food products.

**Feature Measure:** Each Site

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $14,346.00

**Scenario Cost/Unit:** $14,346.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 120 | $14,346.00 |

**Practice:** 207 - Site Assessment and Soil Testing for Contaminants Activity

**Scenario** #41 - Soil Testing and Subsurface Investigation

**Scenario Description:**

This practice applies to urban sites where the desired land use is cropland. Sites may have been residential, industrial or commercial land use in the past and the risk for soil contaminants is unknown. The landowner has a prior Environmental Site Assessment completed by an Environmental Professional. The ESA report recommends further subsurface investigation. OR Landowner has NRCS report from portable Xray Flouresence screening that detected soil contaminants.

**Before Situation:**

Soil suitability for agricultural production is unknown with potential risk of contamination from prior land use activities.

**After Situation:**

Site history has been researched and findings indicate a potential for the presence of contaminants. The soil has been collected and tested for heavy metals, VOCs and PAHs. Final reports provide the landowner with the level of risk. Reports may be used in the conservation planning process to explore non-remedial conservation practices to reduce risk of contaminants entering the food products.

**Feature Measure:** Each Site

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,564.00

**Scenario Cost/Unit:** $9,564.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 80 | $9,564.00 |

**Practice:** 207 - Site Assessment and Soil Testing for Contaminants Activity

**Scenario** #57 - Soil Testing for Contaminants on Low Risk Sites

**Scenario Description:**

This practice applies to urban sites where the desired land use is cropland. Sites may have been residential, industrial or commercial land use in the past and the risk for soil contaminants is unknown. The landowner has a prior Environmental Site Assessment completed by an Environmental Professional. The ESA report does not require further investigation. OR Landowner has NRCS report from portable Xray Flouresence screening that detected soil contaminants. Screening detection levels are below the State Environmental Protection Agency or equivalent agency published safety thresholds for bare soil residential use.

**Before Situation:**

Soil suitability for agricultural production is unknown with potential risk of contamination from prior land use activities.

**After Situation:**

Site history has been researched and findings indicate a potential for the presence of contaminants. The soil has been collected and tested for heavy metals only. Soil test reports provide the landowner with the level of risk. Reports may be used in the conservation planning process to explore non-remedial conservation practices to reduce risk of contaminants entering the food products.

**Feature Measure:** Area of Soil Tested

**Scenario Unit:** 1,000 Square Foot

**Scenario Typical Size:** 4.00

**Scenario Total Cost:** $657.24

**Scenario Cost/Unit:** $164.31

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| **Materials** | | | | | | |
| Test, Soil Test, Heavy Metals | 2735 | Microwave assisted acid digestion of soil for arsenic, cadmium, chromium, copper, lead, molybdenum, nickel, selenium, and zinc using EPA Method 3051A | Number | $108.11 | 4 | $432.44 |

**Practice:** 209 - PFAS Testing in Water or Soil

**Scenario** #9 - PFAS Testing: Simple (Low Complexity) Sampling - Single Sample

**Scenario Description:**

A single sample of water or soil is required to provide prescreening information to the landowner to determine if PFAS may be present in water or soils at their operation. In this scenario, the environmental media being sampled by the qualified individual is of low complexity: there is little temporal or spatial variation to account for in sampling, therefore no pre-sampling planning needed. This could include a single well used for stockwater or irrigation systems. The typical number of tests is 1, assuming that a landowner has a single well or a single field that can be represented by a single composite sample.

**Before Situation:**

Water or soil on an agricultural operation are of unknown PFAS status. PFAS laboratory analysis has not been conducted on the water or soil of interest.

**After Situation:**

A laboratory PFAS analysis was completed, and the results were interpreted and explained to the landowner. The landowner now has pre-screening information that suggests if PFAS may be present in water (or soil) on their operation. If testing detects PFAS in water or soil at levels that exceed State or Federal screening levels, the landowner can decide to pursue non-NRCS sources for follow-up detailed PFAS assessment.

**Feature Measure:** Each

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,278.07

**Scenario Cost/Unit:** $1,278.07

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 6 | $717.30 |
| **Materials** | | | | | | |
| PFAS Laboratory Testing in Water and Soils | 2801 | This component supports data collection on PFAS in soil and water. Soil or water samples are to be collected by trained environmental professionals to be analyzed using the appropriate EPA protocol at an accredited laboratory for PFAS. Includes testing and shipping costs. | Number | $560.77 | 1 | $560.77 |

**Practice:** 209 - PFAS Testing in Water or Soil

**Scenario** #25 - PFAS Testing: Simple (Low Complexity) Sampling - Multiple Samples

**Scenario Description:**

Multiple samples of water or soil are needed to provide prescreening information to the landowner to determine if PFAS may be present in water or soils at their operation. In this scenario, the environmental media being sampled by the qualified individual is of low complexity. There is little temporal or spatial variation to account for in sampling, therefore no pre-sampling planning needed. This scenario could apply to small ponds or wells used for stockwater or irrigation systems, a small field, or a small number of fields of uniform soil composition. This scenario assumes that additional time is needed for each collection of multiple samples. The typical number of tests is 5, assuming that a landowner has four fields and a well and each field can be represented by a single composite sample.

**Before Situation:**

Water or soil on an agricultural operation are of unknown PFAS status. PFAS laboratory analysis has not been conducted on the water or soil of interest.

**After Situation:**

A laboratory PFAS analysis was completed, and the results were interpreted and explained to the landowner. The landowner now has pre-screening information that suggests if PFAS may be present in water (or soil) on their operation. If testing detects PFAS in water or soil at levels that exceed State or Federal screening levels, the landowner can decide to pursue non-NRCS sources for follow-up detailed PFAS assessment.

**Feature Measure:** Each

**Scenario Unit:** Number

**Scenario Typical Size:** 5.00

**Scenario Total Cost:** $4,477.55

**Scenario Cost/Unit:** $895.51

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 14 | $1,673.70 |
| **Materials** | | | | | | |
| PFAS Laboratory Testing in Water and Soils | 2801 | This component supports data collection on PFAS in soil and water. Soil or water samples are to be collected by trained environmental professionals to be analyzed using the appropriate EPA protocol at an accredited laboratory for PFAS. Includes testing and shipping costs. | Number | $560.77 | 5 | $2,803.85 |

**Practice:** 209 - PFAS Testing in Water or Soil

**Scenario** #41 - PFAS Testing: Complicated (High Complexity) Sampling - Multiple Samples

**Scenario Description:**

Multiple samples of water or soil are needed to provide prescreening information to the landowner to determine if PFAS may be present in water or soils at their operation. In this scenario, the environmental media being sampled is of high complexity. There is a need to account for this temporal or spatial variation in sampling. Therefore, additional time is needed to prepare and discuss a comprehensive sampling strategy to detect PFAS and the final comprehensive report with the landowner. This scenario could apply to the agricultural use of multiple sources of water (ponds, wells, and reclaimed water) for stockwater or irrigation systems or to assess multiple fields with variable soil composition. This scenario assumes that additional time is needed for each collection of multiple samples. The typical number of tests is 5, assuming that a farmer has many fields, and the producer doesn't want to test all or has large fields with highly variable soil composition.

**Before Situation:**

Water or soil on an agricultural operation are of unknown PFAS status. PFAS laboratory analysis has not been conducted on the water or soil of interest.

**After Situation:**

A laboratory PFAS analysis was completed, and the results were interpreted and explained to the landowner. The landowner now has pre-screening information that suggests if PFAS may be present in water (or soil) on their operation. If testing detects PFAS in water or soil at levels that exceed State or Federal screening levels, the landowner can decide to pursue non-NRCS sources for follow-up detailed PFAS assessment.

**Feature Measure:** Each

**Scenario Unit:** Number

**Scenario Typical Size:** 5.00

**Scenario Total Cost:** $5,433.95

**Scenario Cost/Unit:** $1,086.79

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 22 | $2,630.10 |
| **Materials** | | | | | | |
| PFAS Laboratory Testing in Water and Soils | 2801 | This component supports data collection on PFAS in soil and water. Soil or water samples are to be collected by trained environmental professionals to be analyzed using the appropriate EPA protocol at an accredited laboratory for PFAS. Includes testing and shipping costs. | Number | $560.77 | 5 | $2,803.85 |

**Practice:** 216 - Soil Health Testing

**Scenario** #156 - Basic Soil Health Suite + Chemical

**Scenario Description:**

Soil is collected and analyzed in a lab to assess soil health and fertility. A laboratory soil health assessment is conducted using recommended methods in technical note 450-03 to evaluate and/or monitor conservation practices. Laboratory tests must include "basic package" indicators: soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon. This scenario also includes a comprehensive chemical soil test (macronutrients + micronutrients). One basic soil health assessment is planned for on Soil Health Management Unit (SHMU). Sample collection is completed by an agricultural service provider, soil scientist, or other agriculture professional and includes time for soil sampling and submission.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management.

**After Situation:**

A laboratory soil health test and nutrient analysis were completed and the results were interpreted (scored) and explained to the producer and used to establish benchmark conditions for soil health management practices or evaluate the effectiveness of a conservation practice.

**Feature Measure:** polygon

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $203.00

**Scenario Cost/Unit:** $203.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 0.5 | $15.20 |
| **Materials** | | | | | | |
| Test, Soil Test, Comprehensive | 2384 | Comprehensive Soil Testing for pH, EC, nitrates, ammonium, phosphorus, potassium, organic matter and other micro-nutrients. Includes materials and shipping only. | Each | $55.89 | 1 | $55.89 |
| Test, Soil Health, Basic Package | 2734 | Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling. | Number | $131.91 | 1 | $131.91 |

**Practice:** 216 - Soil Health Testing

**Scenario** #172 - Basic Soil Health Suite

**Scenario Description:**

A soil sample is collected and laboratory soil health assessment is conducted using recommended methods in technical note 450-03 to evaluate and/or monitor conservation practices. Laboratory tests must include "basic package" indicators: soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon. One basic soil health assessment is planned for on Soil Health Management Unit (SHMU). This scenario assumes that a comprehensive chemical soil test (macronutrients + micronutrients) has been completed on the same management unit in the last 2 years. Sample collection is completed by an agricultural service provider, soil scientist, or other agriculture professional and includes time for soil sampling and submission.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management.

**After Situation:**

A laboratory soil health test was completed and the results were interpreted (scored), explained to the producer, and used to establish benchmark conditions for soil health management practices or to evaluate the effectiveness of a conservation practice.

**Feature Measure:** polygon

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $147.11

**Scenario Cost/Unit:** $147.11

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 0.5 | $15.20 |
| **Materials** | | | | | | |
| Test, Soil Health, Basic Package | 2734 | Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling. | Number | $131.91 | 1 | $131.91 |

**Practice:** 216 - Soil Health Testing

**Scenario** #188 - Single Indicator

**Scenario Description:**

A laboratory soil health assessment for a single indictor is conducted using recommended methods in technical note 450-03 to evaluate and/or monitor conservation practices. Laboratory tests for the single indicator may include: soil organic carbon, aggregation, bioavailable nitrogen, respiration, active carbon, microbial community structure, enzyme activity or other soil health test. One basic soil health assessment is planned for on Soil Health Management Unit (SHMU). Sample collection is completed by a Qualified Individual and includes time for soil sampling and submission.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management.

**After Situation:**

A laboratory soil health test of was completed for a single indicator and the results were interpreted (scored) and explained to the producer and used to establish benchmark conditions for soil health management practices or evaluate the effectiveness of a conservation practice.

**Feature Measure:** polygon

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $201.18

**Scenario Cost/Unit:** $201.18

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 0.5 | $15.20 |
| **Materials** | | | | | | |
| Test, Soil Health, Basic Package | 2734 | Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling. | Number | $131.91 | 1 | $131.91 |
| Testing, Soil Health Single Indicator | 2795 | Single soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, active carbon, microbial activity, or microbial diversity according to technical note 450-03 or standard laboratory methods. Includes shipping and handling. | Each | $54.07 | 1 | $54.07 |

**Practice:** 216 - Soil Health Testing

**Scenario** #209 - Soil Health and Dynamic Soil Properties

**Scenario Description:**

A soil sample is collected and laboratory soil health assessment is conducted using recommended methods in technical note 450-03 to evaluate and/or monitor conservation practices. Laboratory tests must include "basic package" indicators: soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon analyzed by a commerical soil testing laboratory. Sampling design meets the requirements of the Dynamic Soil Properties Guide. Soil samples are collected at 0-5, 5-10, and 10-15 cm at a main location and two satellite locations. Sampling locations are on a single soil series/component in similar landscape positions. Sample collection is completed by a Qualified Individual in consultation with NRCS staff as needed. DSP Land Use and Management Questionnaire is completed. This scenario allows for two soil conditions to be sampled for planning purposes.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer is interested in participating in the Dynamic Soil Properties level of sampling design and soil analysis.

**After Situation:**

A laboratory soil health test was completed and the results were interpreted (scored), explained to the producer, and used to establish benchmark conditions for soil health management practices or to evaluate the effectiveness of a conservation practice. Replicated sampling following DSP design provides details of variability within a single Soil Health Management Unit. Management history was reported with the indicator results.

**Feature Measure:** Polygon

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,647.98

**Scenario Cost/Unit:** $2,647.98

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 9 | $273.60 |
| **Materials** | | | | | | |
| Test, Soil Health, Basic Package | 2734 | Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling. | Number | $131.91 | 18 | $2,374.38 |

**Practice:** 216 - Soil Health Testing

**Scenario** #225 - Basic Soil Health Suite - No Labor

**Scenario Description:**

A soil sample is collected and laboratory soil health assessment is conducted using recommended methods in technical note 450-03 to evaluate and/or monitor conservation practices. Laboratory tests must include "basic package" indicators: soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon. One basic soil health assessment is planned for on Soil Health Management Unit (SHMU). This scenario assumes that a comprehensive chemical soil test (macronutrients + micronutrients) has been completed on the same management unit in the last 2 years. Sample collection is completed with NRCS staff involvement.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management.

**After Situation:**

A laboratory soil health test was completed and the results were interpreted (scored), explained to the producer, and used to establish benchmark conditions for soil health management practices or to evaluate the effectiveness of a conservation practice.

**Feature Measure:** Polygon

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $131.91

**Scenario Cost/Unit:** $131.91

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Test, Soil Health, Basic Package | 2734 | Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling. | Number | $131.91 | 1 | $131.91 |

**Practice:** 216 - Soil Health Testing

**Scenario** #241 - Basic Soil Health Suite + Comprehensive Chemical - No Labor

**Scenario Description:**

Soil is collected and analyzed in a lab to assess soil health and fertility. A laboratory soil health assessment is conducted using recommended methods in technical note 450-03 to evaluate and/or monitor conservation practices. Laboratory tests must include "basic package" indicators: soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon. One basic soil health assessment is planned for on Soil Health Management Unit (SHMU). This scenario also includes a comprehensive chemical soil test (macronutrients + micronutrients). Sample collection is completed with NRCS staff involvement.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management.

**After Situation:**

A laboratory soil health test and nutrient analysis were completed and the results were interpreted (scored) and explained to the producer and used to establish benchmark conditions for soil health management practices or evaluate the effectiveness of a conservation practice.

**Feature Measure:** Polygon

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $187.80

**Scenario Cost/Unit:** $187.80

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Test, Soil Test, Comprehensive | 2384 | Comprehensive Soil Testing for pH, EC, nitrates, ammonium, phosphorus, potassium, organic matter and other micro-nutrients. Includes materials and shipping only. | Each | $55.89 | 1 | $55.89 |
| Test, Soil Health, Basic Package | 2734 | Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling. | Number | $131.91 | 1 | $131.91 |

**Practice:** 216 - Soil Health Testing

**Scenario** #257 - Single Indicator - No Labor

**Scenario Description:**

A laboratory soil health assessment for a single indictor is conducted using recommended methods in technical note 450-03 to evaluate and/or monitor conservation practices. Laboratory tests for the single indicator may include: soil organic carbon, aggregation, bioavailable nitrogen, respiration, active carbon, microbial community structure, or enzyme activity. One basic soil health assessment is planned for on Soil Health Management Unit (SHMU). Sample collection is completed with NRCS staff involvement.

**Before Situation:**

Agricultural producer has been farming a system that has not addressed all of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management.

**After Situation:**

A laboratory soil health test of was completed for a single indicator and the results were interpreted (scored) and explained to the producer and used to establish benchmark conditions for soil health management practices or evaluate the effectiveness of a conservation practice.

**Feature Measure:** Polygon

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $54.07

**Scenario Cost/Unit:** $54.07

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Testing, Soil Health Single Indicator | 2795 | Single soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, active carbon, microbial activity, or microbial diversity according to technical note 450-03 or standard laboratory methods. Includes shipping and handling. | Each | $54.07 | 1 | $54.07 |

**Practice:** 217 - Soil and Source Testing for Nutrient Management

**Scenario** #9 - Soil Test Only

**Scenario Description:**

A qualified individual will develop a nutrient testing strategy, collect soil samples and prepare for laboratory analysis; and interpret soil nutrient needs. Typical management unit is 100 acres. Includes Comprehensive Soil Testing to provide both Macro and micro soil nutrient levels.

**Before Situation:**

Producer does not have soil test laboratory analysis documenting the level of nitrogen, phosphorus, potassium or pH for each field or management unit in crop production. Nutrients are applied without knowledge of soil test levels.

**After Situation:**

Soil samples have been collected and analyzed. The strategy for sampling is described and a map if sampling points is provided. Qualified individual concludes nutrients are needed or not based on soil test results. Follow up by developing a nutrient management plan with DIA 157 Nutrient Management Design and Implementation Activity or implement Nutrient Management 590.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $917.55

**Scenario Cost/Unit:** $917.55

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 6 | $717.30 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 5 | $78.65 |

**Practice:** 217 - Soil and Source Testing for Nutrient Management

**Scenario** #25 - Soil and Source Material Test

**Scenario Description:**

A qualified individual will develop a nutrient testing strategy, collect soil samples and prepare for laboratory analysis; and interpret soil nutrient needs. Typical whole field soil sampling plus collection of samples for nutrient sources needing to be tested.

**Before Situation:**

Producer does not have soil test laboratory analysis documenting the level of nitrogen, phosphorus, potassium or pH for each field or management unit in crop production. Nutrients are applied without knowledge of soil test levels.

**After Situation:**

Soil samples have been collected and analyzed. The strategy for sampling is described and a map if sampling points is provided. Qualified individual concludes nutrients are needed or not based on soil test results. Follow up by developing a nutrient management plan with DIA 157 Nutrient Management Design and Implementation Activity or implement Nutrient Management 590.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,747.49

**Scenario Cost/Unit:** $3,747.49

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 25 | $2,988.75 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 20 | $314.60 |
| Test, Manure Analysis | 306 | Moisture, Total N, P, K. Includes materials and shipping only. | Each | $46.24 | 1.3 | $60.11 |
| Test, Compost Analysis | 307 | Moisture, Total N, P, K. Includes materials and shipping only. | Each | $57.72 | 1.3 | $75.04 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 1.3 | $65.79 |

**Practice:** 217 - Soil and Source Testing for Nutrient Management

**Scenario** #41 - Zone or Grid Soil Test

**Scenario Description:**

A qualified individual will develop a nutrient testing strategy, collect soil samples based on a 2.5 acre grid or zone, and prepare for laboratory analysis; and interpret soil nutrient needs. Typical management unit is 100 acres.

**Before Situation:**

Producer does not have soil test laboratory analysis documenting the level of nitrogen, phosphorus, potassium or pH for each field or management unit in crop production. Nutrients are applied without knowledge of soil test levels.

**After Situation:**

Soil samples have been collected and analyzed. The strategy for sampling is described and a map if sampling points is provided. Qualified individual concludes nutrients are needed or not based on soil test results. Follow up by developing a nutrient management plan with DIA 157 Nutrient Management Design and Implementation Activity or implement Nutrient Management 590.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,828.80

**Scenario Cost/Unit:** $1,828.80

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 8 | $956.40 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 40 | $629.20 |

**Practice:** 217 - Soil and Source Testing for Nutrient Management

**Scenario** #57 - Manure or Compost Only

**Scenario Description:**

A qualified individual will develop a nutrient testing strategy, collect manure or compost samples and prepare for laboratory analysis; and interpret crop nutrient needs. Sampling protocol for liquid manure includes agitation per LGU guidelines. Dry manure and compost sampling protocol are performed per LGU guidelines.

**Before Situation:**

Producer does not have manure or compost laboratory analysis documenting the level of nitrogen, phosphorus, potassium or pH of the organic source. Nutrients are applied without knowledge of manure or compost nutrient levels.

**After Situation:**

Manure or Compost samples have been collected and analyzed. The strategy for sampling is described. Qualified individual concludes the amount of nutrients needed for the crop based on manure or compost test results. Follow up by developing a nutrient management plan with DIA 157 Nutrient Management Design and Implementation Activity or implement Nutrient Management 590.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,069.78

**Scenario Cost/Unit:** $1,069.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 6 | $717.30 |
| **Materials** | | | | | | |
| Test, Compost Analysis | 307 | Moisture, Total N, P, K. Includes materials and shipping only. | Each | $57.72 | 4 | $230.88 |

**Practice:** 217 - Soil and Source Testing for Nutrient Management

**Scenario** #73 - Source Water Nutrient Test

**Scenario Description:**

A qualified individual will develop a nutrient testing strategy, collect source water samples and prepare for laboratory analysis; and interpret crop nutrient needs. Typical irrigation water sampling for nutrients, may include drainage water sampling for monitoring nutrient loss or if drainage water is being reused.

**Before Situation:**

Producer does not have Source Water Nutrient laboratory analysis documenting the level of nitrogen, phosphorus, potassium or pH of the water source. Nutrients are applied without knowledge of source water nutrient levels.

**After Situation:**

Water samples have been collected and analyzed. The strategy for sampling is described. Qualified individual concludes the amount of nutrients needed for the crop based on Source Water test results. Follow up by developing a nutrient management plan with DIA 157 Nutrient Management Design and Implementation Activity or implement Nutrient Management 590.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $802.24

**Scenario Cost/Unit:** $802.24

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 4 | $202.44 |

**Practice:** 217 - Soil and Source Testing for Nutrient Management

**Scenario** #89 - Soil Test- pH Emphasis

**Scenario Description:**

Soil analysis is used as a diagnostic tool to identify fields with soil acidification problems in no-till cropping systems. One soil sample is collected every 40 acres from only the top 3 inches of soil and analyzed for both pH and buffer pH. A recommended three cores should be taken from a 4 sq ft sampling area every 40 acres and composited to provide at least 100 grams of soil for the laboratory test. Test results are georeferenced on a map and can be used to build a lime application budget for the field.

**Before Situation:**

Field shows crop yield decline and areas of lower pH are suspected but not tested. No-till application of nitrogen fertilizers is causing acidification. Soil is sampled to 6-inch depth, multiple sub-samples are collected from random locations in the field and are composited into one main sample, diluting potential low pH results from the top 3-inches of soil. Samples are submitted to the lab to determine pH level in the soil. Fertilizer and liming recommendations are made based on the one composited sample for the whole field.

**After Situation:**

One composited soil sample is collected in a 4 sq ft area from the top 3 inches of soil every 40 acres,. The sample is analyzed for pH and buffer pH. Sample results are georeferenced on a map and and used to identify and diagnose soil acidification problems. Follow up by developing or updating a nutrient management plan with DIA 157 Nutrient Management Design and Implementation Activity or implement Nutrient Management 590. Producers can then use this diagnostic information to apply lime to raise the soil pH. Topsoil pH and plant productivity and health are both maintained at desirable levels.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $232.95

**Scenario Cost/Unit:** $232.95

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 1 | $15.73 |

**Practice:** 217 - Soil and Source Testing for Nutrient Management

**Scenario** #105 - Small scale - Soil and Nutrient Source Test

**Scenario Description:**

A qualified individual will develop a nutrient testing strategy, collect soil and nutrient source samples, prepare for laboratory analysis and interpret soil and crop nutrient needs. Typical field size is less than or equal to 0.5 acres (22000 sq ft). Includes Comprehensive Soil Testing to provide both Macro and micro soil nutrient levels.

**Before Situation:**

Producer does not have soil and nutrient source laboratory analysis documenting the level of nitrogen, phosphorus, potassium or pH for the soil and nutrient source. Nutrients are applied without knowledge of soil and nutrient source test levels.

**After Situation:**

Soil and nutrient source samples have been collected and analyzed. The strategy for sampling is described. Qualified individual concludes nutrients are needed or not based on soil test results. The amount of nutrients needed is based on Nutrient Source results. Follow up by developing a nutrient management plan with DIA 157 Nutrient Management Design and Implementation Activity or implement Nutrient Management 590.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $458.38

**Scenario Cost/Unit:** $458.38

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Test, Manure Analysis | 306 | Moisture, Total N, P, K. Includes materials and shipping only. | Each | $46.24 | 0.5 | $23.12 |
| Test, Compost Analysis | 307 | Moisture, Total N, P, K. Includes materials and shipping only. | Each | $57.72 | 0.5 | $28.86 |
| Test, Soil Test, Comprehensive | 2384 | Comprehensive Soil Testing for pH, EC, nitrates, ammonium, phosphorus, potassium, organic matter and other micro-nutrients. Includes materials and shipping only. | Each | $55.89 | 1 | $55.89 |
| Testing, Water Quality | 2613 | Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration ??? Preferred, or Total Suspended Solids. Includes materials only. | Each | $50.61 | 1 | $50.61 |

**Practice:** 217 - Soil and Source Testing for Nutrient Management

**Scenario** #121 - Soil Test Only Garden Plots/Raised Beds

**Scenario Description:**

A qualified individual will develop a nutrient testing strategy, collect 5 soil subsamples and combine to one representative sample, prepare for laboratory analysis, and interpret soil nutrient needs. This scenario considers costs for 5 or less raised beds. Cost includes comprehensive soil test based on expected specialty crop production.

**Before Situation:**

Producer does not have soil test laboratory analysis documenting the level of nitrogen, phosphorus, potassium or pH for each field or management unit in crop production. Nutrients are applied without knowledge of soil test levels.

**After Situation:**

Soil samples have been collected and analyzed. The strategy for sampling is described and a map if sampling points is provided. Qualified individual concludes nutrients are needed or not based on soil test results. A Nutrient Management Plan CPS 590 or DIA 157 may be developed after the report is complete.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $579.35

**Scenario Cost/Unit:** $579.35

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Test, Soil Test, Comprehensive | 2384 | Comprehensive Soil Testing for pH, EC, nitrates, ammonium, phosphorus, potassium, organic matter and other micro-nutrients. Includes materials and shipping only. | Each | $55.89 | 5 | $279.45 |

**Practice:** 218 - Carbon Sequestration and Greenhouse Gas Mitigation Assessment

**Scenario** #9 - Low Complexity

**Scenario Description:**

An evaluation of the quantifiable carbon sequestration and greenhouse gas mitigation effects using the COMET-Farm tool. The information on the type of operation, land use, and management history is collected initially as part of the planning process for a conservation plan focused on carbon sequestration and greenhouse gas mitigation. The carbon sequestration and greenhouse gas mitigation CEMA includes a complete COMET-Farm project designed to evaluate the current conservation plan and the baseline and historic management impacts on carbon sequestration and greenhouse gas mitigation. The COMET-Farm evaluation can occur concurrently or following a conservation plan. Low complexity would include simple systems of a single enterprise, low number of management units, detailed available history.

**Before Situation:**

The producer's objectives are to improve soil carbon sequestration and greenhouse gas mitigation and to quantify the effects of a conservation plan. The quantifiable effects on soil carbon sequestration and greenhouse gas mitigation of the current and historic management practices are not known.

**After Situation:**

Producer receives a detailed report from COMET-Farm that quantifies the soil carbon sequestration and greenhouse gas mitigation effects of historic, baseline, and (scenario management) proposed conservation plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $956.40

**Scenario Cost/Unit:** $956.40

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 8 | $956.40 |

**Practice:** 218 - Carbon Sequestration and Greenhouse Gas Mitigation Assessment

**Scenario** #25 - Medium Complexity

**Scenario Description:**

An evaluation of the quantifiable carbon sequestration and greenhouse gas mitigation effects using the COMET-Farm tool. The information on the type of operation, land use, and management history is collected initially as part of the planning process for a conservation plan focused on carbon sequestration and greenhouse gas mitigation. The carbon sequestration and greenhouse gas mitigation CEMA includes a complete COMET-Farm project designed to evaluate the current conservation plan and the baseline and historic management impacts on carbon sequestration and greenhouse gas mitigation. The COMET-Farm evaluation can occur concurrently or following a conservation plan. Medium complexity would include systems with more than one enterprises, a moderate number of management units, complex or difficult to define history.

**Before Situation:**

The producer objectives are to improve soil carbon sequestration and greenhouse gas mitigation and quantify the effects of a conservation plan. The quantifiable effects on soil carbon sequestration and greenhouse gas mitigation of the current and historic management practices are not known.

**After Situation:**

Producer receives a detailed COMET-Farm report that quantifies the soil carbon sequestration and greenhouse gas mitigation effects of historic, baseline, and (scenario management) proposed conservation plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,434.60

**Scenario Cost/Unit:** $1,434.60

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 12 | $1,434.60 |

**Practice:** 218 - Carbon Sequestration and Greenhouse Gas Mitigation Assessment

**Scenario** #41 - High Complexity

**Scenario Description:**

An evaluation of the quantifiable carbon sequestration and greenhouse gas mitigation effects using the COMET-Farm tool. The information on the type of operation, land use, and management history is collected initially as part of the planning process for a conservation plan focused on carbon sequestration and greenhouse gas mitigation. The carbon sequestration and greenhouse gas mitigation CEMA includes a complete COMET-Farm project designed to evaluate the current conservation plan and the baseline and historic management impacts on carbon sequestration and greenhouse gas mitigation. The COMET-Farm evaluation can occur concurrently or following a conservation plan. High complexity would include systems with multiple enterprises, high number of management units, and complex or incomplete management history.

**Before Situation:**

The producer objectives are to improve soil carbon sequestration and greenhouse gas mitigation and quantify the effects of a conservation plan. The quantifiable effects on soil carbon sequestration and greenhouse gas mitigation of the current and historic management practices are not known.

**After Situation:**

Producer receives a detailed report from COMET-Farm that quantifies the soil carbon sequestration and greenhouse gas mitigation effects of historic, baseline, and (scenario management) proposed conservation plan .

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,912.80

**Scenario Cost/Unit:** $1,912.80

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 16 | $1,912.80 |

**Practice:** 221 - Soil Organic Carbon Stock Measurement

**Scenario** #9 - Carbon Stock Monitoring

**Scenario Description:**

Soil is collected for organic carbon testing to evaluate and monitor the change in soil carbon stocks before and after the implementation of a conservation practice or conservation plan An area of interest (AOI) of <20 acres is identified in a region that is relatively uniform and is representative of a larger management unit. There are no inclusions or small map units of dissimilar soils, and the topography and vegetation appear uniform. Soil samples are collected by a Qualified Individual (QI) from 4 different depths at 6 different locations within the AOI. Soil bulk density is measured before being analyzed for organic carbon by dry combustion. Payment includes time for soil sampling and sample preparation, submission to the laboratory, and interpretation/delivery of results.

**Before Situation:**

No recent measurements of soil organic carbon stocks have been made in the AOI. Conservation practices are planned or installed for the purpose of improving soil health and sequestering carbon.

**After Situation:**

Soil bulk density was measured before being analyzed for organic carbon by dry combustion. The results were interpreted and explained to the producer. Initial measurements are used to establish benchmark conditions for soil organic carbon stocks. Subsequent measurement are used to evaluate the effectiveness of a conservation practice on carbon sequestration and report the change over time.

**Feature Measure:** Area of Interest Polygon

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,713.64

**Scenario Cost/Unit:** $1,713.64

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Truck Mounted | 2049 | Truck mounted auger for large diameter excavation. Includes equipment and labor. | Hours | $112.02 | 3 | $336.06 |
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 48 | $755.04 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |

**Practice:** 222 - Indigenous Stewardship Methods Evaluation

**Scenario** #9 - ISME 301 to 1,000 Acres

**Scenario Description:**

The scenario involves obtaining assistance from a Qualified Individual, designated by the governing body of a Tribe or Indigenous culture, to evaluate the designated planning area, then gather knowledge about indigenous knowledge, and deliver results to the client and NRCS. The resulting information can be used to inform the conservation planning and implementation processes, meet the client's objectives by addressing one or more NRCS-recognized resource concerns using techniques that align with Tribal or Indigenous knowledge.

**Before Situation:**

Through the NRCS conservation planning process, a conservation planner has identified client objectives for addressing natural resource concerns (Soil, Water, Animals, Plants, Air + Energy) and socio-economic considerations such as increasing capacity for Indigenous people to develop sustainable food systems. A deeper understanding of the planning area's context for Indigenous people is desired and/or greater knowledge about Indigenous Stewardship Methods (ISM) for land stewardship are desired. A Qualified Individual (QI), designated by the governing body of a Tribe or Indigenous culture is available for the program participant to hire (separately from the NRCS program contract)to evaluate the land, gather Indigenous knowledge, and provide results to meet the client's objectives and support the conservation planning process.

**After Situation:**

The client hired a QI to provide the CEMA assistance. The QI has met with client and visited the planning area, in order to develop an understanding of its capabilities, limitations, and needs within a culturally appropriate context. Indigenous knowledge about the planning area has been gathered from sources approved by a Tribe or Indigenous culture. The QI verifies with the Tribe's or Indigenous culture's governing body, that the information gathered is accurate- then provides a report, map and other supporting documentation of their ISM evaluation of the planning area to the client; and a copy is shared with NRCS. In the future, the information this CEMA provides can assists the participant and the planner refine conservation objectives; and realize opportunities to incorporate Indigenous knowledge into a conservation plan and/or conservation practice implementations.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $16,707.98

**Scenario Cost/Unit:** $16,707.98

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 39 | $1,001.52 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 40 | $771.20 |
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 177 | $14,935.26 |

**Practice:** 222 - Indigenous Stewardship Methods Evaluation

**Scenario** #25 - ISME 1001 to 3,000 Acres

**Scenario Description:**

The scenario involves obtaining assistance from a Qualified Individual, designated by the governing body of a Tribe or Indigenous culture, to evaluate the designated planning area, then gather knowledge about indigenous knowledge, and deliver results to the client and NRCS. The resulting information can be used to inform the conservation planning and implementation processes, meet the client's objectives by addressing one or more NRCS-recognized resource concerns using techniques that align with Tribal or Indigenous knowledge.

**Before Situation:**

Through the NRCS conservation planning process, a conservation planner has identified client objectives for addressing natural resource concerns (Soil, Water, Animals, Plants, Air + Energy) and socio-economic considerations such as increasing capacity for Indigenous people to develop sustainable food systems. A deeper understanding of the planning area's context for Indigenous people is desired and/or greater knowledge about Indigenous Stewardship Methods (ISM) for land stewardship are desired. A Qualified Individual (QI), designated by the governing body of a Tribe or Indigenous culture is available for the program participant to hire (separately from the NRCS program contract)to evaluate the land, gather Indigenous knowledge, and provide results to meet the client's objectives and support the conservation planing process.

**After Situation:**

The client hired a QI to provide the CEMA assistance. The QI has met with client and visited the planning area, in order to develop an understanding of its capabilities, limitations, and needs within a culturally appropriate context. Indigenous knowledge about the planning area has been gathered from sources approved by a Tribe or Indigenous culture. The QI verifies with the Tribe's or Indigenous culture's governing body, that the information gathered is accurate- then provides a report, map and other supporting documentation of their ISM evaluation of the planning area to the client; and a copy is shared with NRCS. In the future, the information this CEMA provides can assists the participant and the planner refine conservation objectives; and realize opportunities to incorporate Indigenous knowledge into a conservation plan and/or conservation practice implementations.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $22,240.76

**Scenario Cost/Unit:** $22,240.76

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 39 | $1,001.52 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 60 | $1,156.80 |
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 238 | $20,082.44 |

**Practice:** 222 - Indigenous Stewardship Methods Evaluation

**Scenario** #41 - ISME Less Than or Equal to 10 Acres

**Scenario Description:**

The scenario involves obtaining assistance from a Qualified Individual, designated by the governing body of a Tribe or Indigenous culture, to evaluate the designated planning area, then gather knowledge about indigenous knowledge, and deliver results to the client and NRCS. The resulting information can be used to inform the conservation planning and implementation processes, meet the client's objectives by addressing one or more NRCS-recognized resource concerns using techniques that align with Tribal or Indigenous knowledge.

**Before Situation:**

Through the NRCS conservation planning process, a conservation planner has identified client objectives for addressing natural resource concerns (Soil, Water, Animals, Plants, Air + Energy) and socio-economic considerations such as increasing capacity for Indigenous people to develop sustainable food systems. A deeper understanding of the planning area's context for Indigenous people is desired and/or greater knowledge about Indigenous Stewardship Methods (ISM) for land stewardship are desired. A Qualified Individual (QI), designated by the governing body of a Tribe or Indigenous culture is available for the program participant to hire (separately from the NRCS program contract)to evaluate the land, gather Indigenous knowledge, and provide results to meet the client's objectives and support the conservation planing process.

**After Situation:**

The client hired a QI to provide the CEMA assistance. The QI has met with client and visited the planning area, in order to develop an understanding of its capabilities, limitations, and needs within a culturally appropriate context. Indigenous knowledge about the planning area has been gathered from sources approved by a Tribe or Indigenous culture. The QI verifies with the Tribe's or Indigenous culture's governing body, that the information gathered is accurate- then provides a report, map and other supporting documentation of their ISM evaluation of the planning area to the client; and a copy is shared with NRCS. In the future, the information this CEMA provides can assists the participant and the planner refine conservation objectives; and realize opportunities to incorporate Indigenous knowledge into a conservation plan and/or conservation practice implementations.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,739.36

**Scenario Cost/Unit:** $6,739.36

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 39 | $1,001.52 |
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 68 | $5,737.84 |

**Practice:** 222 - Indigenous Stewardship Methods Evaluation

**Scenario** #57 - ISME 11 to 300 Acres

**Scenario Description:**

The scenario involves obtaining assistance from a Qualified Individual, designated by the governing body of a Tribe or Indigenous culture, to evaluate the designated planning area, then gather knowledge about indigenous knowledge, and deliver results to the client and NRCS. The resulting information can be used to inform the conservation planning and implementation processes, meet the client's objectives by addressing one or more NRCS-recognized resource concerns using techniques that align with Tribal or Indigenous knowledge.

**Before Situation:**

Through the NRCS conservation planning process, a conservation planner has identified client objectives for addressing natural resource concerns (Soil, Water, Animals, Plants, Air + Energy) and socio-economic considerations such as increasing capacity for Indigenous people to develop sustainable food systems. A deeper understanding of the planning area's context for Indigenous people is desired and/or greater knowledge about Indigenous Stewardship Methods (ISM) for land stewardship are desired. A Qualified Individual (QI), designated by the governing body of a Tribe or Indigenous culture is available for the program participant to hire (separately from the NRCS program contract)to evaluate the land, gather Indigenous knowledge, and provide results to meet the client's objectives and support the conservation planing process.

**After Situation:**

The client hired a QI to provide the CEMA assistance. The QI has met with client and visited the planning area, in order to develop an understanding of its capabilities, limitations, and needs within a culturally appropriate context. Indigenous knowledge about the planning area has been gathered from sources approved by a Tribe or Indigenous culture. The QI verifies with the Tribe's or Indigenous culture's governing body, that the information gathered is accurate- then provides a report, map and other supporting documentation of their ISM evaluation of the planning area to the client; and a copy is shared with NRCS. In the future, the information this CEMA provides can assists the participant and the planner refine conservation objectives; and realize opportunities to incorporate Indigenous knowledge into a conservation plan and/or conservation practice implementations.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,995.84

**Scenario Cost/Unit:** $8,995.84

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 39 | $1,001.52 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 12 | $231.36 |
| **Labor** | | | | | | |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 92 | $7,762.96 |

**Practice:** 223 - Forest Management Assessment

**Scenario** #9 - CEMA less than or equal to 20 acres

**Scenario Description:**

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 1 to 20 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Conservation Evaluation and Monitoring Activity is needed to provide a forest inventory to allow the producer to apply for financial assistance through EQIP or other programs to develop and implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a qualified individual for development of the Conservation Evaluation and Monitoring Activities (CEMA) - Forest Inventory. The CEMA criteria requires a forest inventory as a component of a forest management plan to determine current site condition and identify resource concerns. Additional CEMA criteria are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $840.00

**Scenario Cost/Unit:** $840.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 10 | $840.00 |

**Practice:** 223 - Forest Management Assessment

**Scenario** #25 - CEMA 21 to 100 acres

**Scenario Description:**

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 21 to 100 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Conservation Evaluation and Monitoring Activity is needed to provide a forest inventory to allow the producer to apply for financial assistance through EQIP or other programs to develop and implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a qualified individual for development of the Conservation Evaluation and Monitoring Activities (CEMA) - Forest Inventory. The CEMA criteria requires a forest inventory as a component of a forest management plan to determine current site condition and identify resource concerns. Additional CEMA criteria are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,596.00

**Scenario Cost/Unit:** $1,596.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 19 | $1,596.00 |

**Practice:** 223 - Forest Management Assessment

**Scenario** #41 - CEMA 101 to 250 acres

**Scenario Description:**

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 101 to 250 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Conservation Evaluation and Monitoring Activity is needed to provide a forest inventory to allow the producer to apply for financial assistance through EQIP or other programs to develop and implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a qualified individual for development of the Conservation Evaluation and Monitoring Activities (CEMA) - Forest Inventory. The CEMA criteria requires a forest inventory as a component of a forest management plan to determine current site condition and identify resource concerns. Additional CEMA criteria are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,024.00

**Scenario Cost/Unit:** $3,024.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 36 | $3,024.00 |

**Practice:** 223 - Forest Management Assessment

**Scenario** #57 - CEMA 251 to 500 acres

**Scenario Description:**

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 251 to 500 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Conservation Evaluation and Monitoring Activity is needed to provide a forest inventory to allow the producer to apply for financial assistance through EQIP or other programs to develop and implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a qualified individual for development of the Conservation Evaluation and Monitoring Activities (CEMA) - Forest Inventory. The CEMA criteria requires a forest inventory as a component of a forest management plan to determine current site condition and identify resource concerns. Additional CEMA criteria are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,536.00

**Scenario Cost/Unit:** $4,536.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 54 | $4,536.00 |

**Practice:** 223 - Forest Management Assessment

**Scenario** #73 - CEMA 501 to 1000 acres

**Scenario Description:**

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 501 to 1000 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Conservation Evaluation and Monitoring Activity is needed to provide a forest inventory to allow the producer to apply for financial assistance through EQIP or other programs to develop implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a qualified individual for development of the Conservation Evaluation and Monitoring Activities (CEMA) - Forest Inventory. The CEMA criteria requires a forest inventory as a component of a forest management plan to determine current site condition and identify resource concerns. Additional CEMA criteria are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,712.00

**Scenario Cost/Unit:** $5,712.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 68 | $5,712.00 |

**Practice:** 223 - Forest Management Assessment

**Scenario** #89 - CEMA Greater Than 1000 acres

**Scenario Description:**

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 1001 acres or greater in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

**Before Situation:**

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Conservation Evaluation and Monitoring Activity is needed to provide a forest inventory to allow the producer to apply for financial assistance through EQIP or other programs to develop implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

**After Situation:**

After EQIP contract approval, participant has obtained services from a qualified individual for development of the Conservation Evaluation and Monitoring Activities (CEMA) - Forest Inventory. The CEMA criteria requires a forest inventory as a component of a forest management plan to determine current site condition and identify resource concerns. Additional CEMA criteria are detailed in the Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7,644.00

**Scenario Cost/Unit:** $7,644.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 91 | $7,644.00 |

**Practice:** 224 - Aquifer Flow Test

**Scenario** #10 - Aquifer Flow Test

**Scenario Description:**

The typical scenario supports the utilization of an existing or planned vertical turbine or submersible pump in an existing or planned water well for pressurizing an irrigation or stockwater system where water well flow rate is unknown. An aquifer flow test (e.g., step drawdown or constant rate) will be done to determine the flow rate from the well and select a pumping plant to match the pumping requirements of the irrigation or livestock system. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water for livestock - Inefficient use of irrigation water; inefficient energy use. Associated Practices: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Micro-irrigation; 449 - Irrigation Water Management, 642 - Water Well, 516 - Livestock Pipeline

**Before Situation:**

Livestock or irrigation system is delivering insufficient water due to unknown volume and flow rate of the aquifer.

**After Situation:**

With the completion of the aquifer flow test, a known flow rate of the well will determine the correct flow rate and TDH on which a pump can be selected to support an irrigation of stockwater system.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,861.92

**Scenario Cost/Unit:** $1,861.92

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Aquifer Flow Test | 1817 | High-volume aquifer flow test. Includes labor and equipment. | Hours | $200.07 | 8 | $1,600.56 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 228 - Agricultural Energy Assessment

**Scenario** #9 - Large size, 3 Enterprises

**Scenario Description:**

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 3 enterprises where at least I consists of > 2500 acres of crops, > 1000 animal units, more than 6 irrigation pumps, or > 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Large operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,281.22

**Scenario Cost/Unit:** $8,281.22

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 34 | $3,523.76 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 24 | $1,212.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 48 | $3,446.40 |

**Practice:** 228 - Agricultural Energy Assessment

**Scenario** #25 - Large size, 4+ Enterprises

**Scenario Description:**

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 4 or more enterprises where at least I consists of > 2500 acres of crops, > 1000 animal units, more than 6 irrigation pumps, or > 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Large operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,919.76

**Scenario Cost/Unit:** $9,919.76

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 42 | $4,352.88 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 28 | $1,414.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 4 | $132.08 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 56 | $4,020.80 |

**Practice:** 228 - Agricultural Energy Assessment

**Scenario** #41 - Large size, 2 Enterprises

**Scenario Description:**

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 2 enterprises where at least I consists of > 2500 acres of crops, > 1000 animal units, more than 6 irrigation pumps, or > 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Large operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,642.68

**Scenario Cost/Unit:** $6,642.68

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 26 | $2,694.64 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 20 | $1,010.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 2 | $66.04 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 40 | $2,872.00 |

**Practice:** 228 - Agricultural Energy Assessment

**Scenario** #57 - Medium size, 4+ Enterprises

**Scenario Description:**

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 4 or more enterprises where at least I consists of 301 to 2500 acres of crops, < 301 to 1000 animal units, 3 - 6 irrigation pumps, or 20,001 to 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Medium operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,723.52

**Scenario Cost/Unit:** $8,723.52

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 36 | $3,731.04 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 28 | $1,414.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 4 | $132.08 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 48 | $3,446.40 |

**Practice:** 228 - Agricultural Energy Assessment

**Scenario** #73 - Small size, 4+ Enterprises

**Scenario Description:**

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 4 or more enterprises where 1 is not larger than < 300 acres of crops, < 300 animal units, 1 - 2 irrigation pumps, < 20,000 sq. ft. of heated greenhouse, or maple syrup processing. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Small operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7,734.56

**Scenario Cost/Unit:** $7,734.56

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 32 | $3,316.48 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 28 | $1,414.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 4 | $132.08 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 40 | $2,872.00 |

**Practice:** 228 - Agricultural Energy Assessment

**Scenario** #89 - Medium size, 3 Enterprises

**Scenario Description:**

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 3 enterprises where at least I consists of 301 to 2500 acres of crops, < 301 to 1000 animal units, 3 - 6 irrigation pumps, or 20,001 to 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Medium operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7,084.98

**Scenario Cost/Unit:** $7,084.98

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 28 | $2,901.92 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 24 | $1,212.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 40 | $2,872.00 |

**Practice:** 228 - Agricultural Energy Assessment

**Scenario** #105 - Small size, 3 Enterprises

**Scenario Description:**

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 3 enterprises where 1 is not larger than < 300 acres of crops, < 300 animal units, 1 - 2 irrigation pumps, < 20,000 sq. ft. of heated greenhouse, or maple syrup processing. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Small operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,096.02

**Scenario Cost/Unit:** $6,096.02

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 24 | $2,487.36 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 24 | $1,212.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 3 | $99.06 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 32 | $2,297.60 |

**Practice:** 228 - Agricultural Energy Assessment

**Scenario** #121 - Medium size, 2 Enterprises

**Scenario Description:**

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 2 enterprises where at least I consists of 301 to 2500 acres of crops, < 301 to 1000 animal units, 3 - 6 irrigation pumps, or 20,001 to 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Medium operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,446.44

**Scenario Cost/Unit:** $5,446.44

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 20 | $2,072.80 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 20 | $1,010.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 2 | $66.04 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 32 | $2,297.60 |

**Practice:** 228 - Agricultural Energy Assessment

**Scenario** #137 - Small size, 2 Enterprises

**Scenario Description:**

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 2 enterprises where 1 is not larger than < 300 acres of crops, < 300 animal units, 1 - 2 irrigation pumps, < 20,000 sq. ft. of heated greenhouse, or maple syrup processing. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Small operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,457.48

**Scenario Cost/Unit:** $4,457.48

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 16 | $1,658.24 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 20 | $1,010.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 2 | $66.04 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 24 | $1,723.20 |

**Practice:** 228 - Agricultural Energy Assessment

**Scenario** #153 - Large size, 1 Enterprise

**Scenario Description:**

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has either > 2500 acres of crops, > 1000 animal units, more than 6 irrigation pumps, or > 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. A large operation is described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,004.14

**Scenario Cost/Unit:** $5,004.14

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 18 | $1,865.52 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 16 | $808.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 1 | $33.02 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 32 | $2,297.60 |

**Practice:** 228 - Agricultural Energy Assessment

**Scenario** #169 - Medium size, 1 Enterprise

**Scenario Description:**

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has either 301 to 2500 acres of crops, < 301 to 1000 animal units, 3 - 6 irrigation pumps, or 20,001 to 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. A medium operation is described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,807.90

**Scenario Cost/Unit:** $3,807.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 12 | $1,243.68 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 16 | $808.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 1 | $33.02 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 24 | $1,723.20 |

**Practice:** 228 - Agricultural Energy Assessment

**Scenario** #185 - Small size, 1 Enterprise

**Scenario Description:**

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has either < 300 acres of crops, < 300 animal units, 1 - 2 irrigation pumps, < 20,000 sq. ft. of heated greenhouse, or maple syrup processing. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. A small operation is described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

**Before Situation:**

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

**After Situation:**

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,818.94

**Scenario Cost/Unit:** $2,818.94

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 8 | $829.12 |
| CAP Labor, Manager | 1603 | Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $50.50 | 16 | $808.00 |
| CAP Labor, Administrative Assistant | 1739 | Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers. | Hours | $33.02 | 1 | $33.02 |
| CAP Labor, Energy Auditor | 1740 | Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities. | Hours | $71.80 | 16 | $1,148.80 |

**Practice:** 313 - Waste Storage Facility

**Scenario** #2 - Excavated Storage Pond

**Scenario Description:**

An earthen waste impoundment constructed to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This scenario has a design storage volume of more than 382,000 ft3. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation. Earthen storage liners are addressed with another standard. Vehicular and equipment access is addressed in Heavy Use Area Protection (561). Adequately protect liner at agitation and access points. The impoundment will have constructed berms less than 3' high. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Flexible Membrane (521A), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Roofs and Covers (367), and Solid/Liquid Waste Separation Facility (632), Waste Treatment (629).

**Before Situation:**

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

**After Situation:**

An earthen storage structure constructed from on-site material provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan. Typical design size: design storage volume 382,000 ft3; The pond bottom is 280' x 120' x 10' deep with a small berm normally less than 3' high around the outside of the pond. 3:1 inside and outside side slopes; (not included in design volume - freeboard and sludge accumulation).

**Feature Measure:** Design Storage Volume

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 382,000.00

**Scenario Total Cost:** $53,470.81

**Scenario Cost/Unit:** $0.14

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 1415 | $5,560.95 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 1210 | $1,028.50 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 12733 | $45,838.80 |
| **Materials** | | | | | | |
| Structural steel tubing, 2 in. diameter | 1120 | Structural steel tubing, 2 inch diameter, 1/8 inch wall thickness, materials only | Feet | $5.57 | 8 | $44.56 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 313 - Waste Storage Facility

**Scenario** #3 - Buried Concrete Tank, Less than 14,999 c.f. of storage

**Scenario Description:**

This scenario consists of installing a concrete tank that has a design storage volume from 5,000 to 14,999 CF that is totally or partially buried and has an open top. The tank can also be under an animal facility with the top cover of either slats or solid concrete lid/floor. Design volume does not include freeboard. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Flexible Membrane (521A), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Solid/Liquid Waste Separation Facility (632), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

**Before Situation:**

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

**After Situation:**

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan. Tank typically 7' deep, with a bottom area of 1400 SF, and a design storage volume of approximately 9,000 cubic feet plus 6" freeboard. Sizing based on manure, other wastes, rainfall, lot runoff, etc. as appropriate. Volume does not include 6" of freeboard.

**Feature Measure:** Design Storage Volume

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 9,000.00

**Scenario Total Cost:** $43,335.52

**Scenario Cost/Unit:** $4.82

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 39.1 | $18,231.16 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 30.7 | $18,781.34 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 620 | $1,488.00 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 195 | $1,166.10 |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 12 | $721.44 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 12 | $353.04 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 61.6 | $1,175.33 |
| Waterstop, PVC, ribbed, 3/16 in x 6 in | 1614 | Waterstop, PVC, ribbed, 3/16 inch thick by 6 inches wide. Includes materials, equipment and labor. | Feet | $4.98 | 180 | $896.40 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 313 - Waste Storage Facility

**Scenario** #4 - Buried Concrete Tank, Between 15,000 to 110,000 c.f. of storage

**Scenario Description:**

This scenario consists of installing a concrete tank that has a design storage volume from 15,000 to 110,000 CF that is totally or partially buried and has an open top. The tank can also be under an animal facility with the top cover of either slats or solid concrete lid/floor. Design volume does not include freeboard. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Flexible Membrane (521A), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Solid/Liquid Waste Separation Facility (632), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

**Before Situation:**

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

**After Situation:**

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan. Tank typically 10' deep, with a bottom area of 2,947 SF, and a design storage volume of 20,659 cubic feet plus 2' freeboard and 1' residual. Sizing based on manure, other wastes, rainfall, lot runoff, etc. as appropriate. Volume does not include 2' of freeboard, or 1' of residual.

**Feature Measure:** Design Storage Volume

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 20,659.00

**Scenario Total Cost:** $64,992.46

**Scenario Cost/Unit:** $3.15

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 49 | $22,847.23 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 48 | $29,364.96 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 334 | $1,997.32 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 922 | $3,125.58 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 1263 | $4,546.80 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 49 | $934.92 |
| Waterstop, PVC, ribbed, 3/16 in x 6 in | 1614 | Waterstop, PVC, ribbed, 3/16 inch thick by 6 inches wide. Includes materials, equipment and labor. | Feet | $4.98 | 193 | $961.14 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 3 | $216.51 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 313 - Waste Storage Facility

**Scenario** #5 - Buried Concrete Tank, Greater than 110,000 c.f. of storage

**Scenario Description:**

This scenario consists of installing a concrete tank that has a design storage volume of 110, 000 or more CF. Tank is totally or partially buried and has an open top. Tank can also be under a animal facility with the top cover using slats or concrete lid/floor. The design volume does not include freeboard. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Flexible Membrane (521A), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Solid/Liquid Waste Separation Facility (632), Diversion (362), Pipeline (516), Subsurface Drain (606), and Underground Outlet (620).

**Before Situation:**

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

**After Situation:**

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan. Tank typically 102' X 160' X 8' deep with a bottom area of 16,320 SF and a design storage volume of 81,600 CF plus 2' freeboard, and 1' residual. Sizing based on manure, other wastes, rainfall, lot runoff, etc. as appropriate. Volume does not include 2' of freeboard, and 1' residual.

**Feature Measure:** Design Storage Volume

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 81,600.00

**Scenario Total Cost:** $249,761.17

**Scenario Cost/Unit:** $3.06

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 302.2 | $140,906.79 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 134.3 | $82,160.71 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 2115 | $5,076.00 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 432 | $2,583.36 |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 3 | $180.36 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 2115 | $7,614.00 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 3 | $88.26 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 368 | $7,021.44 |
| Waterstop, PVC, ribbed, 3/16 in x 6 in | 1614 | Waterstop, PVC, ribbed, 3/16 inch thick by 6 inches wide. Includes materials, equipment and labor. | Feet | $4.98 | 524 | $2,609.52 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 313 - Waste Storage Facility

**Scenario** #6 - Steel or Concrete Above Ground Storage Structure

**Scenario Description:**

An above ground circular glass lined steel or concrete structure constructed to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This typical scenario has a design storage volume of 66,000 ft3. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation. Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Solid/Liquid Waste Separation Facility (632), Waste Treatment (629), and Pumping Plant (533).

**Before Situation:**

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

**After Situation:**

An above ground storage structure provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan. Typical design size : design storage volume 66,000 ft3, (not included - 1' freeboard); based on 73' X 19' glass lined steel tank

**Feature Measure:** Design Storage Volume

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 66,000.00

**Scenario Total Cost:** $279,496.81

**Scenario Cost/Unit:** $4.23

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 65 | $30,307.55 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 39 | $23,859.03 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 250 | $600.00 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 250 | $982.50 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 73 | $1,392.84 |
| Waste Storage, glass lined steel structure, 25,000 - 100,000 cubic foot | 1620 | Includes materials, equipment and labor to install a steel glass lined structure (based on typical 73' diameter X 19' height) . Includes materials, equipment and labor. | Cubic Feet | $3.36 | 66000 | $221,760.00 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 313 - Waste Storage Facility

**Scenario** #7 - Bedded Pack - Concrete Floor and Concrete Walls

**Scenario Description:**

A composted bedded pack facility is constructed to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This scenario is intended for situations where consistency of manure or geological conditions prohibit the use of earthen floors. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation. Concrete walls required to withstand the heavy equipment that the producer operates. Potential Associated Practices: Fence (382), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561) and Roofs and Covers (367).

**Before Situation:**

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

**After Situation:**

Using a bedded pack provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan. Typical design: floor area 4,000 ft2, (40' X 100'); 4' concrete wall height, 3' footing depth with a 6" concrete floor; 20' openings on each end of structure.

**Feature Measure:** Square Foot Floor Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 4,000.00

**Scenario Total Cost:** $62,616.62

**Scenario Cost/Unit:** $15.65

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 74 | $34,503.98 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 42 | $25,694.34 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 34 | $81.60 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 37 | $145.41 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 16 | $95.68 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 102 | $86.70 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 74 | $266.40 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 61.7 | $1,147.62 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 313 - Waste Storage Facility

**Scenario** #9 - Bedded Pack - Earth Floor and Wood Walls

**Scenario Description:**

This scenario consists of a dry stack facility with compacted earthen floor with wooden walls, posts and a concrete curb. This scenario is intended for dryer material such as poultry litter. The purpose of this practice is to properly store manure and other agricultural by-products until they can be hauled away from the site for proper disposal or utilization on land at agronomical rates. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water. Potential Associated practices: 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 367-Roofs and Covers, 558-Roof Runoff Structure, 317-Composting Facility, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment Area

**Before Situation:**

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

**After Situation:**

The typical is 4,000 SqFt (40' x 100'). The earthen floor will be prepared by stripping the top 1' of soil and roller compacting an 18" thick compacted floor. Walls are 5' pressure treated wood (2" x 8" boards), 6" x 6" x 8' posts set 4' c-c with 6" concrete curbing. Walls allow for greater storage volume. Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

**Feature Measure:** Square Foot Floor Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 4,000.00

**Scenario Total Cost:** $16,398.62

**Scenario Cost/Unit:** $4.10

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 5.5 | $1,331.72 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 2 | $1,223.54 |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 12 | $721.44 |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 12 | $119.88 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 148 | $532.80 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 90 | $2,023.20 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 12 | $353.04 |
| **Materials** | | | | | | |
| Dimension Lumber, Treated | 1044 | Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners | Board Feet | $2.17 | 1620 | $3,515.40 |
| Lumber, planks, posts and timbers, treated | 1609 | Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor. | Board Feet | $4.15 | 1104 | $4,581.60 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 4 | $1,996.00 |

**Practice:** 313 - Waste Storage Facility

**Scenario** #10 - Bedded Pack - Earth Floor and Concrete Walls

**Scenario Description:**

This scenario consists of a dry stack facility (covered) with compacted earthen floor with concrete walls. This scenario is intended to provide storage for manure and agricutural by-products that is protected from the environment and can be either inside the animal housing area or a separate facility for separated solids. The purpose of this practice is to properly store manure and other agricultural by-products until they can be removed from the site for proper utilization on land at agronomical rates. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water. Compacted earth floors required to meet state guidelines for seepage should be installed with CPS 521-D, Pond Sealing or Lining - Compacted Clay Treatment. Potential Associated practices: 521D-Pond Sealing or Lining; Compacted Clay Treatement, 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 367-Roofs and Covers, 558-Roof Runoff Structure, 317-Composting Facility, 632 - Solid/Liquid Waste Separation, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment Area

**Before Situation:**

Livestock are currently on open lots with runoff un-controlled. Un-controlled runoff is causing off-site damage due to sedimentation and elevated nutrient levels in receiving waters.

**After Situation:**

The typical size of the bedded pack Facility is 40' x 100' (4,000 SF). Facility has an earth floor and 4' high walls with 3' deep footings. A 10' opening is located on each end for access. When used as housing, the animal density can be increased by placing under roof and existing open lots abandoned. Using a bedded pack provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

**Feature Measure:** Square Foot Floor Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 4,000.00

**Scenario Total Cost:** $28,742.21

**Scenario Cost/Unit:** $7.19

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 45 | $27,529.65 |
| Trencher, 8 in. | 936 | Equipment and power unit costs. Labor not included. | Hours | $51.59 | 3 | $154.77 |
| Excavation, common earth, small equipment, 50 ft | 1220 | Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor. | Cubic Yards | $2.65 | 150 | $397.50 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 6 | $134.88 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 3 | $88.26 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 313 - Waste Storage Facility

**Scenario** #11 - Bedded Pack - Earth Floor with Concrete Walls and Concrete Apron

**Scenario Description:**

This scenario consists of a dry stack facility (covered) with compacted earthen floor with concrete walls. This scenario is intended to provide storage for manure and agricutural by-products that is protected from the environment and can be either inside the animal housing area or a separate facility for separated solids. The purpose of this practice is to properly store manure and other agricultural by-products until they can be removed from the site for proper utilization on land at agronomical rates. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water. Compacted earth floors required to meet state guidelines for seepage should be installed with CPS 521-D, Pond Sealing or Lining - Compacted Clay Treatment. Concrete floor will be constructed behind the feedbunk in the area with largest manure accumulation, and also to provide an adequate base where equipment will be frequently removing manure. Potential Associated practices: 521D-Pond Sealing or Lining; Compacted Clay Treatement, 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 367-Roofs and Covers, 558-Roof Runoff Structure, 317-Composting Facility, 632 - Solid/Liquid Waste Separation, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment Area

**Before Situation:**

Livestock are currently on open lots with runoff un-controlled. Un-controlled runoff is causing off-site damage due to sedimentation and elevated nutrient levels in receiving waters.

**After Situation:**

The typical size of the bedded pack Facility is 40' x 100' (4,000 SF). Facility has an earth floor and 4' high walls with 3' deep footings. It has a 12' x 100' concrete apron. A 10' opening is located on each end for access. When used as housing, the animal density can be increased by placing under roof and existing open lots abandoned. Using a bedded pack provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

**Feature Measure:** Square Foot Floor Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 4,000.00

**Scenario Total Cost:** $39,437.50

**Scenario Cost/Unit:** $9.86

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 22.2 | $10,351.19 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 45 | $27,529.65 |
| Trencher, 8 in. | 936 | Equipment and power unit costs. Labor not included. | Hours | $51.59 | 3 | $154.77 |
| Excavation, common earth, small equipment, 50 ft | 1220 | Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor. | Cubic Yards | $2.65 | 150 | $397.50 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 6 | $134.88 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 3 | $88.26 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 18.5 | $344.10 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 313 - Waste Storage Facility

**Scenario** #13 - Dry Stack - Concrete floor and no walls

**Scenario Description:**

This scenario consists of a dry stack facility with reinforced concrete floor without side walls. This scenario is intended for situations where consistency of manure or geographical conditions prohibit earthen floors. The purpose of this practice is to properly store manure and other agricultural by-products until they can be hauled away from the site for proper disposal or utilization on land at agronomical rates. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water. Potential

Associated practices: 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 367-Roofs and Covers, 558-Roof Runoff Structure, 317-Composting Facility, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment Area

**Before Situation:**

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

**After Situation:**

The typical is 4,000 SqFt (40' x 100'). The facility floor is 6" reinforced concrete without side walls. Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

**Feature Measure:** Square Foot Floor Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 4,000.00

**Scenario Total Cost:** $38,324.23

**Scenario Cost/Unit:** $9.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 74.1 | $34,550.61 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 74 | $290.82 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 148 | $532.80 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 50 | $954.00 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 4 | $1,996.00 |

**Practice:** 313 - Waste Storage Facility

**Scenario** #14 - Dry Stack - Concrete floor and concrete walls

**Scenario Description:**

This scenario consists of a dry stack facility with reinforced concrete floor with side walls. This scenario is intended for situations where consistency of manure or geographical conditions prohibit earthen floors. The purpose of this practice is to properly store manure and other agricultural by-products until they can be hauled away from the site for proper disposal or utilization on land at agronomical rates. Concrete walls required to withstand the heavy equipment that the producer operates. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water. Potential Associated practices: 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 367-Roofs and Covers, 558-Roof Runoff Structure, 317-Composting Facility, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment Area

**Before Situation:**

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

**After Situation:**

The typical is 4,000 SqFt (40' x 100'). The facility floor is 6" reinforced concrete with 4' walls on 3 sides. Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

**Feature Measure:** Square Foot Floor Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 4,000.00

**Scenario Total Cost:** $52,823.18

**Scenario Cost/Unit:** $13.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 74.1 | $34,550.61 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 23.7 | $14,498.95 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 74 | $290.82 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 148 | $532.80 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 50 | $954.00 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 4 | $1,996.00 |

**Practice:** 314 - Brush Management

**Scenario** #3 - Mechanical and Chemical, Low Infestation

**Scenario Description:**

Removal of woody vegetation on gently sloping to moderately deep to deep soils. The practice requires the felling of trees and brush using a mechanical cutter, chopper or other light equipment, and applying herbicide to cut stump resprouting tree/brush species, as necessary, in order to improve ecological site conditions. Brush density has met or exceeded low or light infestation (1-5% canopy depending upon species) levels based on ecological site potential as determined by state specific criteria. Typical unit is 80 acres.

**Before Situation:**

Area consist of low or light infestations of trees and shrub species which degrade desirable plant productivity, health and vigor of pasture or range units, thus promoting invasive non-herbaceous species and degrading wildlife habitat.

**After Situation:**

Woody species are removed to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Ecological site condition is progressing in an upward trend; hydrology and plant health and vigor is returning to near normal levels, and wildlife habitat is improved.

**Feature Measure:** Acres planned

**Scenario Unit:** Acres

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $4,900.96

**Scenario Cost/Unit:** $61.26

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 10 | $601.20 |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 25 | $2,680.25 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 35 | $1,029.70 |
| **Materials** | | | | | | |
| Herbicide, Triclopyor | 338 | Refer to WIN-PST for product names and active ingredients. Materials and shipping | Acres | $39.22 | 2.5 | $98.05 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 2.5 | $5.60 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 314 - Brush Management

**Scenario** #5 - Mechanical and Chemical, Heavy Infestation

**Scenario Description:**

Removal of woody vegetation on gently sloping terrain with moderately deep to deep soils. The practice requires the felling and potential piling of trees and brush using a mechanical cutter, chopper, or other light equipment, and applying herbicide to cut stump resprouting tree/brush species, as necessary, in order to improve ecological site conditions. Brush density has met or exceeded heavy or high infestation (averaging >15% canopy depending upon species) levels based on ecological site potential as determined by state specific criteria. Typical unit is 10 acres.

**Before Situation:**

Area consist of heavy or high infestations of trees and shrub species which degrade desirable plant productivity, health and vigor of pasture or range units, thus promoting invasive non-herbaceous species and degrading wildlife habitat.

**After Situation:**

Woody species are removed to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Ecological site condition is progressing in an upward trend, hydrology and plant health and vigor is returning to near normal levels, and wildlife habitat is improved.

**Feature Measure:** Acres planned

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $4,105.41

**Scenario Cost/Unit:** $410.54

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 10 | $601.20 |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 20 | $2,144.20 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 5 | $112.40 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 30 | $882.60 |
| **Materials** | | | | | | |
| Herbicide, Triclopyor | 338 | Refer to WIN-PST for product names and active ingredients. Materials and shipping | Acres | $39.22 | 2.5 | $98.05 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 2.5 | $5.60 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 314 - Brush Management

**Scenario** #8 - Chemical, Foliar Spot Treatment

**Scenario Description:**

Apply foliar chemical brush management techniques (aerial fixed wing or ground rig) on isolated upland areas within a 80 acre planning unit (not directly adjacent to streams, ponds or wetlands) associated with rangeland (may include grazed forest, pasture, or other landuses) to control undesirable deciduous species in order to improve ecological/range site conditions. Treatment is applied to 10 acre isolated areas (not adjacent to a stream, wetland or pond), using broadcast/aerial herbicide(s) application, on the entire 10 acres to reduce or remove trees and/or brush which are not appropriate for the site(s). Foliar application of material using the most effecitve, low cost chemical(s).

**Before Situation:**

Plant, animal, or wildlife resource concerns associated with upland areas (not in or adjacent to streams, ponds, or wetlands) on grazed range (incl. grazed forest, pasture, or other landuses) which are adversely affected by undesirable trees and/or brush which degrade ecological site conditions as identified by state specific ecological/range site description.

**After Situation:**

Isolated upland areas infested with undesirable tree and/or shrub species within a range unit (incl. grazed forest, pasture, or other landuse) where reduction or removal of undesirable deciduous species (not adjacent to or within a stream, ponds, or wetlands) has been accomplished through the use of appropriate foliar chemical application to address plant, animal, and wildlife resource concerns, thus improving ecological/range site conditions.

**Feature Measure:** Acres planned

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $419.69

**Scenario Cost/Unit:** $41.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 2.5 | $48.20 |
| **Materials** | | | | | | |
| Herbicide, 2,4-D | 330 | Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $13.82 | 2 | $27.64 |
| Herbicide, Picloram | 337 | Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $23.10 | 4 | $92.40 |
| Herbicide, Triclopyor | 338 | Refer to WIN-PST for product names and active ingredients. Materials and shipping | Acres | $39.22 | 4 | $156.88 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 10 | $22.40 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** 314 - Brush Management

**Scenario** #38 - Mechanical and Chemical, Medium Infestation

**Scenario Description:**

Removal of woody vegetation on gently sloping to moderately deep to deep soils. The practice requires the felling of trees and brush using a mechanical cutter, chopper or other light equipment, and applying herbicide to cut stump resprouting tree/brush species, as necessary, in order to improve ecological site conditions. Brush density has met or exceeded medium or moderate infestation (averaging 6-15% canopy depending upon species) levels based on ecological site potential as determined by state specific criteria. Typical unit is 80 acres.

**Before Situation:**

Area consist of medium or moderate infestations of trees and shrub species which degrade desirable plant productivity, health and vigor of pasture or range units, thus promoting invasive non-herbaceous species and degrading wildlife habitat.

**After Situation:**

Woody species are removed to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Ecological site condition is progressing in an upward trend; hydrology and plant health and vigor is returning to near normal levels, and wildlife habitat is improved.

**Feature Measure:** Acres planned

**Scenario Unit:** Acres

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $12,562.32

**Scenario Cost/Unit:** $157.03

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 32 | $1,923.84 |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 64 | $6,861.44 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 96 | $2,824.32 |
| **Materials** | | | | | | |
| Herbicide, Triclopyor | 338 | Refer to WIN-PST for product names and active ingredients. Materials and shipping | Acres | $39.22 | 8 | $313.76 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 8 | $17.92 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 314 - Brush Management

**Scenario** #375 - Brush Management for 1 Ac. or less

**Scenario Description:**

Using hand tools and small power tools to remove or cut off invasive woody plants at or below the root collar. Typically this scenario is for woody and non-herbaceous species that are in early phases of invasion and are degrading herbaceous plant health and vigor for the 1 acre small farm.

**Before Situation:**

Small farm area is in various phases of woody non-herbaceous species enroachment that degrades the biotic integrity of the site resulting in poor herbaceous plant health and vigor. Continued degradation results in increased invasive woody species and poor hydrological site characteristics.

**After Situation:**

Woody species are removed to achieve desirable biotic conditions for herbaceous plant health and vigor. Hydrological site characteristics and plant health and vigor are improved, and plant pest pressure from invasive woody species is reduced.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $344.53

**Scenario Cost/Unit:** $344.53

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 1 | $6.92 |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 3 | $95.46 |
| Pruning tools, hand tools | 1318 | Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included. | Hours | $2.35 | 2 | $4.70 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 6 | $134.88 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** 315 - Herbaceous Weed Treatment

**Scenario** #1 - Chemical, Ground or Aerial Treatment

**Scenario Description:**

Land unit on which weed control would be beneficial in order to set back the plant community succession, improve the ecological condition, and improve forage conditions for domestic livestock or wildlife. The practice entails the eradication of vegetation by use of weed treatment using ground or aerial equipment to apply chemicals, in order to eliminate noxious weeds, promote forage productivity, and improve ecological condition.

**Before Situation:**

Area consists of excessive stands of herbaceous weeds in existing or newly seeded or planted stands. Excessive weed growth degrades health and vigor of native herbaceous species, promoting noxious and invasive species or undesirable plant species and degrading wildlife habitat.

**After Situation:**

Herbaceous weeds are treated and controlled to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Desirable plant community is progressing in an upward trend, hydrology and plant health and vigor is returning to near normal levels, and wildlife habitat is improved.

**Feature Measure:** Acres treated

**Scenario Unit:** Acres

**Scenario Typical Size:** 160.00

**Scenario Total Cost:** $4,600.59

**Scenario Cost/Unit:** $28.75

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, aerial application, fixed wing | 947 | Chemical application performed by fixed wing aircraft. Includes equipment, power unit and labor costs. | Acres | $11.18 | 80 | $894.40 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 80 | $503.20 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 160 | $2,668.80 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 160 | $358.40 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 315 - Herbaceous Weed Treatment

**Scenario** #3 - Mechanical

**Scenario Description:**

Removal of light infestations of herbaceous weeds on gently sloping terrain with moderately deep to deep soils. The practice entails the removal of herbaceous weeds by the use of a mower, brush hog, disc, or other light equipment, in order to reduce fuel load and improve the ecological site condition. Weeds have exceeded desired levels based on ecological site potential. For organic and non-organic farms.

**Before Situation:**

Area consists of excessive stands of herbaceous weeds degrading the health and vigor of native herbaceous species and wildlife habitat while promoting noxious and invasive species encroachment.

**After Situation:**

Herbaceous weeds are removed to achieve the desired plant community based on species composition, structure, density, and canopy cover or height. Ecological site condition is progressing in an upward trend, hydrology and plant health and vigor are returning to near normal levels, and wildlife habitat is improved.

**Feature Measure:** Acres treated

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $239.68

**Scenario Cost/Unit:** $11.98

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 4 | $127.28 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 5 | $112.40 |

**Practice:** 315 - Herbaceous Weed Treatment

**Scenario** #4 - Mechanical, Tree Establishment

**Scenario Description:**

Land unit on which weed control would be beneficial to set back the plant community succession, improve the ecological condition, and improve stand establishment of herbaceous or deciduous plantings. The practice entails the eradication of vegetation by use of weed treatment, through tillage, to eliminate undesirable weeds, promote stand establishment, improve ecological condition and wildlife habitat.

**Before Situation:**

Area consists of excessive stands of herbaceous weeds degrading the health and vigor of tree species in rows or plantings.

**After Situation:**

Undesirable herbaceous weeds are controlled or removed in and around tree planting, through tillage, to achieve a desirable plant community based on species composition, structure, and density. Tree stand condition is progressing in an upward trend, hydrology and plant health and vigor are returning to near normal levels, and wildlife habitat is improved.

**Feature Measure:** Acres treated

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $208.97

**Scenario Cost/Unit:** $208.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Tillage, Primary | 946 | Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs. | Acres | $19.97 | 1 | $19.97 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 315 - Herbaceous Weed Treatment

**Scenario** #6 - Chemical, Tree Establishment - Post-emergent Herbicide

**Scenario Description:**

Tree establishment in which weed control would be beneficial in order to set back the plant community succession, improve the ecological condition, and improve the heatlh and vigor of the stand. The practice entails the management of undesirable plants (including invasive and non-invasive species) with a post-emergent selective herbicide for the establishment of a tree planting on four acres. Broadcast or spot treatment application of a narrow band of herbicide (2-4 feet wide) along the tree row or around individual trees is an example of banding herbicides to control weeds. In order to receive payment, the landowner, at a minimum, must utilize and maintain Integrated Pest Management (IPM) principles including scouting, biological and/or low risk pesticides.

**Before Situation:**

Area consists of excessive stands of herbaceous weeds degrading the health and vigor of tree rows and timber establishments promoting undesirable plants, noxious and invasive species, and degrading wildlife habitat.

**After Situation:**

Herbaceous weeds are controlled with post-emergent herbicides to achieve the desired plant community based on species composition, structure, density, and canopy cover or height. Permits individual trees and timber stands to be planted to promote/improve soil health and condition, hydrology, plant health and vigor, and wildlife habitat.

**Feature Measure:** Acres treated

**Scenario Unit:** Acres

**Scenario Typical Size:** 4.00

**Scenario Total Cost:** $176.01

**Scenario Cost/Unit:** $44.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 4 | $25.16 |
| **Materials** | | | | | | |
| Herbicide, Clopyrilad or Aminopyralid | 332 | Refer to WIN-PST for product names and active ingredients. Materials and shipping | Acres | $7.55 | 4 | $30.20 |
| Herbicide, sulfosulfuron | 2043 | For the control of annual broad-leaved weeds and grass weeds in cereals. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $12.12 | 4 | $48.48 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** 315 - Herbaceous Weed Treatment

**Scenario** #85 - Herbaceous Weed Treatment for One Acre Small Farm

**Scenario Description:**
Using hand and small power tools to remove or cut off herbaceous invasive plants at or below the root collar. Typically this scenario is for herbaceous invasive species that are degrading the 1 acre small farm.

**Before Situation:**
Small farm area is in various phases of herbaceous species enroachment that degrades the biotic integrity resulting in poor plant health and vigor, and/or wildlife habitat. Continued degradation results in increased plant pest pressure, loss of plant diversity and biotic integrity, and poor hydrological characteristics.

**After Situation:**
Herbaceous species are removed to achieve desirable biotic conditions and improved plant health and vigor, and/or wildlife habitat. Hydrological site characteristics are improved, and plant pest pressure from invasive herbaceous species are reduced.

**Feature Measure:** acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $206.53

**Scenario Cost/Unit:** $206.53

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 1 | $31.82 |
| Pruning tools, hand tools | 1318 | Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included. | Hours | $2.35 | 2 | $4.70 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 3 | $67.44 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** 316 - Animal Mortality Facility

**Scenario** #2 - Incineration, 50-100CF chamber

**Scenario Description:**

This scenario consists of installing a manufactured Type IV incinerator designed to handle 350 to 850 lbs of average daily mortality for the species and size of the operation. Typically very large poultry or medium sized swine operations. System shall use high temperature (>1,300 degrees F) incineration with a secondary combustion or afterburner chamber prior to flue discharge. After determining average daily mortality in lbs, select smallest incinerator that meets capacity. Payment made per unit of actual chamber size obtained from manufacturers' product literature. This option is not typically least-cost. In most states a roofed static pile with concrete floor and bins would be considered least cost. Therefore consider reducing payment rate as per State Conservationist discretion. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors are reduced, however, in non-attainment areas, certain states may require a higher level of processing such as gasification or other approved methods. Potential Associated Practices: Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Access Road (560), Waste Storage Facility (313), Nutrient Management (590), Roofs and Covers (367), Critical Area Planting (342).

**Before Situation:**

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

**After Situation:**

Animal mortality is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete incineration, and protection from predators to minimize pathogen survival or spreading. In non-attainment areas, certain states may require a higher level of processing such as gasification or different methods. An overall plan covers normal and catastrophic mortality events. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation. Incinerator installed to handle 700 lbs per day average mortality for a medium poultry or swine operation. Included is a concrete slab to set the incinerator on and a diesel fuel tank. Ash materials to be stored in suitable containers until land disposal as per the nutrient managment plan or landfilled.

**Feature Measure:** Incinerator Chamber Volume

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 56.00

**Scenario Total Cost:** $15,277.52

**Scenario Cost/Unit:** $272.81

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 4 | $1,865.08 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 8 | $19.20 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 1 | $130.02 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 1 | $22.48 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 1 | $29.42 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 4 | $76.32 |
| Fuel Tank, Anchored | 1033 | Fuel tank for operating incinerators and/or gasifiers. Materials only. | Gallons | $5.22 | 285 | $1,487.70 |
| Incinerator, 400 lbs/day | 1625 | Poultry and livestock incinerator with an approximate chamber capacity of 400 pounds per day. Includes equipment and after burner only. | Each | $11,124.58 | 1 | $11,124.58 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 316 - Animal Mortality Facility

**Scenario** #4 - Invessel Rotary Drum, less than 700 CF

**Scenario Description:**

This scenario consists of installing a horizontal rotary drum to compost smaller poultry and swine facility mortality. It can handle between 250 and 600 lbs per day of mortality plus equal or higher volumes of carbon material (i.e. wood chips). A secondary composting storage area is required to finish materials. Payment quantity based on interior volume of rotary composter in cubic feet of smallest drum that can process daily mortality as per manufacturers' recommendations. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Scenario is needed where the producer has a limited footprint for the installed practice. Potential Associated Practices: Roofs and Covers (367), Waste Storage Facility (313), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for Water Control (587 ), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

**Before Situation:**

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

**After Situation:**

Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Installed a 5' diameter by 22' long rotary drum on two concrete pads that can process 325 lbs of mortality per day. Drum rotation moves and mixes mortality and wood chips. Site preparation includes topsoil removal, gravel pad, and concrete pads and slab at two locations plus small floor and walls to complete composting. Input material reduced by 40-60 percent and put into 4' high, three sided, 20'x 20' concrete bin with 10'x20 concrete pad for secondary composting. Carbon source is placed into a three sided 30' x 30' with 4' high walls. Area can be protected by adding Roofs and Covers (367 ) standard.

**Feature Measure:** Volume of Drum

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 432.00

**Scenario Total Cost:** $70,490.42

**Scenario Cost/Unit:** $163.17

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 15 | $6,994.05 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 6 | $3,670.62 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 28 | $110.04 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 16 | $486.40 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 8 | $152.64 |
| Composter, drum, 12 CY | 1627 | 12 CY drum composter unit. Total capacity range is 10-19 CY. Includes equipment, operation controls, and shipping. Labor not included. | Each | $58,932.33 | 1 | $58,932.33 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |

**Practice:** 316 - Animal Mortality Facility

**Scenario** #5 - Invessel Rotary Drum, greater than or equal to 700 CF

**Scenario Description:**

This scenario consists of installing a horizontal rotary drum to compost larger poultry and swine facility mortality. It can handle between 600 and 1,000 lbs per day of mortality plus equal or higher volumes of carbon material (i.e. wood chips). A secondary composting storage area is required to finish materials. Payment quantity based on interior volume of rotary composter in cubic feet of smallest drum that can process daily mortality as per manufacturers' recommendations. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Scenario is needed where the producer has a limited footprint for the installed practice. Potential Associated Practices: Roofs and Covers (367), Waste Storage Facility (313), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for Water Control (587 ), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

**Before Situation:**

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

**After Situation:**

Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Installed a 5' diameter by 54' long rotary drum on two concrete pads that can process 810 lbs of mortality per day. Drum rotation moves and mixes mortality and wood chips. Site preparation includes topsoil removal, gravel pad, concrete pads, slab at two locations plus concrete floor and walls to complete composting. Input material reduced by 40-60 percent and put into 4' high, three sided, 30'x 30' concrete bin with 10'x30' concrete pad for secondary composting. Area can be protected by adding Roofs and Covers (367) standard.

**Feature Measure:** Volume of Drum

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 1,079.00

**Scenario Total Cost:** $92,015.80

**Scenario Cost/Unit:** $85.28

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 30 | $13,988.10 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 9 | $5,505.93 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 58 | $227.94 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 24 | $729.60 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 8 | $152.64 |
| Composter, drum, 28 CY | 1628 | 28 CY drum composter unit. Total capacity range is 20-29 CY. Includes equipment, operation controls, and shipping. Labor not included. | Each | $70,888.87 | 1 | $70,888.87 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 316 - Animal Mortality Facility

**Scenario** #9 - Static pile, Concrete Pad with hydrant

**Scenario Description:**

This scenario consists of installing a concrete pad over permeable soils, karst topography, frequently accessed sites or sites with regulatory requirements. Typically associated with large dairy (1,000 cows plus heifers ) or beef animal mortality with an average daily mortality of 175 lbs/day. Area sized to compost animal mortality as a static pile or windrow with equipment around materials. Sufficient carbon based bulking material added to allow natural aeration and a proper C:N ratio. Water is added to maintain moisture content. Piles typically turned at least once to go into another heat cycle prior to final disposal, typically land application. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area or vegetated treatment area as per regulations.
Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

**Before Situation:**

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

**After Situation:**

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

**Feature Measure:** Pad Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 5,700.00

**Scenario Total Cost:** $45,941.46

**Scenario Cost/Unit:** $8.06

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 90 | $41,964.30 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 220 | $528.00 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 110 | $432.30 |
| Trenching, Earth, 12 in. x 60 in. | 1459 | Trenching, earth, 12 inch wide x 60 inch depth, includes equipment and labor for trenching, laying 3 to 6 inch CPP drain line with envelope, and backfilling. | Feet | $1.92 | 200 | $384.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 70 | $1,335.60 |
| Pipe, PVC, 1 1/2 in., SCH 40 | 975 | Materials: - 1 1/2 inch - PVC - SCH 40 - ASTM D1785 | Feet | $1.66 | 200 | $332.00 |
| Freeze Proof Hydrant, > 3 ft. Bury | 2393 | Freeze Proof Hydrant, more than 3 foot bury. Materials only. | Each | $82.86 | 1 | $82.86 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 316 - Animal Mortality Facility

**Scenario** #13 - Static pile, Concrete Bin(s) with hydrant

**Scenario Description:**

This scenario consists of installing a two or more of concrete bins, open on one end on a concrete pad to compost larger quantities of poultry or mature swine mortality in static pile(s) that have sufficient bulking material to allow natural aeration. Piles are turned to go through a second heat cycle prior to final land application. Water is added to maintain moisture content. The roofed portion of the facility is addressed in Cover and Roofs (367). Size of facility based on daily mortality and sizing procedures accepted in particular state. Scenarios are needed to meet permit differences between states and sizes of operations (some states in the region do not approve wood walls). Potential Associated Practices: Roofs and Cover ( 367 ), Heavy Use Area Protection (561), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Roof Runoff Structure (558), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

**Before Situation:**

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

**After Situation:**

Animal mortality is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation. Install a 20' deep by 48' long pad with four bins with 8' high walls and one end open. Roofed portion is addressed under Roofs and Covers (367). Site preparation includes topsoil removal, installing 4" of gravel, installing concrete slab, and installing 8' high concrete walls. A hydrant is installed to aid in maintaining moisture content. Piles are turned by moving to adjacent bin to go through a second heat cycle prior to final land application.

**Feature Measure:** Total Bin Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 960.00

**Scenario Total Cost:** $33,561.04

**Scenario Cost/Unit:** $34.96

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 28 | $13,055.56 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 30 | $18,353.10 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 85 | $204.00 |
| Trenching, Earth, 12 in. x 60 in. | 1459 | Trenching, earth, 12 inch wide x 60 inch depth, includes equipment and labor for trenching, laying 3 to 6 inch CPP drain line with envelope, and backfilling. | Feet | $1.92 | 200 | $384.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 14 | $267.12 |
| Pipe, PVC, 1 1/2 in., SCH 40 | 975 | Materials: - 1 1/2 inch - PVC - SCH 40 - ASTM D1785 | Feet | $1.66 | 200 | $332.00 |
| Freeze Proof Hydrant, > 3 ft. Bury | 2393 | Freeze Proof Hydrant, more than 3 foot bury. Materials only. | Each | $82.86 | 1 | $82.86 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 316 - Animal Mortality Facility

**Scenario** #86 - Poultry mortality thermal dehydration - Small

**Scenario Description:**

This scenario consists of installing a manufactured mortality thermal dehydration unit designed to handle up to 1,300 lbs of average daily mortality for the species and size of the operation. System shall use simultaneous mixing and heating to 194 degrees Fahrenheit and will result in approximately 60% mortality volume reduction over a 12-hour cycle time. After determining average daily mortality in lbs, select the smallest unit that meets capacity. Payment made based on the size of the unit obtained from manufacturers' product literature. This option is not typically least-cost. In most states a roofed static compost pile with concrete floor and bins would be considered least cost. Therefore consider reducing payment rate as per State Conservationist discretion. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed, however, in non-attainment areas, certain states may require a higher level of processing such as gasification or other approved methods. Potential Associated Practices: Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Access Road (560), Waste Storage Facility (313), Nutrient Management (590), Roofs and Covers (367), Critical Area Planting (342).

**Before Situation:**

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

**After Situation:**

Animal mortality is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete incineration, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation. Typical thermal dehydrator installed to handle up to 1300 lbs per day average mortality for a poultry operation. Included is a 16'x16' concrete slab to set the thermal dehydrator on. Thermally dehydrated materials to be stored in suitable containers until land disposal as per the nutrient management plan or landfilled.

**Feature Measure:** Number of units

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $60,490.92

**Scenario Cost/Unit:** $60,490.92

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 5 | $2,331.35 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 10 | $24.00 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 2 | $260.04 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 2 | $58.84 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 5 | $95.40 |
| Thermal Dehydrator, Small | 2806 | Poultry mortality thermal dehydrator with a capacity less than or equal to 1,300 pounds per day. Includes equipment, shipping, and installation. | Each | $57,153.61 | 1 | $57,153.61 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 317 - Composting Facility

**Scenario** #1 - Composter, structure facility with concrete floor and walls

**Scenario Description:**

The composting facility, with concrete floor and walls between bins only, is installed to address water quality concerns and disease vectors resulting from improper waste disposal by providing a dedicated facility for storage and treatment, and by creating a compost product that can be used in multiple ways including land application for enrichment of crop ground. This scenario is applicable when geological, soil, or climate conditions, or space limitations for structure footprint, or other site limitations make this scenario more suitable than a structure with wood bin walls on a concrete floor. All animal mortality composting shall be done using Practice Standard 316 - Animal Mortality
Facility.

Potential Associated

Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for water control (587), Diversion (362), Pipeline (516), Subsurface Drain (606), Heavy Use Area Protection (561), Roofs and Covers (367), Roof Runoff Structure (558), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Underground Outlet (620) and Vegetative Treatment Area (635).

**Before Situation:**

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

**After Situation:**

Manure, litter and other agricultural by-products are being controlled, by the collection at the source, and stored properly, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan. The typical composter is designed to handle organic material from a livestock operation. The typical composter is 42' x 14' with 5' high concrete walls. Strip top 1' of soil and roll compact same back into sub-floor. The bins are constructed on a 7" concrete slab used to store and stabilize manure, litter and other agricultural by-products from a four house complex on any farm.

**Feature Measure:** Square Foot Floor Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 588.00

**Scenario Total Cost:** $12,470.71

**Scenario Cost/Unit:** $21.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 12.6 | $5,875.00 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 8.6 | $5,261.22 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 32.7 | $128.51 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 10.9 | $207.97 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 317 - Composting Facility

**Scenario** #31 - Small Farm Pad + Bins

**Scenario Description:**

The composting facility is installed on a small, urban or organic farm to address water quality concerns, pest/rodent concerns, and disease vectors resulting from improper vegetative waste disposal by providing a dedicated facility for storage and treatment, and by creating a compost product that can be used in multiple ways including land application for enrichment of crop ground. The typical facility size is 6 feet by 9 feet and is comprised of a two bin system. Screening is provided to limit access by vermin. Cost may be higher per unit than traditional compost facilities due to construction access limitations.

Potential Associated Practices: Pond Sealing or Lining, Compacted Soil (520), Pond Sealing or Lining, Geomembrane or Geosynthetic Clay Liner (521), Pond Sealing or Lining, Concrete (522), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Diversion (362), Livestock Pipeline (516), Subsurface Drain (606), Heavy Use Area Protection (561), Roofs and Covers (367), Roof Runoff Structure (558), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Underground Outlet (620) and Vegetative Treatment Area (635), Stormwater Runoff Control (570).

**Before Situation:**

Manure and other vegetative waste are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters.

**After Situation:**

Manure and other agricultural by-products are being controlled by collection at the source and properly stored at an environmentally suitable location, until such time that they are utilized in a proper manner, typically in accordance with a nutrient management plan. This is incorporated as part of the overall waste management system meeting the National Engineering Handbook (NEH), Part 651, Agricultural Waste Management Field Handbook (AWMFH) that has been developed to also account for end use of the product from the composting facility. This scenario consists of installing a composting structure on a concrete pad. Concrete pad is 6'x9' on a compacted gravel surface. Include sufficient area for accessing compost structure. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area or vegetated treatment area as per regulations. Site preparation includes topsoil removal, compaction of subsoil, and installing a geotextile plus compacted gravel, concrete pad, and composting structure.

**Feature Measure:** Square Foot Floor Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 54.00

**Scenario Total Cost:** $3,594.81

**Scenario Cost/Unit:** $66.57

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | $1.30 | 6 | $7.80 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 2 | $11.96 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 5 | $128.40 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 30 | $912.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 15 | $717.15 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 2 | $38.16 |
| Concrete mix, bag | 1226 | Pre-mixed dry concrete mix in 60 pound bag. Materials only. | Each | $4.95 | 42 | $207.90 |
| Lumber, planks, posts and timbers, untreated, rot resistant | 1612 | Untreated dimension lumber with nominal thickness greater than 2 inches, milled from rot resistant species such as cedar. Includes lumber and fasteners. Does not include labor. | Board Feet | $4.59 | 264 | $1,211.76 |

**Practice:** 319 - On-Farm Secondary Containment Facility

**Scenario** #2 - Earthen Containment

**Scenario Description:**

This practice scenario includes the construction of an earthen containment wall with a flexible membrane liner around an existing storage tank. The containment will not have a roof. The purpose of the practice is to address resource concerns related to water quality degradation due to the excessive release of organics into ground and surface waters or excessive sediment and turbidity in surface waters. Associated practices: Heavy Use Area Protection (561).

**Before Situation:**

The agricultural operation has a single walled fuel/oil storage tank(s) without any spill prevention protection. The producer has developed an SPCC plan in accordance with EPA requirements, which requires an above ground secondary containment facility for on-farm oil products.

**After Situation:**

This scenario is based on containment for a 10,000 gallon tank. The containment will be lined with a flexible membrane liner. The containment volume is designed for 125% of the tank volume (10,000 gallons X 125% = 12,500 gallons). The bottom dimensions of the containment are 40 ft x 24 ft. The wall is 2.5 feet high with a 2 ft top width and 2:1 sideslopes. The total volume of earthfill = 114 CY. The flexible liner size = 1,872 SF. Tanks will be moved or raised to install base materials. Hauled in earthfill will be used to construct the dike. The flexible liner will be installed in conformance with the design and specifications. The completed structure will provide an environmentally safe facility for handling and storage of oil products stored on the farm. Any accidental spills will be contained.

**Feature Measure:** Cubic Yard of compacted earthen

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 114.00

**Scenario Total Cost:** $5,598.50

**Scenario Cost/Unit:** $49.11

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 126 | $495.18 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 114 | $386.46 |
| Crane, truck mounted, hydraulic, 12 ton | 1734 | 12 ton capacity truck mounted hydraulic crane. Equipment cost only. | Hours | $282.75 | 2 | $565.50 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 2 | $70.26 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 18 | $343.44 |
| Pipe, PVC, 2 in., SCH 40 | 976 | Materials: - 2 inch - PVC - SCH 40 - ASTM D1785 | Feet | $2.19 | 50 | $109.50 |
| Geotextile, non-woven, heavy weight | 1210 | Non-woven greater than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only. | Square Yard | $1.11 | 208 | $230.88 |
| Synthetic Liner, 40 mil | 1387 | Synthetic 40 mil HDPE, LLDPE, EPDM, etc membrane liner material. Includes materials and shipping only. | Square Yard | $7.29 | 208 | $1,516.32 |
| Fuel Containment Facility, Gate valve 2 inch diameter | 1735 | Metal 2 inch diameter gate valve. Materials only. | Each | $697.15 | 1 | $697.15 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 319 - On-Farm Secondary Containment Facility

**Scenario** #4 - Concrete Containment Wall

**Scenario Description:**

This practice scenario includes the installation of a reinforced concrete wall containment with a concrete slab around an existing storage tank. The purpose of the practice is to address resource concerns related to water quality degradation due to the excessive release of organics into ground and surface waters or excessive sediment and turbidity in surface waters. Due to topography, limited site space and/or geological conditions a fabricated structure is needed. Structure will provide an environmentally safe facility for handling and storage of these products. Associated practices may include: Heavy Use Area Protection (561).

**Before Situation:**

Existing agricultural operation that has single walled fuel/oil storage tank(s) not protected. The producer has developed an SPCC plan in accordance with EPA requirements, that requires an above ground secondary containment facility for on-farm oil products, in order to control the excessive release of organics into ground and surface waters, or to control the excessive sediment and turbidity in surface water.

**After Situation:**

This scenario is based on containment for a 4,700 gallon tank. The containment volume is designed for 125% of the tank volume (4,700 gallons X 125% = 5,875 gallons). Structure will provide an environmentally safe facility for handling and storage of these products. Typical containment dimensions are 196 sqft bottom x 6" thick slab with 6" thick x 4' tall formed sidewalls. Tanks will be moved or raised to install base materials. The fabricated containment structure will be installed in conformance with the design and specifications. The on-farm oil products stored on the farm have secondary containment of accidental release that controls the excessive release of organics, suspended sediments, and turbidity. Structure will provide an environmentally safe facility for handling and storage of these products.

**Feature Measure:** Volume of concrete in the wall

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 4.00

**Scenario Total Cost:** $7,035.23

**Scenario Cost/Unit:** $1,758.81

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 4.2 | $1,958.33 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 4.3 | $2,630.61 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 1 | $93.24 |
| Crane, truck mounted, hydraulic, 12 ton | 1734 | 12 ton capacity truck mounted hydraulic crane. Equipment cost only. | Hours | $282.75 | 2 | $565.50 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 2 | $70.26 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 4.2 | $80.14 |
| Pipe, PVC, 2 in., SCH 40 | 976 | Materials: - 2 inch - PVC - SCH 40 - ASTM D1785 | Feet | $2.19 | 30 | $65.70 |
| Fuel Containment Facility, Gate valve 2 inch diameter | 1735 | Metal 2 inch diameter gate valve. Materials only. | Each | $697.15 | 1 | $697.15 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 324 - Deep Tillage

**Scenario** #12 - Deep Tillage less than 20 inches

**Scenario Description:**

Fields (80 acres) with adverse soils conditions that restrict plant growth such as compacted layers caused by tillage operations or restrictive layers such as hardpans (duripans) in the root zone. This practice does not apply to normal tillage practices to prepare a seedbed but is meant to fracture the restrictive soil layer.

**Before Situation:**

In this geographic area, crop plants are observed as having reduced yield, water is not infiltrating into the soil. Soil layers have been compacted by shallow tillage operations, or soils have a hardpan (duripan) layer that is restricting root growth. Typical field size is 80 acres with crop rotations consisting of annual row crops or small grains with conventional tillage or when the harvesting of row crops (onions, sugar beets, potato, and corn silage) use heavy trucks to assist with the harvest. Compaction has been caused when soil moisture is too wet for normal field operations or by excessive shallow tillage or field harvest haul traffic throughout the entire field. Soil structure has been reduced, aggregate strength is weak and soil biological activity is low. Soil organic matter is not adequate and the water holding capacity of the soil is limited for the desired root zone.

**After Situation:**

Soil compaction is measured with a penetrometer and visual observation of limiting root growth. Deep tillage operations such as subsoiling, paratilling or ripping are performed not as a part of the normal tillage operation for seedbed preparation, but used to relieve compaction at depths less than 20 inches. Soil moisture is less than 30 percent when deep tillage is used. The fractured zone will be sufficient to permit root penetration below the restrictive soil layer. Penetrometers are used to identify the severity (psi) of the compaction and the depth of the restrictive layer. Deep tillage is generally performed in the fall after crop harvest when soil conditions are dry. After deep tillage, harvest operations should be avoided when soil moisture is greater than 50% of field capacity. Field harvest haul traffic should be limited to end rows or haul roads. Using dual tires or tracks beneath tractors or grain wagons can help spread the weight load.

**Feature Measure:** <Unknown>

**Scenario Unit:** Acres

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $2,309.74

**Scenario Cost/Unit:** $28.87

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 1 | $25.68 |
| Ripper or subsoiler, 16 to 36 inch depth | 1235 | Deep ripper or subsoiler, (16-36 inches depth) includes tillage implement, power unit and labor. | Acres | $25.00 | 80 | $2,000.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |

**Practice:** 324 - Deep Tillage

**Scenario** #13 - Deep Tillage more than 20 inches

**Scenario Description:**

Fields (80 acres) with adverse soils conditions that restrict plant growth such as compacted layers caused by tillage operations or restrictive layers such as hardpans (duripans) in the root zone. This practice does not apply to normal tillage practices to prepare a seedbed but is meant to fracture the restrictive soil layer.

**Before Situation:**

In this geographic area, crop plants are observed as having reduced yield, water is not infiltrating into the soil. Soil layers have been compacted by shallow tillage operations, or soils have a hardpan (duripan) layer that is restricting root growth. Typical field size is 80 acres with crop rotations consisting of annual row crops, orchard /vineyards or small grains with conventional tillage or when the harvesting of row crops (onions, sugar beets, potato, and corn silage) use heavy trucks to assist with the harvest. Orchards and vineyards may be deep ripped prior to establishment of perennial crop. Compaction has been caused when soil moisture is too wet for normal field operations or by excessive shallow tillage or field harvest haul traffic throughout the entire field. Soil structure has been reduced, aggregate strength is weak and soil biological activity is low. Soil organic matter is not adequate and the water holding capacity of the soil is limited for the desired root zone.

**After Situation:**

Soil compaction is measured with a penetrometer and visual observation of limiting root growth. Deep tillage operations such as subsoiling, paratilling or ripping are performed not as a part of the normal tillage operation for seedbed preparation, but used to relieve compaction at depths more than 20 inches. Soil moisture is less than 30 percent when deep tillage is used. The fractured zone will be sufficient to permit root penetration below the restrictive soil layer. Penetrometers are used to identify the severity (psi) of the compaction and the depth of the restrictive layer. Deep tillage is generally performed in the fall after crop harvest when soil conditions are dry. When possible, harvest operations should be avoided when soil moisture is greater than 50% of field capacity. Field harvest haul traffic should be limited to end rows or haul roads. Using dual tires or tracks beneath tractors or grain wagons can help spread the weight load.

**Feature Measure:** <Unknown>

**Scenario Unit:** Acres

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $5,472.94

**Scenario Cost/Unit:** $68.41

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 1 | $25.68 |
| Ripper or subsoiler, > 36 inch depth | 1236 | Deep ripper or subsoiler, (>36 inches depth) includes tillage implement, power unit and labor. | Acres | $64.54 | 80 | $5,163.20 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |

**Practice:** 325 - High Tunnel System

**Scenario** #98 - Contiguous US Snow

**Scenario Description:**

Used for contiguous US states in areas with high snowfall. A gothic style (peaked) manufactured frame of tubular steel (30 x 70 ft.) with end walls and/or truss supports covered with 4-year 6 mil plastic. Costs are based on purchase of manufactured kit and landowner installing the structure. Structure must be installed to manufacturer's specifications.

**Before 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, and plant condition.

**After Situation:**

A high tunnel structure has been installed and he growing season has been extended for 1-4 months on average. Plant health and vigor has been improved.

**Feature Measure:** Area of Tunnel Installed

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 2,160.00

**Scenario Total Cost:** $17,138.22

**Scenario Cost/Unit:** $7.93

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 71 | $1,596.08 |
| **Materials** | | | | | | |
| High Tunnel, Gothic Style, Fixed Cost | 2791 | Fixed cost portion of a gothic style high tunnel. 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. | Number | $2,766.14 | 1 | $2,766.14 |
| High Tunnel, Gothic Style, Variable Cost | 2792 | Variable cost portion of a Gothic style high tunnel. 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. Includes materials and shipping only. | Square Feet | $4.07 | 2160 | $8,791.20 |
| High Tunnel, End Walls | 2799 | Includes frame, polyvinyl covering, and appurtenances. Price is for two end walls based on the width of the structure. Manufactured doors not included. Includes material and shipping only. | Feet | $60.72 | 30 | $1,821.60 |
| High Tunnel, Truss Supports | 2800 | Rafter or truss support system on Seasonal High Tunnels to add strength for wind or snow load. Based on the area of the structure (square feet). Includes materials and shipping only. | Square Feet | $0.77 | 2160 | $1,663.20 |
| **Mobilization** | | | | | | |
| Mobilization, Material, distance > 50 miles | 1043 | Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price. | Dollars | $1.00 | 500 | $500.00 |

**Practice:** 325 - High Tunnel System

**Scenario** #116 - Small High Tunnel, Snow and Wind

**Scenario Description:**

Use in areas with expected snow and wind loads on sites less than 1 acre. Gothic-style (arched) manufactured frame of tubular steel (less than or equal to 20 ft x 30 ft.) covered with 4-year warrantee, 6 mil UV resistant plastic. Costs are based on purchase of manufactured kit and landowner installation of structure. Structure must be installed to manufacturer's specifications. Associated practices might include CPS Roof Runoff Structure (588), Underground Outlet (620), Critical Area Planting (342), Mulching (484).

**Before Situation:**

Cropland where extension of the growing season is needed. Primary resource concern addressed will be plant health and vigor.

**After Situation:**

High Tunnel structure has been installed and the growing season has been extended for 1-4 months on average. Plant health and vigor is improved.

**Feature Measure:** Area of High Tunnel Installed

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 600.00

**Scenario Total Cost:** $8,165.90

**Scenario Cost/Unit:** $13.61

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 57 | $1,281.36 |
| **Materials** | | | | | | |
| High Tunnel, Gothic Style, Fixed Cost | 2791 | Fixed cost portion of a gothic style high tunnel. 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. | Number | $2,766.14 | 1 | $2,766.14 |
| High Tunnel, Gothic Style, Variable Cost | 2792 | Variable cost portion of a Gothic style high tunnel. 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. Includes materials and shipping only. | Square Feet | $4.07 | 600 | $2,442.00 |
| High Tunnel, End Walls | 2799 | Includes frame, polyvinyl covering, and appurtenances. Price is for two end walls based on the width of the structure. Manufactured doors not included. Includes material and shipping only. | Feet | $60.72 | 20 | $1,214.40 |
| High Tunnel, Truss Supports | 2800 | Rafter or truss support system on Seasonal High Tunnels to add strength for wind or snow load. Based on the area of the structure (square feet). Includes materials and shipping only. | Square Feet | $0.77 | 600 | $462.00 |

**Practice:** 327 - Conservation Cover

**Scenario** #1 - Conservation Cover for Water Quality and Wildlife, Foregone Income - Level 1 (Year 1)

**Scenario Description:**

Permanent vegetation, including a mix of introduced cool season grasses and legumes, established on cropped wetland area needing permanent vegetative cover that improves water quality and provides wetland wildlife habitat. Typical practice size is 2 acres. Practice applicable on cropland.

**Before Situation:**

Setting is any prairie pothole. The wetlands must be wholly or partially in cropland. These wetlands are currently cropped, and hydrology has or could be diverted from the wetland by way of tiling, field or road ditching, diking or any other feature that removes wetland hydrology. These wetter or more water saturated portions of cropland fields degrade water quality by nutrients carried through surface inlets. These areas also have the potential to produce a significant amount of moist soil plants which are valuable source of forage and cover for many waterfowl, shorebird and wading bird species. The current system provides little to no wildlife habitat with habitat limiting factors such as quality, quantity and continuity of forage, cover, shelter and space being identified. Drainage could also result in inadequate wildlife water and inadequate habitat.

**After Situation:**

The 327 Implementation Requirements have been developed for the site and applied. The permanent grass/legume mix vegetation replacing the previously cropped wetland has improved water quality and wetland wildlife habitat.

**Feature Measure:** Area Planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $649.83

**Scenario Cost/Unit:** $324.92

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 4 | $52.84 |
| Mechanical weed control, Vegetation termination | 957 | Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs. | Acres | $22.43 | 2 | $44.86 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 2 | $44.18 |
| **Foregone Income** | | | | | | |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 1 | $245.86 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 1 | $171.19 |
| **Materials** | | | | | | |
| Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2747 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $45.45 | 2 | $90.90 |

**Practice:** 327 - Conservation Cover

**Scenario** #45 - Introduced with Forgone Income

**Scenario Description:**

This practice applies on organically managed land needing permanent protective cover. This practice typically involves conversion from an intensive organic cropping system to permanent non-native vegetation (scenario includes non-native grass/legume mix). The typical size of the practice is 20 acres. This practice scenario is typically used to reduce soil erosion, reduce soil quality degradation, improve water quality, develop wildlife habitat, and reduce air quality impacts.

**Before Situation:**

Crops such as vegetables and small fruit crops are organically grown and harvested. Full width tillage is utilized, weeds controlled mainly by cultivation. Soil surface residue amounts average 10% or less. Erosion exceeds tolerable rates and sediment may be moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The system provides little to no wildlife habitat.

**After Situation:**

The 327 Implementation Requirements have been developed for the site and has been applied. Organically managed land covered with permanent non- native grass/legume mix vegetation has reduced soil erosion, reduced water/sediment runoff, and improved air quality due to the elimination of dust emissions. . Plants sown for conservation cover may provide cover for beneficial insects and wildlife. This scenario does not apply to plantings for forage production or to critical area plantings.

**Feature Measure:** Area planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $21,074.75

**Scenario Cost/Unit:** $421.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 150 | $1,981.50 |
| Fertilizer, ground application, dry bulk | 950 | Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $7.54 | 50 | $377.00 |
| Mechanical weed control, Vegetation termination | 957 | Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs. | Acres | $22.43 | 50 | $1,121.50 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 50 | $1,104.50 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 25 | $7,336.25 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 25 | $6,146.50 |
| **Materials** | | | | | | |
| Nitrogen, Organic | 266 | ORGANIC Nitrogen | Pound | $0.23 | 2500 | $575.00 |
| Phosphorus, Organic | 267 | ORGANIC Phosphorus | Pound | $0.08 | 2000 | $160.00 |
| Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2747 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $45.45 | 50 | $2,272.50 |

**Practice:** 327 - Conservation Cover

**Scenario** #46 - Native Species with Forgone Income

**Scenario Description:**

This practice applies on conventional or organically managed land needing permanent protective cover. This practice typically involves conversion from an intensive cropping system to permanent native vegetation (scenario includes native grass/legume mix). The typical size of the practice is 50 acres. This practice scenario is typically used to reduce soil erosion, reduce soil quality degradation, improve water quality, develop wildlife habitat, and reduce air quality impacts. Applies to conventional or organic systems.

**Before Situation:**

Crops such as vegetables and small fruit crops may be conventionally or organically grown and harvested. Full width tillage is utilized, weeds controlled mainly by cultivation. Soil surface residue amounts average 10% or less. Soil erosion exceeds tolerable rates and sediment may be moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The system provides little to no wildlife habitat.

**After Situation:**

The 327 Implementation Requirements have been developed for the site and applied. Managed land covered with permanent native grass/legume mix vegetation has reduced soil erosion, reduced water/sediment runoff, and improved air quality due to the elimination of dust emissions. Plants sown for conservation cover may provide cover for beneficial insects and wildlife. This scenario does not apply to plantings for forage production or to critical area plantings.

**Feature Measure:** Area planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $25,157.25

**Scenario Cost/Unit:** $503.15

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 150 | $1,981.50 |
| Mechanical weed control, Vegetation termination | 957 | Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs. | Acres | $22.43 | 100 | $2,243.00 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 50 | $1,104.50 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 25 | $7,336.25 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 25 | $6,146.50 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Low Density | 2750 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $126.91 | 50 | $6,345.50 |

**Practice:** 327 - Conservation Cover

**Scenario** #47 - Pollinator Species with Forgone Income

**Scenario Description:**

Permanent vegetation, including a mix of native grasses, legumes, and forbs (mix may also include non-native species), established on land needing permanent vegetative cover that provides habitat for pollinators. Typical practice size is variable depending on site; this scenario uses 1 ac as the typical size. In addition to providing pollinator habitat, this practice scenario may also reduce sheet and rill erosion, improve soil quality, improve water quality, and improve air quality. The practice may also provide wildlife habitat. Practice applicable on cropland, odd areas, corners, etc. Applies to conventional or organic systems.

**Before Situation:**

Crops such as vegetables and small fruit crops may be conventionally or organically grown and harvested. Full width tillage is utilized, weeds controlled mainly by cultivation. Soil surface residue amounts average 10% or less. Soil erosion exceeds tolerable rates and sediment may be moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The system provides little to no wildlife or pollinator habitat.

**After Situation:**

The 327 Implementation Requirements have been developed for the site and applied. Managed land covered with permanent pollinator habitat including a mix of native grasses, legumes, and forbs (mix may also include non-native species). This practice may also reduce soil erosion, reduce water/sediment runoff, and improve air quality due to the elimination of dust emissions. Plants sown for pollinator habitat may also provide cover for beneficial insects and wildlife. This scenario does not apply to critical area plantings.

**Feature Measure:** Area planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $819.11

**Scenario Cost/Unit:** $819.11

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 3 | $39.63 |
| Mechanical weed control, Vegetation termination | 957 | Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs. | Acres | $22.43 | 2 | $44.86 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.5 | $146.73 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.5 | $122.93 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability | 2619 | Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping. | Acres | $442.87 | 1 | $442.87 |

**Practice:** 327 - Conservation Cover

**Scenario** #54 - Monarch Species Mix

**Scenario Description:**

Establish permanent vegetative cover for pollinator habitat according to state specifications. Typically used for high quality nectar and pollen species. Assumes seed/plugs, equipment and labor for seed bed prep/planting, and weed management during establishment. Used for conventional or organic land on small, intensive areas that are central to specialty crop production. Not typically used for large-scale plantings. This is applicable to both organic and non-organic conditions.

**Before Situation:**

Old hayfields that are mowed typically in the fall lack milkweed needed for monarchs. Other crops such as corn, soybeans, or cotton are conventionally grown and harvested. The system provides little to no wildlife or pollinator habitat.

**After Situation:**

The 327 Implementation Requirements have been developed and applied for the site. Land covered with permanent monarch habitat including a mix of milkweed species, native grasses, legumes, and forbs. Plants sown for monarch habitat may also provide cover for beneficial insects and wildlife.

**Feature Measure:** area planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $873.88

**Scenario Cost/Unit:** $873.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 1 | $25.68 |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 3 | $39.63 |
| Mechanical weed control, Vegetation termination | 957 | Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs. | Acres | $22.43 | 2 | $44.86 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability | 2619 | Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping. | Acres | $442.87 | 1.4 | $620.02 |

**Practice:** 327 - Conservation Cover

**Scenario** #102 - Pollinator Mix-Small Footprint

**Scenario Description:**

Permanent vegetation, including a mix of grasses, legumes and forbs established on any land needing permanent vegetative cover that provides habitat, cover, and food for pollinators. Typical size varies depending on the site feasibility for length and width. Urban sites typical size is 2000 square feet (20x100 ft). This scenario included mechanical site preparation. This practice scenario may also reduce wind and water erosion, improve soil quality, reduce water quality degradation and reduce air emissions of particulate matter or greenhouse gases. Applies to conventional and organic systems. This scenario does not applied to areas needing Critical Area Planting.

**Before Situation:**

Crop rotation include specialty crops such as vegetable and fruit/berry production that benefit from pollinator activity. Urban agricultural sites do not provide for pollinator habitat at this time. Planting operations include mechanical removal of weeds. Land adjacent to the planting beds is not managed for resource concerns.

**After Situation:**

The 327 implementation requirements have been developed for the site and applied. Land is in permanent vegetative cover reducing erosion and sediment delivery to water. Pollinator habitat has successfully established providing habitat and cover for pollinators and beneficial insects.

**Feature Measure:** Area of conservation Cover Installe

**Scenario Unit:** 1,000 Square Foot

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $267.95

**Scenario Cost/Unit:** $133.98

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Mechanical weed control, Vegetation termination | 957 | Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs. | Acres | $22.43 | 0.5 | $11.22 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability | 2619 | Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping. | Acres | $442.87 | 0.5 | $221.44 |

**Practice:** 328 - Conservation Crop Rotation

**Scenario** #64 - Basic Rotation Organic and Non-Organic

**Scenario Description:**

In this region this practice may be part of a conservation management system on both organic and non-organic operations to: 1) Reduce sheet, rill and wind erosion, 2) Maintain or increase soil health and organic matter content, 3) Reduce water quality degradation due to excess nutrients, 4) Improve soil moisture efficiency, 5) Reduce the concentration of salts and other chemicals from saline seeps, 6) Reduce plant pest pressures, 7) Provide feed and forage for domestic livestock, and 8) Provide food and cover habitat for wildlife, including pollinator forage, and nesting. This practice payment is provided to the producer for the time needed to plan and implement the logistics of changing the rotation to effectively implement a conservation crop rotation on a typical 200 acre cropland farm. No foregone income. Cost represents typical situations for conventional and organic producers.

**Before Situation:**

The rotation consists primarily of low residue producing row crops. Fields range from nearly flat to C and D slopes. Erosion, soil quality, and pest management are the primary concerns.

**After Situation:**

A rotation is established that provides additional high residue and/or perennial crops that may treat one or more of the following purposes: reduce sheet, rill and wind erosion, maintain or increase soil health and organic matter content, reduce water quality degradation due to excess nutrients, improve soil moisture efficiency, reduce the concentration of salts and other chemicals from saline seeps, reduce plant pest pressures, provide feed and forage for domestic livestock, or provide food and cover habitat for wildlife, including pollinator forage, and nesting.

**Feature Measure:** Area planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,434.30

**Scenario Cost/Unit:** $14.34

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 30 | $1,434.30 |

**Practice:** 328 - Conservation Crop Rotation

**Scenario** #65 - Irrigated to Dryland Rotation Organic and Non-Organic

**Scenario Description:**

In this region this practice may be part of a conservation management system to primarily convert from an irrigated cropping system to dryland farming. In addition to improving water use efficiency the rotation may to: 1) Reduce sheet, rill and wind erosion, 2) Maintain or increase soil health and organic matter content, 3) Reduce water quality degradation due to excess nutrients, 4) Improve soil moisture efficiency, 5) Reduce the concentration of salts and other chemicals from saline seeps, 6) Reduce plant pest pressures, 7) Provide feed and forage for domestic livestock, and 8) Provide food and cover habitat for wildlife, including pollinator forage, and nesting. This practice payment is provided to acquire the technical knowledge and skills necessary to effectively implement a conservation crop rotation on a typical 200 cropland farm. There is foregone income involved with this conversion from irrigated to dryland farming due to lower yields and net return. Cost represents typical situations for conventional (non-organic) producers converting from irrigated cropping to dryland farming.

**Before Situation:**

This rotation consisted of growing row crop grains that received a significant (more than half) of the required water via irrigation. The water demands are impacting the area's water availability. Erosion, soil condition, and future water availability are the major concerns.

**After Situation:**

The dryland rotation, using the same crops or a rotation that grows crops over different periods, will be part of a management system capable of utilizing available rainfall and soil moisture more efficiently and controlling wind and water erosion. Corn yields will be expected to be reduced from 150 to 80 bu/acre.

**Feature Measure:** Area planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 200.00

**Scenario Total Cost:** $60,124.30

**Scenario Cost/Unit:** $300.62

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 200 | $58,690.00 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 30 | $1,434.30 |

**Practice:** 328 - Conservation Crop Rotation

**Scenario** #95 - Specialty Crop Rotations-Small Scale

**Scenario Description:**

Scenario applies to Urban sites less than a 1/2 acre with a rotation of organic or non-organic specialty crops (fruits and vegetable) are produced as part of a conservation management system to treat one or more of the following resource concerns: 1) Reduce sheet, rill and wind erosion, 2) Maintain or increase soil health and organic matter content, 3) Reduce water quality degradation due to excess nutrients, 4) Improve soil moisture efficiency, 5) Reduce the concentration of salts and other chemicals from saline seeps, 6) Reduce plant pest pressures, 7) Provide feed and forage for domestic livestock, and 8) Provide food and cover habitat for wildlife, including pollinator forage, and nesting. This practice payment is provided to acquire the technical knowledge and skills necessary to effectively implement a conservation crop rotation on a typical urban specialty crop farm. Cost represents typical situations for organic and non-organic producers.

**Before Situation:**

This rotation consisted of growing specialty crops. Fields range from nearly flat to B and C slopes. Erosion, soil quality, and pest management are the primary concern. Removal of residue from the planted area is common leaving bare soil.

**After Situation:**

The rotation established adds diversity of plant material organic matter, higher residue amounts that will treat one or more of the following resource concerns on organic and non- organic farms: reduce sheet, rill and wind erosion, maintain or increase soil health and organic matter content, improve soil moisture efficiency or reduce plant pest pressure.

**Feature Measure:** area planned

**Scenario Unit:** 1,000 Square Foot

**Scenario Typical Size:** 15.00

**Scenario Total Cost:** $506.08

**Scenario Cost/Unit:** $33.74

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mechanical weed control, Vegetation termination | 957 | Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs. | Acres | $22.43 | 0.34 | $7.63 |
| Seeding Operation, No Till/Strip Till Planter | 1230 | No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor. | Acres | $27.29 | 0.34 | $9.28 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 9 | $202.32 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 6 | $286.86 |

**Practice:** 329 - Residue and Tillage Management, No Till

**Scenario** #9 - No-Till/Strip-Till

**Scenario Description:**

This practice typically involves conversion from a clean-tilled (conventional tilled) system to no-till or strip-till system on 100 acres of cropland. This involves managing the amount, orientation and distribution of crop and other plant residue on the soil surface year round while limiting soil-disturbing activities used to establish and harvest crops. The practice is used to reduce sheet and rill erosion, reduce wind erosion, improve soil quality, reduce CO2 losses from the soil, reduce energy use, increase plant available moisture and provide food and escape cover for wildlife. The no-till/strip-till system includes non-tillage types of weed control and may also include a period of no till fallow. System is applicable in both irrigated and non-irrigated fields of organic and non-organic operations.

**Before Situation:**

Row crops or small grains are grown and harvested. Full width tillage is performed prior to planting and weed control during crop production is typically cultivation and chemical application. Fields are disked immediately following harvest, with additional operations in some fields to facilitate drainage, seedbed preparation or additional weed control. Residue amounts after tillage operations average 10% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall. Any crop residue that is present degrades and sediment/nutrient runoff from fields increases during rainfall events. Sheet and rill erosion occurs with visible rills by spring. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. This system will typically have a negative Soil Conditioning Index (SCI) and a high Soil Tillage Intensity Rating (STIR).

**After Situation:**

The Implementation Requirements for 329 Residue Management, No Till is prepared and installed. Managing crop residue on the surface of a field (typical 100 acre) year around according to the 329 practice plan while limiting soil disturbing activities to those which place nutrients, and plant crops that meet the minimum criteria in the 329 practice standard. All crops are seeded/planted with a no-till drill or no-till/strip-till planter, which minimizes soil disturbance while establishing good seed-soil contact. All residues are to be maintained on the soil surface in a uniform distribution over the entire field and not burned or removed. Crop residues provide soil surface cover throughout the year. Runoff and erosion are reduced and no rills are visible on the soil surface. Wind erosion is reduced by standing residues and surface cover. Over time, soil health is improved due to the additional biomass (crop residues), ground cover, and soil infiltration. Crop residues and/or cover crop residues left on the soil surface may maximize weed control by increasing allelopathic and mulching effect, and provides cover for wildlife. The practice would require reducing soil disturbance and erosion and increasing biomass returned to the soil in sufficient amounts to achieve increased SCI and decreased STIR.

**Feature Measure:** Area planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $2,209.00

**Scenario Cost/Unit:** $22.09

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 100 | $2,209.00 |

**Practice:** 329 - Residue and Tillage Management, No Till

**Scenario** #31 - Small Scale No Till

**Scenario Description:**

Scenario applies to Urban sites less than a 1/2 acre with a rotation of organic or non-organic specialty crops (fruits and vegetable) are produced as part of a conservation management system to treat one or more of the following resource concerns: 1) Reduce sheet, rill and wind erosion, 2) Maintain or increase soil health and organic matter content, 3) Improve soil moisture efficiency, 4) Reduce plant pest pressures. This practice payment is provided to effectively implement no-till or strip-till management on a typical urban specialty crop farm. Cost represents typical situations for organic and non-organic producers.

**Before Situation:**

This rotation consisted of growing specialty crops. Fields range from nearly flat to B and C slopes. Erosion, soil quality, and pest management are the primary concern. Removal of residue from the planted area is common leaving bare soil-residue amounts average 10% or less. Full width tillage is performed prior to planting . Weed control typically cultivation.

**After Situation:**

The implementation requirements are written following CPS 329 Residue and Tillage Management to will treat one or more of the following resource concerns on organic and non- organic farms: reduce sheet, rill and wind erosion, maintain or increase soil health and organic matter content, improve soil moisture efficiency or reduce plant pest pressure. Soil disturbance is minimized with no-till drill or planter use. May include single slot opener and seedling or plugs follow. When pest management requires the removal of crop residue then planting beds are covered with cover crop using the 340 Cover Crop conservation practice. Runoff and erosion are reduced below T. No observed rills. Wind erosion reduced by maintaining surface cover. They system meets the soil condition index and STIR requirements.

**Feature Measure:** area planted

**Scenario Unit:** 1,000 Square Foot

**Scenario Typical Size:** 15.00

**Scenario Total Cost:** $565.01

**Scenario Cost/Unit:** $37.67

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 0.17 | $3.76 |
| Seeding Operation, No Till/Strip Till Planter | 1230 | No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor. | Acres | $27.29 | 0.17 | $4.64 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 12 | $269.76 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 6 | $286.86 |

**Practice:** 330 - Contour Farming

**Scenario** #4 - Contour Farming

**Scenario Description:**

This scenario meets the specifications of the NRCS Contour Farming Standard. This scenario applies to fields greater than 5 acres. Payment reflects the extra labor and initial supervision costs in laying out and implementing contour farming. Annual erosion rates for the rotation exceeds tolerance levels. Excessive runoff leads to sedimentation of waterways

**Before Situation:**

The typical field size in this geographical region for this scenario is 30 acres. The field slope averages 6% while the slope length averages 160 feet. All farming operations on this cropland field including disking, bedding, planting, and cultivation are performed generally up and down the slope. Annual erosion rates for the rotation exceeds tolerance levels. Excessive runoff leads to sedimentation of waterways.

**After Situation:**

Implementation Requirements are prepared and implemented according to 330 Contour Farming. This practice is installed on the entire field. A survey is completed by trained and certified Federal, State, local personnel or consultant to determine and "stake" contour row arrangement. Permanent row markers are established to ensure that this practice is maintained for the life of this practice. All field operations including disking, bedding, planting, and cultivation are performed on the contour which is near perpendicular to the field slope. The farm manager is initially on site to ensure that equipment operators are properly following contour methods. Soil erosion rates are reduced by nearly half and may be below tolerance depending on the rotation. Likewise, sedimentation has been significantly reduced.

**Feature Measure:** acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 30.00

**Scenario Total Cost:** $316.21

**Scenario Cost/Unit:** $10.54

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 1 | $25.68 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 5 | $147.10 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 3 | $143.43 |

**Practice:** 332 - Contour Buffer Strips

**Scenario** #56 - Introduced Species, Foregone Income (Organic and Non-Organic)

**Scenario Description:**

Narrow strips of permanent, herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips in between that are farmed on the contour. This practice applies to all cropland. Practice includes seedbed prep and planting of native species. The area of the contour grass strip is taken out of production. This applies to both organic and non-organic.

**Before Situation:**

The NRCS water erosion prediction software indicates that there is a significant amount of sheet and rill erosion and/or a significant amount of sediment potentially delivered to the downslope edge of the field. A secondary concern is that there may not be enough wildlife/pollinator habitat, food source or refugia in the field or farm.

**After Situation:**

Introduced grasses and legumes will be established in strips in the field to meet the Contour buffer Strips (332) criteria, resource needs, and producer objectives. Minimum widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Introduced species shall be selected that do not function as a host for diseases of a field crop and have physical characteristics necessary to control water erosion to tolerable levels in the cropped area of the field.

**Feature Measure:** Number of acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $438.36

**Scenario Cost/Unit:** $438.36

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 1 | $293.45 |
| **Materials** | | | | | | |
| Nitrogen (N), Urea | 71 | Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.94 | 30 | $28.20 |
| Phosphorus, P2O5 | 73 | Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.67 | 20 | $13.40 |
| Sulfate of Potash | 263 | Approved for Organic Systems - Muriate of Potash | Pound | $0.64 | 20 | $12.80 |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2747 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $45.45 | 1 | $45.45 |

**Practice:** 332 - Contour Buffer Strips

**Scenario** #57 - Native Species, Foregone Income (Organic and Non-organic)

**Scenario Description:**

Narrow strips of permanent, herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips in between that are organically or non-organically farmed on the contour. This practice applies to all cropland. Practice includes seedbed prep and planting of native species. The area of the contour grass strip is taken out of production.

**Before Situation:**

The NRCS water erosion prediction software indicates that there is a significant amount of sheet and rill erosion and/or a significant amount of sediment potentially delivered to the downslope edge of the field. A secondary concern is that there may not be enough wildlife/pollinator habitat, food source or refugia in the field or farm.

**After Situation:**

Native grasses, legumes and forbs will be established in strips in the field to meet the Contour buffer Strips (332) criteria, resource needs, and producer objectives. Minimum widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Native species shall be selected that do not function as a host for diseases of a field crop and have physical characteristics necessary to control water erosion to tolerable levels in the cropped area of the field.

**Feature Measure:** number of acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $465.42

**Scenario Cost/Unit:** $465.42

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 1 | $293.45 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Native Perennial Grasses, Low Density | 2750 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $126.91 | 1 | $126.91 |

**Practice:** 334 - Controlled Traffic Farming

**Scenario** #4 - Controlled Traffic

**Scenario Description:**

This practice must be part of a conservation management system to reduce soil compaction. This scenario considers the time needed to modify equipment, develop the technical skills necessary to effectively implement a controlled traffic farming system on a typical 200 acre cropland farm. The controlled traffic generally utilizes RTK automatic steering technology to locate and maintain high load field traffic. This scenario represents the costs associated with reducing the amount of surface area tracked/compacted to 33% or less. Cost represents typical situations for conventional, organic, and transitioning to organic producers.

**Before 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 some degree of soil compaction. Before the practice is installed traffic is uncontrolled tracking and 85% of the field has compacted soil which limits soil health.

**After Situation:**

An Implementation Requirement for Controlled Traffic (334) is developed and the controlled traffic lanes installed per the implementation requirements. After the practice is installed wheel/track traffic is confined to designated traffic lanes/tramlines. Wheel/track soil compaction is confined to the traffic lanes to protect the remaining surface area and subsoil from wheel/track compaction. The wheel/track traffic follows the installed traffic lanes/tramlines each year.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 200.00

**Scenario Total Cost:** $11,996.00

**Scenario Cost/Unit:** $59.98

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 80 | $2,432.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 80 | $9,564.00 |

**Practice:** 338 - Prescribed Burning

**Scenario** #2 - Herbaceous Fuel - Standard

**Scenario Description:**

Applying a prescribed burn according to a designed burn plan and NRCS Prescribed Burning (338) standard and specifications in order to control undesirable species, improve wildlife habitat, improve plant productivity and/or quality, facilitate grazing distribution and maintain ecological processes. This scenario is based on the following conditions: where the terrain of the majority of the area to be burned <15% slopes with herbaceous and/or low volatile herbaceous fuels with limited high volatile fuels. Burned firebreaks used to achieve total firebreak width are part of these burns. (Constructed firebreak cost is not included in cost of burn. Refer to Firebreak (394) standard and cost scenarios).

**Before Situation:**

Desirable plant composition is lacking due to reduced plant vigor, invasive species, or improper livestock distribution.

**After Situation:**

Desirable plant composition is restored, plant vigor improved and invasive species reduced. Forage production and quality for livestock and/or wildlife is improved.

**Feature Measure:** Acres planned

**Scenario Unit:** Acres

**Scenario Typical Size:** 320.00

**Scenario Total Cost:** $2,918.50

**Scenario Cost/Unit:** $9.12

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 16 | $410.88 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 16 | $308.48 |
| Trailer, water tank | 1598 | Mobile 5,000 gal water tank mounted on a trailer. Equipment only. Does not include towing equipment. | Hours | $22.65 | 8 | $181.20 |
| Water tank, portable | 1602 | Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only. | Hours | $12.99 | 8 | $103.92 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 34 | $764.32 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 14 | $669.34 |
| **Materials** | | | | | | |
| Fuel, ignition fuel mixture | 1596 | Mixture of gasoline and diesel for ignition of prescribed burns. Materials only. | Gallons | $5.19 | 10 | $51.90 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 338 - Prescribed Burning

**Scenario** #66 - Level Terrain, Volatile or woody fuels

**Scenario Description:**

Applying a prescribed burn according to designed burn plan and NRCS Prescribed Burning (338) standard and specifications in order to control undesirable species, improve wildlife habitat, improve plant productivity and/or quality, facilitate grazing distribution and maintain ecological processes. This scenario is based on a burn area of less than 320 acres and applies under the following conditions: where the terrain of the majority of the area to be burned <15% slopes with herbaceous and low volatile woody fuel with high volatile woody fuels less than 4ft tall. Burned firebreaks used to achieve total firebreak width are part of these burns. (Constructed firebreak cost is not included in cost of burn. Refer to Firebreak (394) standard and cost scenarios)

**Before Situation:**

Desirable plant composition is lacking due to reduced plant vigor, invasive species or improper livestock distribution.

**After Situation:**

Desirable plant composition is restored, plant vigor improved and invasive species reduced. Forage production and quality for livestock and /or wildlife is improved.

**Feature Measure:** Acres planned

**Scenario Unit:** Acres

**Scenario Typical Size:** 320.00

**Scenario Total Cost:** $4,010.14

**Scenario Cost/Unit:** $12.53

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 16 | $410.88 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 16 | $308.48 |
| Trailer, water tank | 1598 | Mobile 5,000 gal water tank mounted on a trailer. Equipment only. Does not include towing equipment. | Hours | $22.65 | 8 | $181.20 |
| Water tank, portable | 1602 | Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only. | Hours | $12.99 | 16 | $207.84 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 64 | $1,945.60 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 12 | $573.72 |
| **Materials** | | | | | | |
| Fuel, ignition fuel mixture | 1596 | Mixture of gasoline and diesel for ignition of prescribed burns. Materials only. | Gallons | $5.19 | 25 | $129.75 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |

**Practice:** 338 - Prescribed Burning

**Scenario** #68 - Steep Terrain, Volatile or Woody fuels

**Scenario Description:**

Applying a prescribed burn according to designed burn plan and NRCS Prescribed Burning (338) standard and specifications in order to control undesirable species, improve wildlife habitat, improve plant productivity and/or quality, facilitate grazing distribution and maintain ecological processes. This scenario is based on a burn area of 320 acres and applies under the following conditions: where the terrain of the majority of the area to be burned >15% slopes with herbaceous and low volatile woody fuel with high volatile woody fuels greater than 4ft tall, but fire is still a ground fire carried by fine fuel. Burned firebreaks used to achieve total firebreak width are part of these burns. (Constructed firebreak cost is not included in cost of burn. Refer to Firebreak (394) standard and cost scenarios)

**Before Situation:**

Desirable plant composition is lacking due to reduced plant vigor, invasive species or improper livestock distribution.

**After Situation:**

Desirable plant composition is restored, plant vigor improved and invasive species reduced. Forage production and quality for livestock and /or wildlife is improved.

**Feature Measure:** Acres planned

**Scenario Unit:** Acres

**Scenario Typical Size:** 320.00

**Scenario Total Cost:** $6,235.89

**Scenario Cost/Unit:** $19.49

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 16 | $410.88 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 48 | $925.44 |
| Trailer, water tank | 1598 | Mobile 5,000 gal water tank mounted on a trailer. Equipment only. Does not include towing equipment. | Hours | $22.65 | 8 | $181.20 |
| Water tank, portable | 1602 | Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only. | Hours | $12.99 | 16 | $207.84 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 80 | $2,432.00 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 24 | $1,147.44 |
| **Materials** | | | | | | |
| Fuel, ignition fuel mixture | 1596 | Mixture of gasoline and diesel for ignition of prescribed burns. Materials only. | Gallons | $5.19 | 30 | $155.70 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 340 - Cover Crop

**Scenario** #17 - Cover Crop - Basic (Organic and Non-organic)

**Scenario Description:**

Typically a small grain or legume (may also use forage sorghum, radishes, turnips, buckwheat, etc.) will be planted as a cover crop immediately after harvest of a row crop, and will be followed by a row crop that will utilize the residue as a mulch. This scenario assumes that seed will be planted with a drill. The cover crop should be allowed to generate as much biomass as possible, without delaying planting of the following crop. The cover crop will be terminated using an approved herbicide prior to planting the subsequent crop.

**Before Situation:**

Row crops such as corn, soybeans, or cotton are grown and harvested in mid-late fall. Fields are disked immediately following harvest, with rows in some fields being hipped for drainage. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Erosion exceeds soil loss tolerances. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil.

**After Situation:**

Implementation Requirements according to Cover Crop (340) are prepared and implemented. Within 30 days after harvest of the row crop, fields are planted with a small grain or legume cover crop (may also use forage sorghum, radishes, turnips, buckwheat, etc.), typically rye or clover. The average field size is 40 acres. The cover crop is seeded with a drill. No additional fertilizer is applied with the cover crop. The cover crop provides soil cover by late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced. Wind erosion is reduced by standing residues. The cover crop is terminated with an approved herbicide prior to spring planting as late as feasible to maximize plant biomass production. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity introduced to the cropping system. Cover crop residues left on the surface may maximize weed control by increasing allelopathic and mulching effect.

**Feature Measure:** Area planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $3,269.60

**Scenario Cost/Unit:** $81.74

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 40 | $251.60 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 40 | $883.60 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 40 | $667.20 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 40 | $1,467.20 |

**Practice:** 340 - Cover Crop

**Scenario** #19 - Cover Crop - Multiple Species (Organic and Non-organic)

**Scenario Description:**

Typically the multi-species cover crop (two or more species) mix includes a small grain, a legume, and may include other species such as forage sorghum, radishes, turnips, buckwheat, etc.). This mix will address all the purposes of the Cover Crop (340) standard. Typically the cover crop is seeded immediately after harvest of a row crop, but may be inter-seeded into a row crop using a broadcast seeder, drill, or similar device. The cover crop will be followed by another row crop and will utilize the residue as a mulch. The cover crop should be allowed to generate as much biomass as possible without delaying planting of the following crop. The cover crop will be terminated using an approved herbicide or tillage prior to planting the subsequent crop and terminated per the NRCS Cover Crop Termination Guidelines.

**Before Situation:**

Row crops such as corn, soybeans, or cotton are grown and harvested in mid-late fall. Fields are disked immediately following harvest with rows in some fields being hipped for drainage. Residue amounts after harvest average 30% or less resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Erosion exceeds soil loss tolerances. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil.

**After Situation:**

Implementation Requirements according to Cover Crop (340) are prepared and implemented. Within 30 days after the harvest of row crop, fields are planted with a multi-species (2 or more species) cover crop mix that generally includes a small grain, a legume, and may include other species such as forage sorghum, radishes, turnips, buckwheat, etc. The average field size is 40 acres. The cover crop is seeded with a drill, broadcast seeder, aerial broadcast, or other method. No additional fertilizer is applied with the cover crop. The cover crop provides soil cover by late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced. Wind erosion is reduced by standing residues. The cover crop is terminated with an approved herbicide prior to spring planting as late as feasible to maximize plant biomass production. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity introduced to the cropping system. Cover crop residues left on the surface may maximize weed control by increasing allelopathic and mulching effect.

**Feature Measure:** Area planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $4,092.00

**Scenario Cost/Unit:** $102.30

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 40 | $251.60 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 40 | $883.60 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 40 | $667.20 |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 40 | $2,289.60 |

**Practice:** 340 - Cover Crop

**Scenario** #85 - Multi-species Cover Crop per 1000 square feet

**Scenario Description:**

Typical cover crop is more than one plant species, planted immediately after harvest of a crop and will be followed by a new crop. Cover crops are planted in the production bed typically 4000 square feet. Implementation is mostly hand labor or labor intensive. Cover crop is mechanically terminated in urban agricultural sites with State and local laws, ordinance and zoning restrictions on use of agrichemicals.

**Before Situation:**

Crop rotation include specialty crops such sweet corn, vegetables, or root crops are grown and harvested through out growing season and into mid-late fall. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Erosion exceeds soil loss tolerances. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil.

**After Situation:**

Implementation Requirements according to Cover Crop (340) are prepared and implemented. The cover crop is seeded by hand. No additional fertilizer is applied with the cover crop. The cover crop provides soil cover at the critical period when cover is needed usually late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced. Wind erosion is reduced by standing residues. The cover crop is mechanically terminated as late as feasible to maximize cover crop biomass production and meet the planting date needs of the next crop. Over time, soil health is improved due to additions of biomass, improvement of aggregate stability and infiltration/aeration.

**Feature Measure:** Area of Cover Crop Installed

**Scenario Unit:** 1,000 Square Foot

**Scenario Typical Size:** 4.00

**Scenario Total Cost:** $228.85

**Scenario Cost/Unit:** $57.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 2 | $136.80 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 0.7 | $40.07 |

**Practice:** 342 - Critical Area Planting

**Scenario** #26 - Native or Introduced Vegetation - Normal Tillage (Organic and Non-Organic)

**Scenario Description:**

Establishment of permanent vegetation (Native and Introduced) on a site (both organic and non-organic) that is void or nearly void of vegetation due to a natural occurrence or a newly constructed conservation practice. Costs include seedbed preparation with typical tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application.

**Before Situation:**

Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from recent natural occurrences (fire, flood, wind, etc.) or due to newly constructed conservation practices such as waterways, terraces, water and sediment basins or dams. The exposed areas will be subject to wind and water erosion that exceed soil loss tolerances. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

**After Situation:**

Implementation Requirements are prepared and implemented according to the Critical Area Planting (342) standard. This typical 1.0 acre critical area is stabilized by applying fertilizer, lime and seed. Soil amendments will be incorporated at a depth of four to six inches to improve fertility and ensure establishment of permanent vegetative cover. The site will be stabilized, erosion reduced, and offsite damages reduced/eliminated.

**Feature Measure:** area seeded

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $420.46

**Scenario Cost/Unit:** $420.46

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 2 | $26.42 |
| Fertilizer, ground application, dry bulk | 950 | Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $7.54 | 1 | $7.54 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 1 | $9.44 |
| **Materials** | | | | | | |
| Nitrogen (N), Urea | 71 | Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.94 | 30 | $28.20 |
| Phosphorus, P2O5 | 73 | Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.67 | 60 | $40.20 |
| Potassium, K2O | 74 | K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.56 | 60 | $33.60 |
| Lime, ENM | 75 | Fertilizer: Limestone Spread on field. | Ton | $84.28 | 2 | $168.56 |
| Introduced Perennial Grasses, Legumes and/or Forbs, High Density | 2749 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at high density (greater than 60 pure live seeds/sq ft). Includes material and shipping. | Acres | $84.41 | 1 | $84.41 |

**Practice:** 342 - Critical Area Planting

**Scenario** #27 - Native or Introduced Vegetation - Moderate Grading (Organic and Non-Organic)

**Scenario Description:**

Establishment of permanent vegetation (native and introduced) on a site that is void or nearly void of vegetation due to a natural or human disturbance. Costs include a dozer for grading and shaping of small gullies, seedbed preparation with typical tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application.

**Before Situation:**

Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from natural occurrences (fire, flood, etc.) or human disturbance. The exposed areas have visible rills and small gullies averaging 1 foot in depth and 1 foot in width that requires some moderate grading to prepare a seedbed. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

**After Situation:**

Implementation Requirements are prepared and implemented according to the Critical Area Planting (342) standard.. This typical 1.0 acre critical area is stabilized by grading and shaping the small gullies with a dozer and then applying fertilizer, lime and seed. The site will be stabilized, erosion reduced, and offsite damages reduced/eliminated.

**Feature Measure:** area seeded

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $903.18

**Scenario Cost/Unit:** $903.18

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 4 | $305.52 |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 2 | $26.42 |
| Fertilizer, ground application, dry bulk | 950 | Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $7.54 | 1 | $7.54 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 1 | $9.44 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 4 | $140.52 |
| **Materials** | | | | | | |
| Nitrogen (N), Urea | 71 | Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.94 | 30 | $28.20 |
| Phosphorus, P2O5 | 73 | Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.67 | 60 | $40.20 |
| Potassium, K2O | 74 | K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.56 | 60 | $33.60 |
| Lime, ENM | 75 | Fertilizer: Limestone Spread on field. | Ton | $84.28 | 2 | $168.56 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 1 | $36.68 |
| Introduced Perennial Grasses, Legumes and/or Forbs, High Density | 2749 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at high density (greater than 60 pure live seeds/sq ft). Includes material and shipping. | Acres | $84.41 | 1 | $84.41 |

**Practice:** 342 - Critical Area Planting

**Scenario** #69 - Permanent Cover

**Scenario Description:**

Establishment of permanent vegetation on a site that is void of vegetation or needs to improve the vegetation to adequately cover the existing site soil to reduce particulate matter dust emissions. Costs include seedbed prep with light tillage, seed, fertilizer and lime. Small Scale fields and urban sites have soil conditions limiting vegetation growth or sensitive areas that need protection.

**Before Situation:**

Fields are bare or sparsely vegetated exposed to wind and water erosion. Soil physical of chemical properties limit vegetative growth. Urban site soils contain heavy metal contaminants at risk of emissions as particulate dust from field activities.

**After Situation:**

The Implementation Requirement with site specific instruction is prepared for each treatment site. The establishment of permanent vegetation will stabilize the soil. Sensitive areas are protected. Particulate dust is reduced. Wind and water erosion loss is within tolerance levels (T).

**Feature Measure:** planted area

**Scenario Unit:** 1,000 Square Foot

**Scenario Typical Size:** 15.00

**Scenario Total Cost:** $280.03

**Scenario Cost/Unit:** $18.67

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 0.8 | $10.57 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 0.4 | $8.84 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 6 | $134.88 |
| **Materials** | | | | | | |
| Nitrogen (N), Ammonium Sulfate | 70 | Price per pound of N supplied by Ammonium Sulfate. Price is not per pound of total product applied, no conversion is needed. | Pound | $1.60 | 5 | $8.00 |
| Phosphorus, P2O5 | 73 | Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.67 | 5 | $3.35 |
| Potassium, K2O | 74 | K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.56 | 5 | $2.80 |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 1 | $15.73 |
| Straw | 1237 | Small grain straw (non organic and certified organic). Includes materials only. | Ton | $107.37 | 0.1 | $10.74 |
| Introduced Perennial Grasses, Legumes and/or Forbs, High Density | 2749 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at high density (greater than 60 pure live seeds/sq ft). Includes material and shipping. | Acres | $84.41 | 0.4 | $33.76 |

**Practice:** 345 - Residue and Tillage Management, Reduced Till

**Scenario** #46 - Residue and Tillage Management, Reduced Till

**Scenario Description:**

Mulch-till is managing the amount, orientation and distribution of crop and other plant residue on the soil surface year round while limiting the soil-disturbing activities used to grow crops in systems where the entire field surface is tilled by the planter/drill or tillage tools prior to planting. This practice includes tillage methods commonly referred to as mulch tillage, vertical tillage, chiseling and disking, or the use of high disturbance drills without additional tillage. It applies to stubble mulching on summer-fallowed land, to tillage for annually planted crops, to tillage for planted crops and to tillage for planting perennial crops. All residue shall be uniformly spread or managed over the surface throughout the critical erosion period(s). All residue shall be uniformly distributed over the entire field and not burned or removed. These periods of intensive tillage have led to excessive soil loss, often above the soil loss tolerance (T), due to the loss of crop residue on the soil surface. The NRCS erosion prediction model(s) will be used to review the farming operations and determine the amount of surface residue to manage throughout the rotation to keep soil loss below T. The producer will adopt a reduced till system to meet one or more of the practice purposes.

**Before Situation:**

Crops such as corn, soybeans, small grains, or cotton are grown and harvested. Fields are tilled immediately following harvest, with rows in some fields being hipped for drainage. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increase. Sheet, rill and wind erosion occurs. Spring tillage and seedbed preparation activities occur as early as possible in the late winter and early spring. Runoff from the fields flows into streams, water courses or other water bodies causing water quality degradation. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue monocultures, and long periods of bare soil.

**After Situation:**

The Implementation Requirements are prepared following the criteria in the 345 Residue and Tillage Management, Reduced Till conservation practice standard. Reduced till applies to all cropland and other lands where crops are planted. This scenario includes the use of a reduce till systems and high disturbance drills, such as a hoe drill, air seeder, or no-till drill that disturbs a large percentage of soil surface during the planting operation. The residue that remains on the soil surface provides soil cover during late fall, throughout the winter, and into the early spring. Runoff and water/wind erosion are reduced and water quality improves. Over time, soil health is improved due to less tillage, the additional biomass, ground cover, soil infiltration, and plant diversity in the cropping system.

**Feature Measure:** Area planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $2,729.00

**Scenario Cost/Unit:** $27.29

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Seeding Operation, No Till/Strip Till Planter | 1230 | No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor. | Acres | $27.29 | 100 | $2,729.00 |

**Practice:** 345 - Residue and Tillage Management, Reduced Till

**Scenario** #69 - Reduced Tillage less than 0.5 acres

**Scenario Description:**

Scenario applies to Urban sites less than a 1/2 acre with a rotation of organic or non-organic specialty crops (fruits and vegetable) are produced as part of a conservation management system to treat one or more of the following resource concerns: 1) Reduce sheet, rill and wind erosion, 2) Maintain or increase soil health and organic matter content, 3) Improve soil moisture efficiency, 4) Reduce plant pest pressures. This practice payment effectively implements a reduced tillage system on a typical urban specialty crop farm. Cost represents typical situations for organic and non-organic producers.

**Before Situation:**

This rotation consisted of growing specialty crops. Fields range from nearly flat to B and C slopes. Erosion, soil quality, and pest management are the primary concern. Removal of residue from the planted area is common leaving bare soil-residue amounts average 10% or less. Full width tillage is performed prior to planting . Weed control is typically by cultivation.

**After Situation:**

The implementation requirements are written following CPS 345 Residue and Tillage Management, Reduced Tillage to treat one or more of the following resource concerns on organic and non- organic farms: reduce sheet, rill and wind erosion, maintain or increase soil health and organic matter content, improve soil moisture efficiency or reduce plant pest pressure. Soil disturbance is minimized with no-till drill or planter use. May include single slot opener and seedling or plug planting follows. When pest management requires the removal of crop residue then planting beds are covered with cover crop using the 340 Cover Crop conservation practice. Runoff and erosion are reduced below T. No observed rills. Wind erosion reduced by maintaining surface cover. Over time, soil health is improved due to less tillage, the additional biomass, ground cover, soil infiltration, and plant diversity in the cropping system.

**Feature Measure:** area planted

**Scenario Unit:** 1,000 Square Foot

**Scenario Typical Size:** 15.00

**Scenario Total Cost:** $497.57

**Scenario Cost/Unit:** $33.17

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 0.17 | $3.76 |
| Seeding Operation, No Till/Strip Till Planter | 1230 | No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor. | Acres | $27.29 | 0.17 | $4.64 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 9 | $202.32 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 6 | $286.86 |

**Practice:** 348 - Dam, Diversion

**Scenario** #78 - Earth Fill

**Scenario Description:**

An earth fill built to divert all or part of the water from a waterway or a stream to provide water in such a manner that it can be controlled and used beneficially for irrigation, livestock water, fire control, municipal or industrial uses, develop renewable energy systems, or recreation, to divert periodic damaging flows from one watercourse to another watercourse thereby reducing the damage potential of the flows. This structure will address the resource concerns of inefficient water use on Irrigated Land, inadequate water for livestock, and inadequate water supply for other beneficial
uses.

**Before Situation:**

This practice applies where a diversion dam is needed as an integral part of an irrigation system or a water-spreading system designed to facilitate the conservation use of soil and water resources, Diversion of water from an unstable watercourse to a stable watercourse is desirable, The water supply available is adequate for the purpose for which it is to be diverted, Adverse environmental impacts resulting from the installation of the practice can be overcome. This standard applies to structures of a permanent nature, constructed of materials having an expected life span consistent with the purpose for which the structure is designed. It does not apply where conservation practice standard Diversion (362), Floodwater Diversion (400), Dam (402), or Grade Stabilization Structure (410) would be used. This practice will provide beneficial uses for irrigation, livestock water, fire control, municipal or industrial uses, renewable energy systems, recreation, or to divert periodic damaging flows from one watercourse to another watercourse thereby reducing the damage potential of the flows.

**After Situation:**

An earth fill structure of approximately 1500 cubic yards is built to divert all or part of the water from a waterway or a stream. This standard applies to structures of a permanent nature, constructed of materials having an expected life span consistent with the purpose for which the structure is designed. This structure will be an integral part of an irrigation system or a water-spreading system designed to facilitate the conservation use of soil and water resources, or diversion of water from an unstable watercourse to a stable watercourse as needed. The water supply available is adequate for the purpose for which it is to be diverted. Adverse environmental impacts resulting from the installation of the practice must be overcome. The earth fill structure provides beneficial uses for irrigation, livestock water, fire control, municipal or industrial uses, renewable energy systems, recreation, or to divert periodic damaging flows from one watercourse to another watercourse thereby reducing the damage potential of the flows. Any needed vegetation of disturbed areas must use Critical Area Planting (342). Other associated practices such as Channel Vegetation (322), Stream Habitat Improvement and Management (395), Channel Stabilization (584) will be as appropriate. Any needed head gates or flap gates to control the quantity of water being diverted must use Structure for Water Control
(587).

**Feature Measure:** Volume of Earth Fill

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 1,500.00

**Scenario Total Cost:** $10,458.35

**Scenario Cost/Unit:** $6.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Scraper, self propelled, 21 CY | 1208 | Self propelled earthmoving scraper with 21 CY capacity. Does not include labor. | Hours | $308.54 | 30 | $9,256.20 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 30.5 | $1,071.47 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 0.5 | $130.68 |

**Practice:** 351 - Well Decommissioning

**Scenario** #4 - Drilled, between 300 and 1,000 feet

**Scenario Description:**
A licensed well driller will seal and permanently close an inactive, abandoned, or unusable water well to prevent excess nutrients in surface and groundwater and to eliminate pesticides transported to surface and ground water.

**Before Situation:**
Drilled well that is greater than 300 feet deep. Assume 6" diameter casing. Resource Concern - Water Quality Degradation

**After Situation:**
Procedures and sealing materials shall conform to ASTM D5299 and be compatible with all local, State, Tribal, and Federal requirements. Backfill shall be placed and compacted in a manner that minimizes segregation and bulking to prevent surface subsidense. Associated practices: 342 Critical Area Seeding

**Feature Measure:** Length of well casing

**Scenario Unit:** Feet

**Scenario Typical Size:** 500.00

**Scenario Total Cost:** $10,803.20

**Scenario Cost/Unit:** $21.61

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 5 | $29.90 |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 2 | $110.60 |
| Grout pump | 1334 | Grout pump with tremie pipe. Equipment and power unit costs. Labor not included. | Hours | $25.40 | 8 | $203.20 |
| Rotary Drill Rig | 1595 | Rotary drill rig including equipment and power unit costs. Labor not included. | Hours | $370.17 | 20 | $7,403.40 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 2 | $70.26 |
| **Materials** | | | | | | |
| Grout, cement | 1333 | 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 Yards | $656.66 | 3.7 | $2,429.64 |
| Chlorine | 1335 | Liquid chlorine bleach. Includes materials only. | Gallons | $6.68 | 1 | $6.68 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 356 - Dike and Levee

**Scenario** #2 - Protective dike 6 feet high or less

**Scenario Description:**

Construction of a barrier 6' or less in height, constructed of an earthen embankment, to control water level. Embankment structure to provide adequate freeboard, allowance for settlement, and foundation and embankment stability. Payment includes stripping prior to fill placement, excavation of a core trench, and earthfill for embankment. Associated practices include, but are not limited to: PS327 Conservation Cover, PS656 Constructed Wetland, PS342 Critical Area Planting, PS378 Ponds, PS382 Fence, PS464 Irrigation Land Levelling, PS500 Obstruction Removal, PS528 Prescribed Grazing, PS587 Structure for Water Control, PS620 Underground Outlet, PS645 Upland Wildlife Management, PS658 Wetland Creation, PS659 Wetland Enhancement, PS657 Wetland Restoration, PS644 Wetland Wildlife Habitat Management.

**Before Situation:**

Site is subject to flooding or indundation which poses a potential hazard to public safety, damage to land or property. Site may also require control of water level for purposes connected with crop production; fish and wildlife managment; or wetland maintenance, improvement, restoration, or construction. An adequate quantity of soil suitable for constructing an earthen dike is available at an economical haul distance.

**After Situation:**

Water level controlled by a stable earthen structure 6' or less in height. Potential hazard to public safety, land or property mitigated; environmental benefit provided.

**Feature Measure:** Length of constructed dike

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $29,059.85

**Scenario Cost/Unit:** $29.06

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 5925 | $23,285.25 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 444 | $377.40 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 1222 | $4,399.20 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 356 - Dike and Levee

**Scenario** #3 - Protective Dike >6 feet high

**Scenario Description:**

Construction of a barrier > 6' in height, constructed of an earthen embankment, to control water level. Embankment structure to provide adequate freeboard, allowance for settlement, and foundation and embankment stability. Payment includes stripping prior to fill placement, excavation of a core trench, and earthfill for embankment. Associated practices include, but are not limited to: PS327 Conservation Cover, PS656 Constructed Wetland, PS342 Critical Area Planting, PS378 Ponds, PS382 Fence, PS464 Irrigation Land Levelling, PS500 Obstruction Removal, PS528 Prescribed Grazing, PS587 Structure for Water Control, PS620 Underground Outlet, PS645 Upland Wildlife Management, PS658 Wetland Creation, PS659 Wetland Enhancement, PS657 Wetland Restoration, PS644 Wetland Wildlife Habitat Management.

**Before Situation:**

Site is subject to flooding or indundation which poses a potential hazard to public safety, damage to land or property. Site may also require control of water level for purposes connected with crop production; fish and wildlife managment; or wetland maintenance, improvement, restoration, or construction. An adequate quantity of soil suitable for constructing an earthen dike is available at an economical haul distance.

**After Situation:**

Water level controlled by a stable earthen structure > 6' in height. Potential hazard to public safety, land or property mitigated; environmental benefit provided.

**Feature Measure:** Length of constructed dike

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $42,932.81

**Scenario Cost/Unit:** $42.93

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 9407 | $36,969.51 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 666 | $566.10 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 1222 | $4,399.20 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 359 - Waste Treatment Lagoon

**Scenario** #14 - Waste Treatment Lagoon

**Scenario Description:**

A waste treatment lagoon is a component of a waste management system that provides biological treatment of manure and other byproducts of animal agricultural operations by reducing the pollution potential. Resource concern addressed is water quality by reducing the pollution potential to surface and groundwater by treating and storing liquid waste. Earthen lagoon liners are addressed with another standard. This scenario intended for embankment or excavated lagoon. Potential Associated Practices: Pond Sealing or Lining, Compacted Soil (520), Pond Sealing or Lining, Concrete (522), Pond Sealing or Lining, Geomembrane or Geosynthetic Clay Liner (521), Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), and Waste Separation Facility (632).

**Before Situation:**

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

**After Situation:**

A waste treatment lagoon constructed from on-site material provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing and treating waste until it can be utilized in a proper manner in accordance with a nutrient management plan. Excavated material used to build an embankment around the lagoon so this is a combination excavated/embankment design. Typical design size : Design Volume 492,129 cf = 18,227 cy; 260' X 208' (top); 3:1 inside and outside side slopes; cut/fill ratio = 1.25; total depth = 13' which includes 1' freeboard Feature Measure = Design Volume [Operational Volume + emergency volume + freeboard]

**Feature Measure:** Design Volume (Operational + eme

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 492,129.00

**Scenario Total Cost:** $98,068.82

**Scenario Cost/Unit:** $0.20

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 9102 | $35,770.86 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 8101 | $27,462.39 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 1389 | $1,180.65 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 9125 | $32,850.00 |
| **Materials** | | | | | | |
| Structural steel tubing, 2 in. diameter | 1120 | Structural steel tubing, 2 inch diameter, 1/8 inch wall thickness, materials only | Feet | $5.57 | 8 | $44.56 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 360 - Waste Facility Closure

**Scenario** #1 - Decommissioning of Concrete Waste Storage Structure

**Scenario Description:**

This practice scenario includes the decomissioning of a concrete storage and/or treatment structure or impoundment. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrient and pathogens in ground and/or surface waters and air quality impacts from greenhouse gases, particulate matter and associated precursors, and objectionable odors. This practice scenario does not include payment for the removal and land application of the manure, wastewater, slurry and/or sludge; however, all manure wastes shall be removed and properly land applied in accordance with Nutrient Management (590) prior to decomissioning of the structure. Associated practices: Nutrient Management (590), Critical Area Planting (342)

**Before Situation:**

An existing concrete waste storage structure is no longer functioning correctly or is not being used for its intended purpose. The structure may or may not contain manure, wastewater, slurry and/or sludge. It poses a safety hazard for humans and livestock and is a threat to environmentally sustainability by the potential for impacts to water and air quality.

**After Situation:**

This scenario assumes a concrete waste storage structure with a volume of 48000 cubic feet (200' x 30' x 8') with 8" thick walls. The volume of earthwork (earthfill and/or excavation, final grading) required is approximately 75% of the storage volume. Decomissioning of a concrete waste storage structure will consist of collapsing the concrete sidewalls to 20% of their original height and filling the storage structure with earthfill. The concrete may be disposed off site if necessary. All manure and wastewater nutrient material shall be removed and land applied in accordance with Nutrient Management (590) prior to fill. After collapsing the side walls the remaining void will be filled with earthen material from a borrow source. The disturbed areas shall be vegetated in accordance with Critical Area Planting (342) or planted to crops in accordance with Nutrient Management (590). Removing and properly utilizing the manure and waste water from the impoundment, demolition of any above grade concrete and the fill in of the concrete waste structure will address water quality degradation, air quality impacts and safety hazards The site may also become available for another use.

**Feature Measure:** Cubic Feet of storage to be decomi

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 48,000.00

**Scenario Total Cost:** $9,085.11

**Scenario Cost/Unit:** $0.19

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 1400 | $5,502.00 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 8 | $1,040.16 |
| Demolition, concrete | 1498 | Demolition and disposal of reinforced concrete structures including slabs and walls. Includes labor and equipment. | Cubic Yards | $11.27 | 73 | $822.71 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 8 | $281.04 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 360 - Waste Facility Closure

**Scenario** #2 - Earthen Waste Impoundment Closure

**Scenario Description:**

This practice scenario includes the decommissioning of an earthen storage and/or treatment structure or impoundment (embankment or excavated type) include any basins intended for sediment removal. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrient and pathogens in ground and/or surface waters and air quality impacts from greenhouse gases, particulate matter and associated precursors, and objectionable odors. This practice scenario does not include payment for the removal and land application of the manure, wastewater, slurry and/or sludge; however, all manure wastes shall be removed and properly land applied in accordance with Nutrient Management (590) prior to decomissioning of the structure. Associated practices: Nutrient Management (590), Critical Area Planting (342)

**Before Situation:**

The existing manure, runoff and/or wastewaste water lagoon, storage pond or pit is no longer functioning correctly or is not being used for its intended purpose. The structure may or may not contain manure, wastewater, slurry and/or sludge. It poses a safety hazard for humans and livestock and is a threat to environmentally sustainability by the potential for impacts to water and air quality.

**After Situation:**

This scenario assumes a waste storage pond with total storage volume of 100,000 cubic feet over a footprint of 12150 square feet. The volume of earthwork (earthfill and excavation) required to breach the embankment and/or fill in the impoundment and perform final grading of the site is approximately 75% of the storage volume. The volume of earthwork will include 60% as excavation and 40% as compacted earthfill. An additional excavation of 450 cubic yards is assumed to remove contaminated soil below original design over the entire footprint of pond. Structural removal, as necessary, may include the removal and disposal of the synthetic liner, sealing or removal and disposal of waste transfer components and other appurtenances associated with closure of the facility. This practice scenario does not include payment for the removal and land application of the manure, wastewater, slurry and/or sludge; however, all manure wastes shall be removed and properly land applied in accordance with Nutrient Management (590) prior to decomissioning of the structure. If present, the synthetic liner will be removed and properly disposed of. All inflow devices and associated appurtenances will be removed and properly disposed of. The embankment will be breached and the excavation filled in with the embankment material or hauled in earthfill. The disturbed areas shall be vegetated in accordance with Critical Area Planting (342) or planted to crops in accordance to Nutrient Management (590). Closure of the waste impoundment will address water quality degradation, air quality impacts and safety hazards by removing and properly utilizing the waste from the impoundment and earthfill of the structure. The site will also become available for another use.

**Feature Measure:** Storage Volume

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 100,000.00

**Scenario Total Cost:** $10,099.15

**Scenario Cost/Unit:** $0.10

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 1600 | $5,424.00 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 8 | $1,040.16 |
| Spreading, manure sludge | 1633 | Loading, hauling and spreading manure solids/sludge by ground equipment on nearby fields. Includes equipment, power unit and labor costs. | Cubic Feet | $0.21 | 12150 | $2,551.50 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 8 | $281.04 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 5 | $78.65 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 360 - Waste Facility Closure

**Scenario** #13 - Feedlot Closure

**Scenario Description:**

This practice scenario includes the remediation of the soil on an abandoned feedlot previously used to feed animals on a bare earthen lot. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrient and pathogens in ground and/or surface waters and air quality impacts from greenhouse gases, particulate matter and associated precursors, and objectionable odors. Associated practices: Nutrient Management (590), Critical Area Planting (342).

**Before Situation:**

The feedlot is abandoned. Vegetation has not been reestablished. The high level of nutrients in the soil is preventing volunteer establishment of native vegetation. Rainfall and nutrients on the bare earth feedlot pose a risk to surface water from contaminated runoff or to ground water from seepage into the underlying soils.

**After Situation:**

This scenario is based on a 3 acre feedlot. Surveys and testing have determined the manure pack averages 8 inches in depth and the level of nutirients in the 4 inches of soil below the manure pack is too high to treat insitu with vegetation. Payment under this scenario includes only activities associated with the soil remediation. Soil remediation activities in this scenario include removing the nutrient enriched manure pack and soil, an average of 12 inches below the existing surface (130,680 CF). The excavated surface will be vegetated with a mix of salt tolerant plants in conformance with Critical Area Planting, Code 342. Nutrient level testing and field application of the removed soil shall be performed according to nutrient planning in conformance with Nutrient Management, Code 590. Shaping and crowning of the soil material on the disturbed area and critical area seeding will be done to provide drainage, complete the site remediation and establish vegetation. Operation and maintenance of the site will include nutrient testing the following year to determine if the soil has been remediated and surface and ground water resource concerns have been addressed. In this scenario, samples at four (4) locations will be taken at 6, 12, 18 and 24 inches at the end of Year 1. Fence and feedbunk removal is to be performed under Obstruction Removal, Code 500.

**Feature Measure:** Acres of soil remediated

**Scenario Unit:** Acres

**Scenario Typical Size:** 3.00

**Scenario Total Cost:** $41,731.70

**Scenario Cost/Unit:** $13,910.57

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 40 | $5,200.80 |
| Manure, compost, application | 955 | Loading, hauling and spreading manure/compost by ground equipment. Includes equipment, power unit and labor costs. | Hours | $127.70 | 269 | $34,351.30 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 40 | $1,405.20 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 16 | $251.68 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 360 - Waste Facility Closure

**Scenario** #37 - Closure of Underbarn Liquid Waste Impoundment w/concrete liner

**Scenario Description:**

This practice scenario includes the decommissioning of a concrete waste storage facility which is located under an existing building, which will remain after the waste storage structure is closed. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrient and pathogens in ground and/or surface waters and air quality impacts from greenhouse gases, particulate matter and associated precursors, and objectionable odors. This practice scenario does not include payment for the removal and land application of the manure, wastewater, slurry and/or sludge; however, all manure wastes shall be removed and properly land applied in accordance with Nutrient Management (590) prior to decommissioning of the structure. Associated practices: Nutrient Management (590).

**Before Situation:**

An existing underbarn concrete waste storage structure is no longer functioning correctly or is not being used for its intended purpose. The structure may or may not contain manure, wastewater, slurry and/or sludge. It poses a safety hazard for humans and livestock and is a threat to environmentally sustainability by the potential for impacts to water and air quality.

**After Situation:**

This scenario assumes a concrete waste storage structure, which is located under a building, with the top dimensions of 40 ft x 60 ft .x 8 ft total depth with vertical walls, with 10" thick walls. The total structural storage volume of 19,2000 cubic feet. The majority of the walls will remain in place, but a 15' section of wall will be removed as well as breaking up 4, 4' x 4' holes to inspect for contamination and removing the beams and slats on the top of the structure. The rest of the floor or slats are broken up, but doesn't need to be removed. The structure is then filled with material. All manure and wastewater nutrient material shall be removed and land applied in accordance with Nutrient Management (590) prior to fill. Removing and properly utilizing the manure and waste water from the impoundment, demolition of any above grade concrete and the fill in of the concrete waste structure will address water quality degradation, air quality impacts and safety hazards The site may also become available for another use.

**Feature Measure:** Cubic feet of total storage

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 19,200.00

**Scenario Total Cost:** $16,896.27

**Scenario Cost/Unit:** $0.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 332 | $796.80 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 32 | $4,160.64 |
| Demolition, concrete | 1498 | Demolition and disposal of reinforced concrete structures including slabs and walls. Includes labor and equipment. | Cubic Yards | $11.27 | 5 | $56.35 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 32 | $1,124.16 |
| **Materials** | | | | | | |
| Earthfill Material, purchased, common | 2060 | Purchased earthfill materials includes both silt or clay. Material only. | Cubic Yards | $13.48 | 712 | $9,597.76 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 362 - Diversion

**Scenario** #1 - Diversion

**Scenario Description:**

An earthen channel constructed across long slopes with supporting ridge on lower side, to divert runoff away from farmsteads, gullies, critical erosion areas, construction areas or other sensitive areas. Outlet may be waterway, underground outlet. or other suitable outlet. Typical diversion is, 2300 feet long and requires 1 CY excavation per LF. Channel my be level or gradient and ridge may be vegetated or farmed. The quantity of excavation and fill is balanced.

**Before 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 agricultral wastes that significantly contributes to the amount of runoff that has to be stored or treated.

**After Situation:**

Diversion is 2300 feet long installed using a dozer and/or scraper. Storm water runoff is diverted away from the area to be protected. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Underground Outlet (620), Mulching (484), and Subsurface Drainage (606).

**Feature Measure:** Diversion Excavated Volume

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 2,300.00

**Scenario Total Cost:** $8,716.42

**Scenario Cost/Unit:** $3.79

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 710 | $603.50 |
| Motor Grader, 160 HP | 1781 | Motor Grader or Maintainer, 160 hp. Typical of equipment with HP in range of 150-170. Equipment cost, does not include labor. | Hours | $109.86 | 4 | $439.44 |
| Scraper, Self Propelled, 14 CY | 2306 | Self propelled earthmoving scraper with 14 CY capacity. Does not include labor. | Hours | $299.05 | 19 | $5,681.95 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 23 | $807.99 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 362 - Diversion

**Scenario** #8 - Concrete Curb

**Scenario Description:**

A reinforced concrete (RC) curb constructed across the slope to divert runoff away from farmsteads, gullies, critical erosion areas, construction areas, agricultural waste system, other sensitive areas, or to a waste storage facility. Outlet may be a waterway, underground outlet, or other suitable outlet. Typical 1.0 ft. high, 6 inch thick RC curb diversion is approximately 50 feet long with a 2.0 ft wide footing and requires approximately 0.056 CY of RC per linear ft. The curb will be placed on 6" of compacted sand. Concrete diversion is necessary due to limited footprint availability.

**Before Situation:**

Excessive 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. Also, contaminated lot runoff that needs to be diverted to a waste storage facility so it doesn't pollute surface water or ground water.

**After Situation:**

The 1.0 ft. high, 6 inch thick RC curb diversion is approximately 50 feet long. "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. Polluted water is diverted to a waste storage facility for proper storage. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Underground Outlet (620), Mulching (484), and Waste Storage Facility (313).

**Feature Measure:** Length of concrete diversion

**Scenario Unit:** Feet

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $2,020.73

**Scenario Cost/Unit:** $40.41

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 2.8 | $1,712.96 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 2.15 | $5.16 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 3.7 | $22.13 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 1 | $22.48 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 1.85 | $34.41 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 366 - Anaerobic Digester

**Scenario** #1 - Anaerobic Digester

**Scenario Description:**

An anaerobic digester can be part of a waste management system. It provides biological treatment of the waste in the absence of oxygen. This process for manure and other by-products of animal agricultural operations will manage odors, reduce the net effect of greenhouse gas emissions, and/or reduce pathogens. This scenario is for a generic anaerobic digester. Energy generation is not included with this scenario. Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Waste Separation Facility (632), Waste Treatment Lagoon (359), and Waste Storage Facility (313).

**Before Situation:**

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and ground waters, in addition to the use of excessive amounts of fertilizers. The treatment of manure and other agricultural by-products is desired in order to manage odors, and/or reduce pathogens.

**After Situation:**

Manure and other agricultural by-products are being treated such that odors are managed and/or pathogens are reduced. Effluent from the digester is disposed of or utilized in a proper manner in accordance with a nutrient management plan. The typical scenario also includes items necessary to maintain mesophylic or thermophylic temperatures for bacterial activity (i.e. piping and boiler or other heat source). Typical Design Scenario is each.

**Feature Measure:** Each

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,706,049.19

**Scenario Cost/Unit:** $1,706,049.19

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 2 | $216.66 |
| **Equipment Installation** | | | | | | |
| Anaerobic Digester | 2478 | Concrete anaerobic digester which includes poured walls, floor and top, reception and mixing tanks, piping installed in and/or around the digester for circulating heated liquid to maintain the necessary temperatures for efficient digester operation, piping and collection system for biogas, controls for operating digester and boiler system, boiler needed to maintain digester temperature, and flare excess gas to convert from methane to carbon dioxide. Includes material, labor, and equipment. | Each | $1,705,000.00 | 1 | $1,705,000.00 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 366 - Anaerobic Digester

**Scenario** #7 - Covered Lagoon/Holding Pond

**Scenario Description:**

A covered lagoon can be part of a waste management system. It provides biological treatment of the waste in the absence of oxygen. This process for manure and other by-products of animal agricultural operations will manage odors, reduce the net effect of greenhouse gas emissions, and/or reduce pathogens. This scenario is for all livestock operation sizes. The waste holding/treatment area is covered by waste treatment lagoon (359) or waste storage facility (313) and the cover is addressed under roofs and covers (367). Selection of digester type will be based on effluent consistency. Costs for this scenario are only for system controls, gas collection, and flaring system. Energy generation is not included with this scenario. Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Waste Separation Facility (632), Waste Treatment Lagoon (359), and Waste Storage Facility (313).

**Before Situation:**

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and ground waters, in addition to the use of excessive amounts of fertilizers. The treatment of manure and other agricultural by-products is desired in order to manage odors, and/or reduce pathogens.

**After Situation:**

Manure and other agricultural by-products are being treated such that odors are managed and/or pathogens are reduced. Effluent from the digester is disposed of or utilized in a proper manner in accordance with a nutrient management plan. A covered lagoon/holding pond typically has a fexible top installed over an earthen storage/treatment facility for the purpose of capturing the biogas. Typical Design Scenario: 1,000 animal units (715 - 1,400 lbs dairy cows).

**Feature Measure:** Animals Units Contributing to Dige

**Scenario Unit:** Animal Unit

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $474,191.86

**Scenario Cost/Unit:** $474.19

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Anaerobic Digester Gas Collection and Flare System | 2484 | Piping and collection system for biogas, controls for operating the digester system, flare excess gas to convert from methane to carbon dioxide Includes material, labor, and equipment. | Each | $473,750.00 | 1 | $473,750.00 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 367 - Roofs and Covers

**Scenario** #1 - Hoop Structure Roof

**Scenario Description:**

A flexible membrane or fabric-like roof placed on a steel truss hoop-like supports and supporting foundation. Manure is stored as a liquid in basins, tanks, and as a solid on concrete and earthen surfaces. Excess precipitation can cause premature filling of storages or cause nutrients to leach from solid manure piles leading to uncontrolled runoff as well as odor issues. Associated practices include Waste Storage Facility (313), Animal Mortality Facility (316), Composting Facility (317), Roof Runoff Structure (558), and Waste Treatment (629).

**Before Situation:**

Applicable where the exclusion of precipitation from an animal waste storage and/or treatment facility will improve of an existing or planned system. Manure is stored as a liquid in basins, tanks, and as a solid on concrete and earthen surfaces. Excess precipitation can cause premature filling of storages or cause nutrients to leach from solid manure piles leading to uncontrolled runoff as well as odor issues.

**After Situation:**

A flexible membrane or fabric-like roof placed on a steel truss hoop-like supports and supporting foundation. Roof or cover will be engineered and installed in accordance with appropriate building codes and permits. Typical size is 9,000 square feet (36' X 250') and is over an approved animal waste management facility as a component of a CNMP. It is designed to prevent precipitation to allow proper management of animal waste streams (manure or compost streams), thus mitigating the negative factors from the "before practice implementation".

**Feature Measure:** Footprint of the building

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 9,000.00

**Scenario Total Cost:** $106,147.06

**Scenario Cost/Unit:** $11.79

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Roof, Hoop Truss Arch Structure, 30-60' wide | 1668 | Hoop Truss Arch Structure with fabric cover - 30' to 60' width, includes materials, equipment, and installation. Does not include foundation preparation. | Square Feet | $11.72 | 9000 | $105,480.00 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 367 - Roofs and Covers

**Scenario** #2 - Timber or Steel Sheet Roof

**Scenario Description:**

A timber framed structure without enclosing sidewalls with a timber or steel "sheet" roof and supporting foundation. Manure is stored as a liquid in basins, tanks, and as a solid on concrete and earthen surfaces. Excess precipitation can cause premature filling of storages or cause nutrients to leach from solid manure piles leading to uncontrolled runoff as well as odor issues. Associated practices include Waste Storage Facility (313), Animal Mortality Facility (316), Composting Facility (317), Agrichemical Handling Facility (309), Roof Runoff Structure (558), and Waste Treatment (629).

**Before Situation:**

Applicable where the exclusion of precipitation from an animal waste storage and/or treatment facility will improve of an existing or planned system. Manure is stored as a liquid in basins, tanks, and as a solid on concrete and earthen surfaces. Excess precipitation can cause premature filling of storages or cause nutrients to leach from solid manure piles leading to uncontrolled runoff as well as odor issues.

**After Situation:**

A timber framed building with a timber or steel "sheet" roof and supporting foundation. Engineered and installed in accordance with appropriate building codes and permits. Typical size is 5,000 square feet and is over an approved animal waste management facility as a component of a CNMP. It is designed to prevent precipitation to allow proper management of animal waste streams (manure or compost streams), thus mitigating the negative factors from the "before practice implementation".

**Feature Measure:** Area under roof

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 5,000.00

**Scenario Total Cost:** $81,355.70

**Scenario Cost/Unit:** $16.27

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Roof, Post Frame Building, 30 to 60 ft. wide | 1676 | Post Frame Building, no sides, - 30 to 60 ft. width. Building sites with expected snow loads up to 30 lbs. per square foot and wind exposure in semi protected areas (wooded or terrain with numerous closely spaced obstructions). Includes materials, shipping, equipment, and installation. Does not include foundation preparation. | Square Feet | $16.19 | 5000 | $80,950.00 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 367 - Roofs and Covers

**Scenario** #3 - Flexible Membrane Cover Only

**Scenario Description:**

A fabricated rigid, semi-rigid, or flexible membrane over a waste storage or treatment facility. The membrane will cover the entire surface of a waste storage or treatment facility (e.g. waste treatment lagoon or anaerobic digester). Cover will exclude precipitation and/or capture biogas for controlled release for flaring or anaerobic digestion. This scenario does not include the flare to convert methane to carbon dioxide. Associated practices include Waste Storage Facility (313), Waste Treatment Lagoon (359), Anaerobic Digester (366), Animal Mortality Facility (316), Composting Facility (317), Roof Runoff Structure (558), Pumping Plant (533), and Waste Treatment (629).

**Before Situation:**

Applicable where the exclusion of precipitation from an animal waste storage or treatment lagoon will improve the management of an existing or planned system, capture and controlled release or flaring of emissions from an existing or planned agricultural waste storage to improve air quality, and/or biogas production and capture for energy use are part of the existing or planned animal waste management system.

**After Situation:**

A 50,000 SF fabricated rigid, semi-rigid, or flexible membrane over a waste storage or treatment facility. The membrane will cover the entire surface of a waste storage or treatment facility (e.g. waste treatment lagoon or anaerobic digester). Precipitation is excluded from the animal waste storage or treatment lagoon

**Feature Measure:** Surface of Membrane

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 50,000.00

**Scenario Total Cost:** $58,184.04

**Scenario Cost/Unit:** $1.16

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 60 | $3,607.20 |
| Trencher, 8 in. | 936 | Equipment and power unit costs. Labor not included. | Hours | $51.59 | 60 | $3,095.40 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 80 | $2,432.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 200 | $4,496.00 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 120 | $3,530.40 |
| **Materials** | | | | | | |
| Synthetic Liner, 40 mil | 1387 | Synthetic 40 mil HDPE, LLDPE, EPDM, etc membrane liner material. Includes materials and shipping only. | Square Yard | $7.29 | 5555.6 | $40,500.32 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 367 - Roofs and Covers

**Scenario** #4 - Flex Membrane w/Flare

**Scenario Description:**

A fabricated rigid, semi-rigid, or flexible membrane over a waste storage or treatment facility. The membrane will cover the entire surface of a waste storage or treatment facility (e.g. waste treatment lagoon or anaerobic digester). Cover will exclude precipitation and/or capture biogas for controlled release for flaring or anaerobic digestion. This scenario includes the flare to convert methane to carbon dioxide. Associated practices include Waste Storage Facility (313), Waste Treatment Lagoon (359), Anaerobic Digester (366), Animal Mortality Facility (316), Composting Facility (317), Roof Runoff Structure (558), Pumping Plant (533), and Waste Treatment (629).

**Before Situation:**

Applicable where the exclusion of precipitation from an animal waste storage or treatment lagoon will improve the management of an existing or planned system, capture and controlled release or flaring of emissions from an existing or planned agricultural waste storage to improve air quality, and/or biogas production and capture for energy use are part of the existing or planned animal waste management system.

**After Situation:**

A 50,000 SF fabricated rigid, semi-rigid, or flexible membrane over a waste storage or treatment facility. The membrane will cover the entire surface of a waste storage or treatment facility (e.g. waste treatment lagoon or anaerobic digester). This scenario includes the flare to convert methane to carbon dioxide.

**Feature Measure:** Surface of Membrane

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 50,000.00

**Scenario Total Cost:** $519,434.04

**Scenario Cost/Unit:** $10.39

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 60 | $3,607.20 |
| Trencher, 8 in. | 936 | Equipment and power unit costs. Labor not included. | Hours | $51.59 | 60 | $3,095.40 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 80 | $2,432.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 200 | $4,496.00 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 120 | $3,530.40 |
| **Materials** | | | | | | |
| Synthetic Liner, 40 mil | 1387 | Synthetic 40 mil HDPE, LLDPE, EPDM, etc membrane liner material. Includes materials and shipping only. | Square Yard | $7.29 | 5555.6 | $40,500.32 |
| Covered Lagoon Gas Collection System | 1664 | Piping and collection system for biogas. Includes labor and equipment. | Each | $390,000.00 | 1 | $390,000.00 |
| Covered Lagoon Flare | 1666 | Flare excess gas to convert from methane to carbon dioxide. Includes labor and equipment. | Each | $71,250.00 | 1 | $71,250.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 368 - Emergency Animal Mortality Management

**Scenario** #185 - National Emergency Shallow Burial of Swine or Cattle

**Scenario Description:**

This scenario consists of the disposal of animal carcasses by burial in a shallow trench resulting from impacts related to the National Emergency. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, and organics being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. This scenario has been written to exclude feathered animals since early research has indicated that feathered animals do not break down quickly using this method. Potential Associated Practices: Critical Area Planting (342), Nutrient Management (590), Access Road (560), Fence (384)

**Before Situation:**

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

**After Situation:**

Emergency animal mortalities resulting from causes not related to disease are being buried in a shallow trench,that prevents non-point source pollution of excessive nutrients, and organics being transported into surface and groundwater resources. The is a new method of mortality disposal recommended by APHIS. 50 animal units (50,000 pound) of animal mortality is the maximum allowed for this method. Proper operation results in little to no odors, and protection from predators to minimize pathogen survival or spreading. An overall plan covers the disposal of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of livestock animal mortality by burial in an 18 inch deep by 8 foot wide trench. A 12 inch thick layer of carbon material is placed in the bottom of the trench. The carcass is placed in the trench and covered with 4 inches of carbon material. Then the excavated soil is placed over the entire trench area. The scenario includes equipment time and labor to excavate the trench, place carbon layer in the trench bottom, recover and transport carcasses to the shallow burial location, place carcasses in the trench and cover with more carbon and the excavated soil. Wood chips (45 pcf) will be used as the carbon source.

**Feature Measure:** Number of 1000 lbs Animal Units

**Scenario Unit:** Animal Unit

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $9,157.72

**Scenario Cost/Unit:** $183.15

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 4 | $520.08 |
| Tractor, agricultural, 120 HP | 962 | Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included. | Hours | $65.82 | 13 | $855.66 |
| Aggregate, Wood Chips | 1098 | Includes materials, equipment and labor to transport and place. | Cubic Yards | $51.72 | 120 | $6,206.40 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 13 | $292.24 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 13 | $382.46 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 4 | $140.52 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 368 - Emergency Animal Mortality Management

**Scenario** #201 - National Emergency Composting – purchase carbon material and mobilize equipment

**Scenario Description:**

This scenario consists of the disposal of animal carcasses by composting in a static windrow resulting from impacts related to the National Emergency. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, and organics being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Critical Area Planting (342), Nutrient Management (590), Access Road (560)

**Before Situation:**

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

**After Situation:**

Emergency animal mortalities resulting from causes not related to disease are being disposed by composting in a static windrow that prevents non-point source pollution of excessive nutrients, and organics being transported into surface and groundwater resources. Proper operation results in little to no odors, and protection from predators. An overall plan covers the disposal of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of 30,000 pounds of animal mortality by composting on-site. The scenario includes equipment time and labor to recover and transport carcasses to the composting location and the building and turning of the pile at the appropriate time. Composting requires 5 cubic yards of carbon material per 1000 pounds of animal. Wood chips (45 pcf) will be used as the carbon source.

**Feature Measure:** Number of 1000 lbs Animal Units

**Scenario Unit:** Animal Unit

**Scenario Typical Size:** 30.00

**Scenario Total Cost:** $14,899.66

**Scenario Cost/Unit:** $496.66

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tractor, agricultural, 120 HP | 962 | Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included. | Hours | $65.82 | 55 | $3,620.10 |
| Aggregate, Wood Chips | 1098 | Includes materials, equipment and labor to transport and place. | Cubic Yards | $51.72 | 150 | $7,758.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 55 | $1,236.40 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 55 | $1,618.10 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 368 - Emergency Animal Mortality Management

**Scenario** #217 - National Emergency Carcass Disposal Other Than Burial, Incineration, Landfill or Render

**Scenario Description:**

This scenario consists of the disposal of animal carcasses by methods other than burial, incineration, landfill or rendering resulting from impacts related to the National Emergency. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Critical Area Planting (342), Nutrient Management (590), Access Road (560)

**Before Situation:**

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

**After Situation:**

Emergency animal mortalities resulting from causes not related to disease are being disposed in a manner, other than burial, incineration, landfill or rendering, that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, and protection from predators to minimize pathogen survival or spreading. An overall plan covers the disposal of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of livestock carcasses by composting on-site. The scenario assumes the grower will provide all equipment and labor and that 50% of the carbon for composting is available on-site.

**Feature Measure:** Number of 1000 lbs Animal Units

**Scenario Unit:** Animal Unit

**Scenario Typical Size:** 30.00

**Scenario Total Cost:** $10,353.60

**Scenario Cost/Unit:** $345.12

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tractor, agricultural, 120 HP | 962 | Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included. | Hours | $65.82 | 55 | $3,620.10 |
| Aggregate, Wood Chips | 1098 | Includes materials, equipment and labor to transport and place. | Cubic Yards | $51.72 | 75 | $3,879.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 55 | $1,236.40 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 55 | $1,618.10 |

**Practice:** 368 - Emergency Animal Mortality Management

**Scenario** #233 - National Emergency Disposal At Landfill or Render

**Scenario Description:**

This scenario consists of the disposal of animal mortality carcasses by landfilling or rendering resulting from impacts related to the National Emergency. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Critical Area Planting (342), Nutrient Management (590), Access Road (560)

**Before Situation:**

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

**After Situation:**

Catastrophic Animal mortalities resulting from causes not related to disease are being disposed in a landfill or by rendering, that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, and protection from predators to minimize pathogen survival or spreading. An overall plan covers disposal of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of 700 finisher swine carcasses at an average weight of 200 pounds each in a landfill. The scenario includes materials, equipment time and labor to recover and transport the carcasses to the landfill which is within a 1.5 hour drive of the farm.

**Feature Measure:** Pounds of mortality

**Scenario Unit:** Pound

**Scenario Typical Size:** 140,000.00

**Scenario Total Cost:** $10,002.79

**Scenario Cost/Unit:** $0.07

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 5 | $300.60 |
| Truck, dump, 8 CY | 1401 | Dump truck for moving bulk material. Typically capacity is 12 ton or 8 cubic yards. Includes equipment only. | Hours | $55.89 | 39 | $2,179.71 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 5 | $112.40 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 5 | $147.10 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 39 | $1,370.07 |
| **Materials** | | | | | | |
| Poly film, 6 mil. | 245 | 6 mil, polyethylene, black | Square Feet | $0.10 | 3388 | $338.80 |
| Landfill Fee, Animal Carcass | 2711 | Fees charged by a landfill for proper disposal of animal carcass or animal debris | Cubic Yards | $55.29 | 91 | $5,031.39 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 368 - Emergency Animal Mortality Management

**Scenario** #249 - National Emergency In-House Composting

**Scenario Description:**

This scenario consists the emergency disposal of poultry mortality by composting in a static windrow resulting from impacts related to the National Emergency. Additional carbon based bulking material is added to facilitate aeration and provide a proper C:N ratio. The windrow is turned at least once to go into another heat cycle prior to land application. Access is infrequent. This option may not be desirable for sites with limited area, karst topography, and not isolated from of public view. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Diversion (362).

**Before Situation:**

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

**After Situation:**

Animal mortality disposal is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. The typical scenario consists of in-house composting of animal mortality. Composting requires 1.5 pounds of carbon per pound of mortatility. There is some manure and bedding already on site. Wood chips (45 pcf) will be used as the additional carbon source. The composting windrow construction operation consists of 2 pieces of equipment and 2 add'l laborers: 1) stockpiling carcasses, bedding, and manure in center of house; 2) construct 2 windrow bases using carbon material; 3) place carcass/bedding/manure mix on bases; 4) cover with carbon material; 5) cap windrows with any remaining bedding/manure; 6) after first heat cycle remove windrow from house and reconstruct outside house for finishing. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area.

**Feature Measure:** Number of 1000 lbs Animal Units

**Scenario Unit:** Animal Unit

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $8,690.58

**Scenario Cost/Unit:** $108.63

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 28 | $1,683.36 |
| Aggregate, Wood Chips | 1098 | Includes materials, equipment and labor to transport and place. | Cubic Yards | $51.72 | 91 | $4,706.52 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 28 | $629.44 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 28 | $823.76 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 4 | $703.16 |

**Practice:** 368 - Emergency Animal Mortality Management

**Scenario** #265 - National Emergency Forced Air Incineration

**Scenario Description:**

This scenario consists the emergency disposal of a large number of livestock resulting from impacts related to the National Emergency. The cause of mortatiy is an event not related to disease. Additional carbon based bulking material is added to facilitate aeration and provide a proper C:N ratio. The windrow is turned at least once to go into another heat cycle prior to land application. Access is infrequent. This option may not be desirable for sites with limited area, karst topography, and not isolated from of public view. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Critical Area Planting (342), Nutrient Management (590), Access Road (560), Diversion (362).

**Before Situation:**

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

**After Situation:**

Animal mortality is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. An overall plan covers normal and catastrophic mortality events. This typical scenario was developed based on the forced air incineration of 50 animal units of livestock carcasses. The scenario includes equipment time and labor to recover and transport carcasses to a suitable on-site incineration location and the rental and operation of a portable forced air incinerator. Wood fuel is also added to assist with the incineration process. The forced air incineration operation consists of a tractor plus operator to collect and transport carcasses to the incineration site, a portable forced air incinerator plus operator, and 1 add'l laborer. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area. The forced air incineration operation consists of a tractor plus operator to collect and transport carcasses to the incineration site, a portable forced air incinerator plus operator, and 1 add'l laborer. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area.

**Feature Measure:** Number of 1000 lbs Animal Units

**Scenario Unit:** Animal Unit

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $15,789.68

**Scenario Cost/Unit:** $315.79

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tractor, agricultural, 120 HP | 962 | Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included. | Hours | $65.82 | 50 | $3,291.00 |
| Aggregate, Wood Chips | 1098 | Includes materials, equipment and labor to transport and place. | Cubic Yards | $51.72 | 42 | $2,172.24 |
| Incinerator, Portable, Trench Burner | 2712 | A portable incinerator used with the development of a trench to incinerate animal carcasses or other debris | Week | $1,297.14 | 2 | $2,594.28 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 50 | $1,124.00 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 94 | $2,765.48 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 56 | $2,677.36 |
| **Materials** | | | | | | |
| Fuel, propane | 1597 | 20 pound propane bottle, with propane, for ignition of prescribed burns. Materials only. | Each | $14.28 | 45 | $642.60 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 368 - Emergency Animal Mortality Management

**Scenario** #281 - National Emergency Burial

**Scenario Description:**

This scenario consists of the on-site burial of animal mortalities resulting from impacts related to the National Emergency. An earthen pit is excavated to contain the mortalities, and earth cover is placed over the mortalities to provide protection from predators to minimize pathogen survival or spreading. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), and Diversion (362).

**Before Situation:**

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

**After Situation:**

Catastrophic Animal mortalities resultuing from causes not related to disease are being disposed in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, and protection from predators to minimize pathogen survival or spreading. An overall plan covers the burial of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of 25 head of mature cattle located near the area where the cattle have been found. The scenario includes equipment time and labor to recover and transport carcasses to the burial location. The scenario also includes a burial trench 4' deep plus 3' additional cover over carcasses. Construct a 6' x 60' (surface dimensions) burial site with appropriate cover. Site can handle mortality for 25 mature beef cattle. On site soils can be recompacted to meet required imperviousness. Include 3' overfill or mounding excavated material to provide for settlement of the burial site and divert or minimize offsite runoff. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area.

**Feature Measure:** Number of 1000 lbs Animal Units

**Scenario Unit:** Animal Unit

**Scenario Typical Size:** 25.00

**Scenario Total Cost:** $2,634.54

**Scenario Cost/Unit:** $105.38

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 94 | $318.66 |
| Tractor, agricultural, 120 HP | 962 | Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included. | Hours | $65.82 | 12 | $789.84 |
| Excavation, common earth, large equipment, 50 ft | 1222 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 50 feet. Includes equipment and labor. | Cubic Yards | $1.52 | 94 | $142.88 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 12 | $269.76 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 12 | $353.04 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 371 - Air Filtration and Scrubbing

**Scenario** #3 - Biofilter-Traditional Horizontal

**Scenario Description:**

Porous filter media is utilized to filter the exhaust from animal confinement facilities to allow microbial activity to reduce objectionable odors. The typical installation is a horizontal media bed supported by a treated lumber substructure to allow airflow from multiple fans to be directed beneath and then up through the media. Vertical biofilters may also be utilized. The filter media is a combination of wood chips to maintain porosity and compost to provide the microorganisms for the air filtering activity. A typical mix ratio would be 80% wood chips and 20% compost. Ventilation system component alterations that may be required to facilitate the biofilter application are not included in the cost computation. Payment includes materials, equipment, and labor costs for installing the biofilter. A stabilized area around the biofilter is not included and must be addressed through the associated practice of Heavy Use Area Protection (561), if needed. Resource concern: Air – Objectionable Odors

**Before Situation:**

The animal confinement facility has an uncontrolled airflow that is causing objectionable odors.

**After Situation:**

A 32' X 200" horizontal media bed, 20" thick is supported by a treated lumber substructure to allow airflow to be directed beneath and then up through the media is installed adjacent to a swine production facility. Exhaust from the facility is directed to flow through the biofilter media to reduce objectionable odors. Maintainace of the media bed will be required on a 3-5 year cycle to maintain effectiveness. Associated practices include Heavy Use Area Protection (561), Amendments for Treatment of Agricultural Waste (591), Windbreak (380), Waste Storage Facility (313), Composting Facility (317), and CAP-Comprehensive Air Quality Management Plan (126).

**Feature Measure:** Biofilter Media Volume

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 395.00

**Scenario Total Cost:** $26,097.89

**Scenario Cost/Unit:** $66.07

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 2 | $209.82 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 24 | $539.52 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 2 | $70.26 |
| **Materials** | | | | | | |
| Compost | 265 | A mixture of decaying organic matter, as from leaves and manure, used to improve soil structure and provide nutrients. | Ton | $42.88 | 20 | $857.60 |
| Dimension Lumber, Treated | 1044 | Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners | Board Feet | $2.17 | 9550 | $20,723.50 |
| Post, Wood, Untreated, 8-9 inch dia. X 8 ft. | 1078 | Wood Post, End 8-9 inch diameter x 8 foot long, untreated. Includes materials and shipping only. | Each | $34.07 | 30 | $1,022.10 |
| Plywood, 3/4 inch, treated | 2363 | Treated 4 x 8 ft. sheets of 3/4 inch exterior grade plywood | Each | $76.91 | 30 | $2,307.30 |
| Biofilter Media Netting | 2640 | UV stabilized, 3/4 inch polypropylene mesh. Materials and shipping only. | Square Feet | $0.03 | 6400 | $192.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 371 - Air Filtration and Scrubbing

**Scenario** #6 - Biofilter-Single Pit Fan

**Scenario Description:**

Establishment of a biofilter used to treat the air flow from a single waste pit ventilation fan in instances where control of the exhaust from all pit ventilation fans is not needed. Adequate moisture in the wood chip media is maintained for proper growth of bacteria. For each waste pit ventilation fan servicing a waste storage facility that is identified as exhausting odorous and/or particulate laden air into the atmosphere, a separate biofilter is installed. Payment includes materials, equipment, and labor costs for installing the biofilter. A stabilized area around the biofilter is not included and must be addressed through the associated practice of Heavy Use Area Protection (561), if needed.

**Before Situation:**

One or more pit ventilation fans of a manure storage facility on a Headquarters site are exhausting odorous and/or particulate laden air into the atmosphere.

**After Situation:**

Air Quality resource concerns are addressed through installation of the practice by reducing odors and/or particulate matter emissions. Exhaust from a 24" waste pit ventilation fan is piped to a 16' wide by 20' long by 4' high horizontal biofilter constructed of a formed concrete bin that is filled with wood chip media, capable of handling 5,500 cubic feet per minute of airflow. The loading of odor and/or particulates into the air at the production facility is significantly reduced, resulting in a substantial improvement in air quality. Ammonia emissions are reduced approximately 60%; hydrogen sulfide about 80% and odor 60 to 80%. Associated practices include Heavy Use Area Protection (561), Amendments for Treatment of Agricultural Waste (591), Windbreak (380), Waste Storage Facility (313)and CAP-Comprehensive Air Quality Management Plan (126).

**Feature Measure:** Number of Biofilters Installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $23,572.42

**Scenario Cost/Unit:** $23,572.42

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 10 | $4,662.70 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 11.3 | $6,913.00 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 33 | $79.20 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 8 | $205.44 |
| Aggregate, Wood Chips | 1098 | Includes materials, equipment and labor to transport and place. | Cubic Yards | $51.72 | 24 | $1,241.28 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 6 | $134.88 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 11 | $209.88 |
| Pipe, PE, 3/4 in., DR 9 | 996 | Materials: - 3/4 inch - PE - 160 psi - ASTM D3035 DR 9 | Feet | $0.59 | 50 | $29.50 |
| Pump, <= 5 HP, pump and motor, fixed cost portion | 1009 | Fixed cost portion of a pump less than or equal to 5 HP pump and motor. This portion is the base cost and is not dependent on horsepower. The total cost of any pump will include this fixed cost plus a variable cost portion. Includes the motor and controls for materials and shipping only. | Each | $1,309.33 | 1 | $1,309.33 |
| Pump, <= 5 HP, pump and motor, variable cost portion | 1010 | Variable cost portion of a pump less than or equal to 5 HP pump and motor. This portion is dependent on the total horsepower for the pump. The total cost of any pump will include this variable cost plus the fixed cost portion. Includes the motor and controls for materials and shipping only. | Horsepower | $418.15 | 0.25 | $104.54 |
| Dimension Lumber, Treated | 1044 | Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners | Board Feet | $2.17 | 80 | $173.60 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Switches and Controls, programmable controller | 1193 | Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $528.75 | 1 | $528.75 |
| Geotextile, non-woven, light weight | 1209 | Non-woven less than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only. | Square Yard | $2.11 | 36 | $75.96 |
| Micro Irrigation, surface drip tubing | 1488 | Tubing is installed above ground for surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tubing has emitters built in. | Feet | $0.34 | 100 | $34.00 |
| Articulated precast concrete block | 1906 | Articulated precast concrete blocks with a typical thickness of 4.5 to 6 inches. Includes materials and shipping. | Square Feet | $10.79 | 320 | $3,452.80 |
| Pipe, PVC, 24 in., SCH 40 | 2046 | Materials: - 24 inch - PVC - SCH 40 - ASTM D1785 | Feet | $102.72 | 40 | $4,108.80 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #1 - Ventilation - Exhaust

**Scenario Description:**

Replacement of a conventional exhaust fan with high volume, low speed, efficient exhaust fan. Fans being installed should be models previously tested by BESS Lab or the Air Movement and Control Association and be in top 20 percentile of fans tested. Practice certification will be through receipts and pictures from the applicant. Typical scenario includes the replacement of a 48" fan.

**Before Situation:**

Inefficient ventilation in an agricultural building.

**After Situation:**

High-efficiency ventilation system which reduces energy use. The new ventilation equipment will provide suitable air quality and reduce overall power requirements (kW) compared to the existing ventilation system as evidenced in an energy audit. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Each

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,244.16

**Scenario Cost/Unit:** $2,244.16

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 3 | $91.20 |
| **Materials** | | | | | | |
| Fan, exhaust, 48 in. High Efficiency | 1187 | 48 inch high efficiency exhaust fan, controls, wiring, and associated appurtenances. Materials only. | Each | $2,152.96 | 1 | $2,152.96 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #2 - Ventilation - HAF

**Scenario Description:**

A system of fans are installed to create a horizontal air circulation pattern; the new system promotes efficient heat and moisture distribution. In a typical 10,000 square foot greenhouse, 10 HAF fans are needed. Fan performance meets Energy Audit efficiency criteria as tested by AMCA or BESS Labs.

**Before Situation:**

Inefficent air circulation system in a greenhouse.

**After Situation:**

High-efficiency air circulation system which reduces energy use. The new equipment will provide suitable air quality and reduce overall power requirements (kW) compared to the existing system as evidenced in an energy audit. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Each

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $266.78

**Scenario Cost/Unit:** $266.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| **Materials** | | | | | | |
| Fan, HAF, 1/10 to 1/15 HP | 1189 | High efficiency Horizontal Air Flow (HAF) fan, controls, wiring, and associated appurtenances. Materials only. | Each | $205.98 | 1 | $205.98 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #3 - Plate Cooler-Small

**Scenario Description:**
The installation of all stainless steel dual pass plate cooler, type 316 stainless steel. Practice certification will be through receipts and pictures from the applicant.

**Before Situation:**
Inefficient milk cooling (minimal pre-cooling of milk before entering the bulk tank).

**After Situation:**
High-efficiency milk cooling system which reduces energy use. The new milk cooling equipment will pre-cool the milk and reduce overall power requirements (kW) compared to the existing milk cooling system (where most of the cooling was accomplished in the bulk tank) as evidenced in an energy audit. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Each

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,154.26

**Scenario Cost/Unit:** $5,154.26

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| **Materials** | | | | | | |
| Plate Cooler, <= 499 gal/hr capacity | 1176 | Stainless Steel, dual pass plate cooler with < 499 gallon/hour capacity. Includes materials and shipping only. | Each | $4,911.06 | 1 | $4,911.06 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #4 - Plate Cooler

**Scenario Description:**
The installation of all stainless steel dual pass plate cooler, type 316 stainless steel. Practice certification will be through receipts and pictures from the applicant.

**Before Situation:**
Inefficient milk cooling (minimal pre-cooling of milk before entering the bulk tank).

**After Situation:**
High-efficiency milk cooling system which reduces energy use. The new milk cooling equipment will pre-cool the milk and reduce overall power requirements (kW) compared to the existing milk cooling system (where most of the cooling was accomplished in the bulk tank) as evidenced in an energy audit. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Each

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $36,238.02

**Scenario Cost/Unit:** $36,238.02

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| **Materials** | | | | | | |
| Plate Cooler, 750 - 999 gal/hr capacity | 1178 | Stainless Steel, dual pass plate cooler with 750 - 999 gallon/hour capacity. Includes materials and shipping only. | Each | $35,994.82 | 1 | $35,994.82 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #5 - Scroll Compressor

**Scenario Description:**

Install a new scroll compressor, associated controls, wiring, and materials to retrofit an existing refrigeration system. A new condenser is not included in this typical scenario. Typical scenario includes a new 5 horsepower scroll compressor.

**Before Situation:**

Inefficient reciprocating compressor as a key component of the refrigeration system used to cool milk. The compressor is a critical part of a milk cooling system, affecting milk quality, system reliability, and system efficiency.

**After Situation:**

A more efficient scroll compressor, which will reduce energy use, is evidenced by the energy audit. A comparably sized scroll compressor provides refrigeration capacity at a higher efficiency than a reciprocating compressor. Newer scroll compressor systems typically reduce electricity use by 15 to 25 percent compared to reciprocating compressors. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Horse Power

**Scenario Unit:** Horsepower

**Scenario Typical Size:** 5.00

**Scenario Total Cost:** $3,767.79

**Scenario Cost/Unit:** $753.56

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| **Materials** | | | | | | |
| Scroll Compressor - 5 HP | 1183 | Scroll compressor, 5 Horsepower, controls, wiring, and appurtenances. Materials only. | Each | $3,646.19 | 1 | $3,646.19 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #6 - Variable Speed Drive < 5 HP

**Scenario Description:**

The typical scenario consists of a variable speed drive (VSD) and appurtenances, such as hook-ups, control panels, wiring, control blocks, filters, switches, pads, etc. attached to an electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production. The motor size, on which the VSD is added, is less than 5 HP.

**Before Situation:**

The system is inefficient when a motor operates at constant speed to satisfy a load which varies as to flow rate and/or pressure requirements.

**After Situation:**

An on-farm energy audit has determined that energy use can be reduced through use of a VSD to control electric motors. After the VSD is applied, the motor speed can be adjusted to reduce power requirements and better match varied flow or pressure requirements. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** HP

**Scenario Unit:** Horsepower

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $842.69

**Scenario Cost/Unit:** $842.69

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| **Materials** | | | | | | |
| Variable Speed Drive, 1 HP | 2347 | Variable speed drive for 1 Horsepower electric motor. Does not include motor. Materials only. | Each | $599.49 | 1 | $599.49 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #7 - Automatic Controller System

**Scenario Description:**

The typical scenario consists of an automatic control system installed on an existing manually controlled agricultural system. Typical components may include any of the following: wiring, sensors, data logger, logic controller, communication link, software, switches, and relay.

**Before Situation:**

A manually controlled system is existing in an agricultural facility that causes the inefficient use of energy, as evidenced by an on-farm energy audit.

**After Situation:**

An on-farm energy audit has determined that energy use can be reduced through use of an automatic controller that helps regulates the energy consumption of the existing system. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Each system

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,298.65

**Scenario Cost/Unit:** $2,298.65

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| **Materials** | | | | | | |
| Switches and Controls, temp sensors | 1192 | Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $697.95 | 1 | $697.95 |
| Switches and Controls, programmable controller | 1193 | Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $528.75 | 1 | $528.75 |
| Switches and Controls, Wi-Fi system and software | 1194 | Software with built-in cellular or Wi-Fi communication commonly used to control pumps and irrigation systems | Each | $828.75 | 1 | $828.75 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #8 - Motor Upgrade > 100 HP

**Scenario Description:**

The typical scenario consists of replacing an existing electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production with a new, high efficiency motor. The motor size is larger than 100 horsepower.

**Before Situation:**

The system is inefficient with a standard efficiency motor.

**After Situation:**

An on-farm energy audit has determined that energy use can be reduced through use of a NEMA premium efficiency motor. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** HP

**Scenario Unit:** Horsepower

**Scenario Typical Size:** 150.00

**Scenario Total Cost:** $22,680.51

**Scenario Cost/Unit:** $151.20

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 16 | $486.40 |
| **Materials** | | | | | | |
| Motor, electric, NEMA Premium, 200 HP | 1175 | Premium NEMA approved electric motor, 200 Horsepower and all required appurtenances. Includes materials and shipping only. | Each | $22,194.11 | 1 | $22,194.11 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #9 - Motor Upgrade 10 - 100 HP

**Scenario Description:**

The typical scenario consists of replacing an existing electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production with a new, high efficiency motor. The motor size is equal to or larger than 10 and less than or equal to 100 horsepower.

**Before Situation:**

The system is inefficient with a standard efficiency motor.

**After Situation:**

An on-farm energy audit has determined that energy use can be reduced through use of a NEMA premium efficiency motor. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** HP

**Scenario Unit:** Horsepower

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $6,220.07

**Scenario Cost/Unit:** $124.40

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| **Materials** | | | | | | |
| Motor, electric, NEMA Premium, 50 HP | 1173 | Premium NEMA approved electric motor, 50 Horsepower and all required appurtenances. Includes materials and shipping only. | Each | $5,976.87 | 1 | $5,976.87 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #10 - Motor Upgrade > 1 and < 10 HP

**Scenario Description:**

The typical scenario consists of replacing an existing electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production with a new, high efficiency motor. The motor size is larger than 1 and less than 10 horsepower.

**Before Situation:**

The system is inefficient with a standard efficiency motor.

**After Situation:**

An on-farm energy audit has determined that energy use can be reduced through use of a NEMA premium efficiency motor. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** HP

**Scenario Unit:** Horsepower

**Scenario Typical Size:** 5.00

**Scenario Total Cost:** $1,099.61

**Scenario Cost/Unit:** $219.92

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| **Materials** | | | | | | |
| Motor, electric, NEMA Premium, 5 HP | 1171 | Premium NEMA approved electric motor, 5 Horsepower and all required appurtenances. Includes materials and shipping only. | Each | $978.01 | 1 | $978.01 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #11 - Motor Upgrade <= 1 HP

**Scenario Description:**

The typical scenario consists of replacing an existing electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production with a new, high efficiency motor. The motor size is less than or equal to 1 horsepower.

**Before Situation:**

The system is inefficient with a standard efficiency motor.

**After Situation:**

An on-farm energy audit has determined that energy use can be reduced through use of a NEMA premium efficiency motor. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Horsepower

**Scenario Unit:** Horsepower

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $730.81

**Scenario Cost/Unit:** $730.81

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| **Materials** | | | | | | |
| Motor, electric, NEMA Premium, 1 HP | 1169 | Premium NEMA approved electric motor, 1 Horsepower and all required appurtenances. Includes materials and shipping only. | Each | $609.21 | 1 | $609.21 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #12 - Heating - Radiant Systems

**Scenario Description:**

Replace "pancake" Brood Heaters in a poultry house with Radiant Tube Heaters, or similar. Replacement will require the materials and labor to remove existing heating system, re-plumb gas lines, cables and wench system to retrofit new radiant tube heaters, and miscellaneous items to complete the installation. Alternate acceptable radiant heating systems can include radiant brooders and quad radiant systems as evidenced by the energy audit. The typical scenario consists of the replacement of 28 brood heaters with 6 radiant tube heaters.

**Before Situation:**

Inefficient heat distribution equipment, such as conventional "pancake" brood heaters. The Pancake brooder, mounted at a low installation height, primarily warms the air. They provide a one-to-two foot perimeter at desired temperatures around each brooder. A large number of brooders are required to cover a significant percent of floor space. As the warmed air naturally rises it loses effectiveness for poultry on the ground.

**After Situation:**

Energy use is reduced through installation of a more efficient heater. Radiant tube heaters primarily warm objects within a direct line of sight (similar to the sun or an open fire). Air temperature is of relatively little importance for a radiant heating systems to be effective. As a result, radiant sytems are typically installed 5' or more above the floor level. This height extends the distribution of the radiant heat over a larger area than is possible with pancake style heaters. A roughly 16' diameter radiant heat zone heats over twice that of a convential pancake brooder. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Each

**Scenario Unit:** Each

**Scenario Typical Size:** 6.00

**Scenario Total Cost:** $10,925.62

**Scenario Cost/Unit:** $1,820.94

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 16 | $486.40 |
| **Materials** | | | | | | |
| Heater, radiant tube | 1163 | Radiant tube heater rated at 125,000 BTU/hour. Materials only. | Each | $1,739.87 | 6 | $10,439.22 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #13 - Heating (Building)

**Scenario Description:**

Replace existing low efficiency heaters with new high efficiency heaters. High-efficiency heating systems include any heating unit with efficiency rating of 80%+ for fuel oil and 90%+ for natural gas and propane. Applications may be air heating/building environment and hydronic (boiler) heating for agricultural operations, including under bench, or root zone heating. An alternative to heater replacement might be the addition of climate control system and electronic temperature controls with +/- 1 degree F differential, to reduce the annual run time.

**Before Situation:**

Buildings heated with low efficiency heaters or heaters without proper electronic climate controls

**After Situation:**

Higher efficiency heaters reduce energy consumption, energy costs, and GHG emissions. These replacement systems can be fueled by natural gas, propane, or fuel oil. Associated practices/activities: 122-AgEMP - HQ and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Rated Heat Output

**Scenario Unit:** 1,000 BTU/Hour

**Scenario Typical Size:** 750.00

**Scenario Total Cost:** $18,666.40

**Scenario Cost/Unit:** $24.89

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 16 | $486.40 |
| **Materials** | | | | | | |
| Heater, high efficiency | 1165 | Natural gas, propane, or fuel oil unit heater or boiler and venting materials. Based on input kBTU/hour. Includes materials and shipping only. | 1,000 BTU/Hour | $24.24 | 750 | $18,180.00 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #14 - Heating - Attic Heat Recovery vents

**Scenario Description:**

Install actuated inlets or automatic latching gravity inlets that draw warmer, drier air from the attic to assist with moisture and heat control when ventiliation fans are being operated in poultry houses and swine barns. Other systems to transfer heat, as detailed in ASABE S612-compliant energy audit may also be used. Based on a 40' x 500' poultry house.

**Before Situation:**

Heated buildings with attic spaces but no means to transfer heat between the heated space, attic, and ambient (outside) air when relative conditions allow for reduced energy use.

**After Situation:**

Attic vents or inlets allow dry warm air from the attic to cirulated through out the building. By using pre-warmed air from the attic less energy is needed for heating 122-AgEMP - HQ and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Each inlet

**Scenario Unit:** Each

**Scenario Typical Size:** 14.00

**Scenario Total Cost:** $3,108.06

**Scenario Cost/Unit:** $222.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 24 | $729.60 |
| **Materials** | | | | | | |
| Inlet, Attic Ceiling | 2414 | Poultry house attic air inlets. Includes materials only. | Each | $169.89 | 14 | $2,378.46 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #40 - Variable Speed Drive > 15 HP

**Scenario Description:**

The typical scenario consists of a variable speed drive (VSD) and appurtenances, such as hook-ups, control panels, wiring, control blocks, filters, switches, pads, etc. attached to an electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production. The motor size, on which the VSD is added, is larger than 15 HP.

**Before Situation:**

The system is inefficient when a motor operates at constant speed to satisfy a load which varies as to flow rate and/or pressure requirements.

**After Situation:**

An on-farm energy audit has determined that energy use can be reduced through use of a VSD to control electric motors. After the VSD is applied, the motor speed can be adjusted to reduce power requirements and better match varied flow or pressure requirements. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** HP

**Scenario Unit:** Horsepower

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $6,570.20

**Scenario Cost/Unit:** $131.40

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| **Materials** | | | | | | |
| Variable Speed Drive, 50 HP | 1288 | Variable speed drive for 50 Horsepower electric motor. Does not include motor. Materials only. | Horsepower | $126.54 | 50 | $6,327.00 |

**Practice:** 374 - Energy Efficient Agricultural Operation

**Scenario** #41 - Variable Speed Drive, 5 - 15 HP

**Scenario Description:**

The typical scenario consists of a variable speed drive (VSD) and appurtenances, such as hook-ups, control panels, wiring, control blocks, filters, switches, pads, etc. attached to an electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production. The motor size, on which the VSD is added, is between 5 and 15 HP.

**Before Situation:**

The system is inefficient when a motor operates at constant speed to satisfy a load which varies as to flow rate and/or pressure requirements.

**After Situation:**

An on-farm energy audit has determined that energy use can be reduced through use of a VSD to control electric motors. After the VSD is applied, the motor speed can be adjusted to reduce power requirements and better match varied flow or pressure requirements. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** HP

**Scenario Unit:** Horsepower

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $1,901.00

**Scenario Cost/Unit:** $190.10

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| **Materials** | | | | | | |
| Variable Speed Drive, 10 HP | 1287 | Variable speed drive for 10 Horsepower electric motor. Does not include motor. Materials only. | Horsepower | $165.78 | 10 | $1,657.80 |

**Practice:** 378 - Pond

**Scenario** #1 - Excavated Pond

**Scenario Description:**

A low-hazard water impoundment structure on agricultural lands to maintain or improve water quality and to provide water for livestock, fish and wildlife, recreation, fire control, developing renewable energy systems and other related uses. Pond is created solely by excavation and impounds less than 3 feet against the embankment or spoil. Excavated material is spoiled, not placed in a designed embankment. Earthen spillway is constructed as needed. The resource concerns addressed include inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition.

**Before Situation:**

Area exists where water could naturally pool or run off to create a pond for livestock, wildlife, fire control or developing renewable energy systems, and other related uses, and to maintain or improve water quality. Failure of the pond will not result in loss of life; damage to homes, commercial or industrial buildings, main highways, or railroads; or in interruption of the use or service of public utilities.

**After Situation:**

The typical pond is constructed by excavating 3000 cubic yards and spreading the spoil outside the pool area using a dozer or similar excavation equipment. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A, 533, 614, 587, 396.

**Feature Measure:** Excavated Volume

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 3,000.00

**Scenario Total Cost:** $8,562.96

**Scenario Cost/Unit:** $2.85

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 3000 | $7,200.00 |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 6 | $629.46 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 6 | $210.78 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 378 - Pond

**Scenario** #3 - Embankment Pond, No Principal Spillway

**Scenario Description:**

An earthen embankment dam without a principal spillway pipe. A low flow tube of 6 inches or less to reduce saturation of the auxiliary spillway is installed, anti-seep collars or sand diaphragms are not required. A low-hazard water impoundment structure on agricultural land to maintain or improve water quality and to provide water for livestock, fish and wildlife, recreation, fire control, developing renewable energy systems and other related uses. An earthen embankment will be constructed with a principle spillway conduit and earthen auxiliary spillway, as designed. The resource concerns addressed include inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition. Cost estimate is based upon a typical amount of earthfill of 2,000 cubic yards, and 80 feet of pipe 6" PVC pipe. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

Area exists where water could naturally pool or run off to create a pond for livestock, wildlife, fire control or developing renewable energy systems, and other related uses, and to maintain or improve water quality. Failure of the embankment will not result in loss of life or damages of any kind.

**After Situation:**

The typical pond is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and creating an embankment. The product of the storage times the effective height of the dam is less than 3,000. The effective height of the dam is 35 feet or less. The earthen auxiliary spillway will be constructed as designed. No principle spillway pipe will be used. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A, 533, 614, 587, 396.

**Feature Measure:** Cubic Yards of Earthfill

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 2,000.00

**Scenario Total Cost:** $10,315.75

**Scenario Cost/Unit:** $5.16

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 100 | $240.00 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 2000 | $7,860.00 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 5 | $650.10 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 5 | $152.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 1 | $22.48 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 5 | $175.65 |
| **Materials** | | | | | | |
| Pipe, PVC, 6 in., SDR 26 | 990 | Materials: - 6 inch - PVC - SDR 26 160 psi - ASTM D2241 | Feet | $8.66 | 80 | $692.80 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 378 - Pond

**Scenario** #4 - Embankment Pond with less than 24 inch Pipe

**Scenario Description:**

An earthen embankment dam with a principle spillway pipe less than 24 inches, anti-seep collars or sand diaphragm, and excavated plunge pool basin. A low-hazard water impoundment structure on agricultural land to maintain or improve water quality and to provide water for livestock, fish and wildlife, recreation, fire control, developing renewable energy systems and other related uses. An earthen embankment will be constructed with a principle spillway conduit and earthen auxiliary spillway, as designed. The resource concerns addressed include inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition. Cost estimate is based upon a typical amount of earthfill of 4000 cubic yards, 90 feet of 18" PVC, pipe with a canopy inlet, and 3 cubic yard sand diaphragm. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

Area exists where water could naturally pool or run off to create a pond for livestock, wildlife, fire control or developing renewable energy systems, and other related uses, and to maintain or improve water quality. Failure of the embankment will not result in loss of life or damages of any kind.

**After Situation:**

The typical pond is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and creating an embankment. The product of the storage times the effective height of the dam is less than 3,000. The effective height of the dam is 35 feet or less. The earthen auxiliary spillway will be constructed as designed, and a principle spillway pipe will be used. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A, 533, 614, 587, 396.

**Feature Measure:** Cubic Yards of Earthfill

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 4,000.00

**Scenario Total Cost:** $27,634.16

**Scenario Cost/Unit:** $6.91

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 4000 | $15,720.00 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 29 | $173.42 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 10 | $1,300.20 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 18 | $547.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 9 | $202.32 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 10 | $351.30 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 22 | $2,956.80 |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 11 | $204.60 |
| Pipe, PVC, 18 in., SCH 40 | 1373 | Materials: - 18 inch - PVC - SCH 40 - ASTM D1785 | Feet | $62.84 | 90 | $5,655.60 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 378 - Pond

**Scenario** #5 - Embankment Pond with greater than or equal to 24 inch Pipe

**Scenario Description:**

An earthen embankment dam with a principle spillway pipe greater than or equal to 24 inches, anti-seep collars or sand diaphragm, and excavated plunge pool basin. A low-hazard water impoundment structure on agricultural land to maintain or improve water quality and to provide water for livestock, fish and wildlife, recreation, fire control, developing renewable energy systems and other related uses. An earthen embankment will be constructed with a principle spillway conduit and earthen auxiliary spillway, as designed. The resource concerns addressed include inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition. Cost estimate is based upon a typical amount of earthfill of 10,000 cubic yards,corrugated metal drop inlet principle spillway with a 11 ft riser and 100 ft barrel, and 82 Square feet of anti-seep collars. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

Area exists where water could naturally pool or run off to create a pond for livestock, wildlife, fire control or developing renewable energy systems, and other related uses, and to maintain or improve water quality. Failure of the embankment will not result in loss of life or damages of any kind.

**After Situation:**

The typical pond is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and creating an embankment. The product of the storage times the effective height of the dam is less than 3,000. The effective height of the dam is 35 feet or less. The earthen auxiliary spillway will be constructed as designed, and a principle spillway pipe will be used. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A, 533, 614, 587, 396.

**Feature Measure:** Cubic Yards of Earthfill

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 10,000.00

**Scenario Total Cost:** $55,760.72

**Scenario Cost/Unit:** $5.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 1 | $242.13 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 2 | $1,223.54 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 10000 | $39,300.00 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 129 | $771.42 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 13 | $1,690.26 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 36 | $1,094.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 18 | $404.64 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 13 | $456.69 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 46 | $6,182.40 |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 11 | $204.60 |
| Pipe, CMP, 24 in., 12 Gauge | 1417 | 24 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $31.92 | 100 | $3,192.00 |
| Pipe, CMP, 30 in., 12 Gauge | 1824 | 30 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $39.66 | 12 | $475.92 |
| **Mobilization** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 378 - Pond

**Scenario** #63 - Rehab Embankment Pond, No Principal Spillway

**Scenario Description:**

A previously built earthen embankment dam without a principal spillway pipe. Previously installed structure had embankment failure and is in need of embankment repair. Cost estimate is based upon shaping side slopes, and replacing with a typical amount of earthfill of 500 cubic yards. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the structure and impacting the downstream water quality. Also presents a safety hazard of potential dam failure. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Pumping Plant (533), Watering Facility (614), and Livestock Pipeline (516) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Cubic Yards of Earthfill

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 500.00

**Scenario Total Cost:** $4,380.12

**Scenario Cost/Unit:** $8.76

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 450 | $1,080.00 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 500 | $1,965.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 16 | $486.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 8 | $281.04 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 378 - Pond

**Scenario** #64 - Rehab Embankment Pond, With Principal Spillway

**Scenario Description:**

A previously built earthen embankment dam witha principal spillway pipe that is greater than 24" in diameter. Previously installed structure had embankment and pipe failure, and is in need of new pipe installation and embankment repair. Cost estimate is based upon shaping side slopes, replacing pipe and riser, and replacing with a typical amount of earthfill of 4250 cubic yards. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the structure and impacting the downstream water quality. Also presents a safety hazard of potential dam failure. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Pumping Plant (533), Watering Facility (614), and Livestock Pipeline (516) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Diameter Inch Foot of Barrel

**Scenario Unit:** Diameter Inch Foot

**Scenario Typical Size:** 2,400.00

**Scenario Total Cost:** $33,163.22

**Scenario Cost/Unit:** $13.82

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 1 | $242.13 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 2 | $1,223.54 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 4250 | $16,702.50 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 129 | $771.42 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 13 | $1,690.26 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 36 | $1,094.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 18 | $404.64 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 13 | $456.69 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 46 | $6,182.40 |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 11 | $204.60 |
| Pipe, CMP, 24 in., 12 Gauge | 1417 | 24 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $31.92 | 100 | $3,192.00 |
| Pipe, CMP, 30 in., 12 Gauge | 1824 | 30 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $39.66 | 12 | $475.92 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 380 - Windbreak/Shelterbelt Establishment and Renovation

**Scenario** #1 - Hand Planted, Bare Root

**Scenario Description:**

Single 600 foot row of bare root shrubs, conifers, hardwoods, or combination for wind protection, wildlife habitat, or snow management. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers based on feet of trees. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

**Before Situation:**

Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition

**After Situation:**

Wind velocity suitably reduced to minimize soil erosion, or to manage snow deposition. Additional wildlife food and cover.

**Feature Measure:** Number of trees

**Scenario Unit:** Each

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $198.74

**Scenario Cost/Unit:** $2.48

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 1 | $25.68 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 2 | $25.62 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 3 | $67.44 |
| **Materials** | | | | | | |
| Shrub, Seedling, Small | 1506 | Bare root shrub seedling, 6 to 18 inches tall, includes containerized seedlings less than 10 cubic inches. Includes materials and shipping only. | Each | $1.05 | 40 | $42.00 |
| Tree, Hardwood, Seedling, Small | 1509 | Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only. | Each | $0.99 | 20 | $19.80 |
| Tree, Conifer, Seedling, Small | 1512 | Containerized conifer seedlings, 4 or 6 cubic inches; or bare root conifer seedlings 1+0 (one-year old seedlings grown in their original seedbed). Includes materials and shipping only. | Each | $0.79 | 20 | $15.80 |
| Wire flags | 1586 | Small vinyl flags attached to wire stakes, typically, 36 in. length, for marking tree rows | Each | $0.12 | 20 | $2.40 |

**Practice:** 380 - Windbreak/Shelterbelt Establishment and Renovation

**Scenario** #5 - Trees, machine planted

**Scenario Description:**

Tree planting consisting of 2500 feet of trees for wind protection, energy conservation, wildlife habitat, air quality, snow management or to provide a visual screen. The planting may consist of shrubs, hardwood trees, conifers, or a combination. Trees and shrubs planted with a tree planting machine. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart in the row with rows 16 feet apart. The scenario will include 1/4 shrubs, 1/2 hardwoods, and 1/4 conifers based on feet of trees. Herbivores (deer, rabbits, etc.) are NOT expected to browse tree seedlings, tree protection is not needed. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, pesticides transported to surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Livestock Production Limitation (inadequate shelter); Air Quality Impacts (emission of particulate matter, objectionable odors); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

**Before Situation:**

Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, odor mitigation, visual screen or management of snow deposition

**After Situation:**

Wind velocity suitably reduced to minimize soil erosion, energy loss or to manage snow deposition. Additional wildlife food and cover, mixing of odor plumes and visual screening.

**Feature Measure:** length of planted windbreak

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,500.00

**Scenario Total Cost:** $867.82

**Scenario Cost/Unit:** $0.35

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 3 | $84.45 |
| Mechanical tree planter | 1600 | Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor. | Hours | $6.09 | 3 | $18.27 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 3 | $88.26 |
| **Materials** | | | | | | |
| Shrub, Seedling, Small | 1506 | Bare root shrub seedling, 6 to 18 inches tall, includes containerized seedlings less than 10 cubic inches. Includes materials and shipping only. | Each | $1.05 | 156 | $163.80 |
| Tree, Hardwood, Seedling, Small | 1509 | Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only. | Each | $0.99 | 125 | $123.75 |
| Tree, Conifer, Seedling, Small | 1512 | Containerized conifer seedlings, 4 or 6 cubic inches; or bare root conifer seedlings 1+0 (one-year old seedlings grown in their original seedbed). Includes materials and shipping only. | Each | $0.79 | 63 | $49.77 |
| Wire flags | 1586 | Small vinyl flags attached to wire stakes, typically, 36 in. length, for marking tree rows | Each | $0.12 | 100 | $12.00 |

**Practice:** 380 - Windbreak/Shelterbelt Establishment and Renovation

**Scenario** #6 - Trees, machine planted, wildlife protection

**Scenario Description:**

Tree planting consisting of 2500 feet of trees for wind protection, energy conservation, wildlife habitat, air quality, snow management or to provide a visual screen. The planting may consist of shrubs, hardwood trees, conifers, or a combination. Trees and shrubs planted with a tree planting machine. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart in the row with rows 16 feet apart. The scenario will include 1/4 shrubs, 1/2 hardwoods, and 1/4 conifers based on feet of trees. Herbivore (deer, rabbits, etc.) damage is likely, so each tree must be protected with a rigid tube tree shelter. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, pesticides transported to surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Livestock Production Limitation (inadequate shelter); Air Quality Impacts (emission of particulate matter, objectionable odors); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

**Before Situation:**

Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, odor mitigation, visual screen or management of snow deposition

**After Situation:**

Wind velocity suitably reduced to minimize soil erosion, energy loss or to manage snow deposition. Additional wildlife food and cover, mixing of odor plumes and visual screening.

**Feature Measure:** length of planted windbreak

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,500.00

**Scenario Total Cost:** $2,489.94

**Scenario Cost/Unit:** $1.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 3 | $84.45 |
| Mechanical tree planter | 1600 | Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor. | Hours | $6.09 | 3 | $18.27 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 14 | $314.72 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 3 | $88.26 |
| **Materials** | | | | | | |
| Shrub, Seedling, Small | 1506 | Bare root shrub seedling, 6 to 18 inches tall, includes containerized seedlings less than 10 cubic inches. Includes materials and shipping only. | Each | $1.05 | 156 | $163.80 |
| Tree, Hardwood, Seedling, Small | 1509 | Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only. | Each | $0.99 | 125 | $123.75 |
| Tree, Conifer, Seedling, Small | 1512 | Containerized conifer seedlings, 4 or 6 cubic inches; or bare root conifer seedlings 1+0 (one-year old seedlings grown in their original seedbed). Includes materials and shipping only. | Each | $0.79 | 63 | $49.77 |
| Tree shelter, solid tube type, 4 in. x 60 in. | 1567 | 4 inch x 60 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $5.64 | 188 | $1,060.32 |
| Cable ties, plastic | 1575 | Plastic cable ties (typ. 8-12 in.) to assist in securing items. Materials only. | Each | $0.07 | 188 | $13.16 |
| Stakes, wood, 3/4 in. x 3/4 in. x 60 in. | 1583 | 3/4 in. x 3/4 in. x 60 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.44 | 188 | $458.72 |
| Wire flags | 1586 | Small vinyl flags attached to wire stakes, typically, 36 in. length, for marking tree rows | Each | $0.12 | 100 | $12.00 |

**Practice:** 380 - Windbreak/Shelterbelt Establishment and Renovation

**Scenario** #84 - Renovation-Thinning or tree removal with Dozer (trees > 8 inches DBH) followed by machine planting

**Scenario Description:**

Windbreak/shelterbelt renovation to remove and replace deteriorated, damaged, diseased, or unsuitable trees or shrubs. The treatment may include removal of entire rows, or removal of selected trees/shrubs in order to prepare for the necessary planting of replacement trees and shrubs within the footprint of an existing windbreak, to improve the health and function of the windbreak. The treatment uses mechanized equipment to remove trees and/or shrubs with average DBH > 8 inches. Trees and shrubs are cleared with a Dozer. All slash material from cutting and pruning is either scattered and crushed, piled and crushed, chipped, or removed from the treatment area. Machine planting is used to replace the trees/shrubs that were removed, to improve the effectiveness and longevity of the windbreak. Various types and combinations of plant materials may be used, including bare root and/or containerized trees/shrubs, and conifer and/or deciduous species or mixtures. Windbreak width of 60' and length of 726' are used in calculations; this is equivalent to an area of 1 acre. For planting that expands the footprint of an existing windbreak, use scenarios for Windbreak/Shelterbelt Establishment. Resource concerns include: Plant pest pressure, Plant productivity and health, Inadequate livestock shelter, Wind erosion.

**Before Situation:**

The health of trees and/or shrubs in a windbreak/shelterbelt has degraded as plants age, or plants may have been damaged by weather events or pests, decreasing the effectiveness of the original windbreak design. Plants lack leaf cover, have dead branches, gaps with no live green material, or may be completely dead. Wind moves freely through areas that lack foliage.

**After Situation:**

The integrity of 726 linear feet (one acre) of windbreak/ shelterbelt has been restored and is functioning properly to reduce wind impacts to plants, animals, humans, and structures.

**Feature Measure:** Length of Restoration

**Scenario Unit:** Feet

**Scenario Typical Size:** 726.00

**Scenario Total Cost:** $2,543.09

**Scenario Cost/Unit:** $3.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 8 | $839.28 |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 3 | $180.36 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Mechanical tree planter | 1600 | Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor. | Hours | $6.09 | 3 | $18.27 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 11 | $247.28 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 3 | $88.26 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 8 | $281.04 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Shrub, Seedling, Small | 1506 | Bare root shrub seedling, 6 to 18 inches tall, includes containerized seedlings less than 10 cubic inches. Includes materials and shipping only. | Each | $1.05 | 48 | $50.40 |
| Tree, Hardwood, Seedling, Small | 1509 | Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only. | Each | $0.99 | 24 | $23.76 |
| Tree, Conifer, Seedling, Medium | 1514 | Containerized conifer seedlings, 8 or 10 cubic inches; or bare root conifer seedlings 1+1 (two-year old seedlings that grew one year in the original seedbed and another year in a transplant bed), or bare root seedlings 2+0 (two-year old seedlings grown in their original seedbed). Includes materials and shipping only. | Each | $0.98 | 24 | $23.52 |
| **Mobilization** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 380 - Windbreak/Shelterbelt Establishment and Renovation

**Scenario** #111 - Renovation - Sod Release

**Scenario Description:**

Renovation to reduce competition from grass sod around trees/shrubs within a windbreak/shelterbelt. Apply appropriate herbicide to stress or kill competing sod vegetation between and/or within tree/shrub rows. The herbicide application is completed to significantly reduce competition from sod (grass) in the windbreak. Use WIN-PST or equivalent approved tool to evaluate herbicide impacts. Windbreak width of 60' and length of 726' are used in calculations, resulting in an area of 1 acre.

**Before Situation:**

The health of an existing windbreak/shelterbelt is deteriorating due to competition with grass sod. Trees/shrubs are dying or growth rate is reduced, and the windbreak/shelterbelt is not functioning as intended.

**After Situation:**

The integrity of 726 linear feet (one acre) of windbreak/ shelterbelt has been restored and it is functioning properly to reduce wind impacts to plants, animals, humans, and structures.

**Feature Measure:** Length of Renovation

**Scenario Unit:** Feet

**Scenario Typical Size:** 726.00

**Scenario Total Cost:** $323.61

**Scenario Cost/Unit:** $0.45

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |
| **Materials** | | | | | | |
| Herbicide, Sethoxydim | 339 | A selective post emergence herbicide used to control annual and perennial grass weeds. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $21.98 | 1 | $21.98 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 380 - Windbreak/Shelterbelt Establishment and Renovation

**Scenario** #112 - Coppicing

**Scenario Description:**

Coppicing of selected trees and understory vegetation in a windbreak/shelterbelt is needed to ensure that species composition and stand structure continue to serve their intended purpose. Windbreak/shelterbelt renovation is carried out through manipulating species composition, structure, and stocking by the cutting of selected trees and understory vegetation for coppicing and by removing or disposing of slash so as to not interfere with the windbreak/shelterbelt renovation or other management operations. Windbreak width of 60' and length of 726' are used in calculations; this is equivalent to an area of 1 acre. For planting that expands the footprint of an existing windbreak, use scenarios for Windbreak/Shelterbelt Establishment. Resource concerns include: Plant pest pressure, Plant productivity and health, Plant composition and structure, Inadequate livestock shelter, Wind erosion.

**Before Situation:**

The health of trees and/or shrubs in a windbreak/shelterbelt has degraded as plants age, or plants may have been damaged by weather events or pests, decreasing the effectiveness of the original windbreak design. Plants lack leaf cover, have dead branches, gaps with no live green material, or may be completely dead. Wind moves freely through areas that lack foliage.

**After Situation:**

The integrity of 726 linear feet (one acre) of windbreak/shelterbelt has been restored and is functioning properly to reduce wind impacts to plants, animals, humans, and structures.

**Feature Measure:** Area of Renovation

**Scenario Unit:** Feet

**Scenario Typical Size:** 726.00

**Scenario Total Cost:** $1,773.34

**Scenario Cost/Unit:** $2.44

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 8 | $857.68 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 8 | $235.36 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 380 - Windbreak/Shelterbelt Establishment and Renovation

**Scenario** #115 - Renovation-Thinning or tree/shrub removal with Skidsteer followed by machine planting

**Scenario Description:**

Windbreak/shelterbelt renovation to remove and replace deteriorated, damaged, diseased, or unsuitable trees or shrubs. The treatment may include removal of entire rows, or removal of selected trees/shrubs in order to prepare for the necessary planting of replacement trees and shrubs within the footprint of an existing windbreak, to improve the health and function of the windbreak. The treatment uses mechanized equipment to remove trees and/or shrubs with average DBH < 8 inches. Trees and shrubs are cleared by a Skidsteer with a tree shear or saw. All woody debris produced by cutting and pruning is either scattered and crushed, piled and crushed, chipped, or removed from the treatment area. Machine planting is used to replace the trees/shrubs that were removed, to improve the effectiveness and longevity of the windbreak. Various types and combinations of plant materials may be used, including bare root and/or containerized trees/shrubs, and conifer and/or deciduous species or mixtures. Windbreak width of 60' and length of 726' are used in calculations; this is equivalent to an area of 1 acre. For planting that expands the footprint of an existing windbreak, use scenarios for Windbreak/Shelterbelt Establishment. Resource concerns include: Plant pest pressure, Plant productivity and health, Inadequate livestock shelter, Wind erosion.

**Before Situation:**

The health of trees and/or shrubs in a windbreak/shelterbelt has degraded as plants age, or plants may have been damaged by weather events or pests, decreasing the effectiveness of the original windbreak design. Plants lack leaf cover, have dead branches, gaps with no live green material, or may be completely dead. Wind moves freely through areas that lack foliage.

**After Situation:**

The integrity of 726 linear feet (one acre) of windbreak/ shelterbelt has been restored and is functioning properly to reduce wind impacts to plants, animals, humans, and structures.

**Feature Measure:** Length of Renovation

**Scenario Unit:** Feet

**Scenario Typical Size:** 726.00

**Scenario Total Cost:** $2,139.09

**Scenario Cost/Unit:** $2.95

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 11 | $661.32 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Mechanical tree planter | 1600 | Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor. | Hours | $6.09 | 3 | $18.27 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 11 | $247.28 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 11 | $323.62 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Shrub, Seedling, Small | 1506 | Bare root shrub seedling, 6 to 18 inches tall, includes containerized seedlings less than 10 cubic inches. Includes materials and shipping only. | Each | $1.05 | 48 | $50.40 |
| Tree, Hardwood, Seedling, Small | 1509 | Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only. | Each | $0.99 | 24 | $23.76 |
| Tree, Conifer, Seedling, Medium | 1514 | Containerized conifer seedlings, 8 or 10 cubic inches; or bare root conifer seedlings 1+1 (two-year old seedlings that grew one year in the original seedbed and another year in a transplant bed), or bare root seedlings 2+0 (two-year old seedlings grown in their original seedbed). Includes materials and shipping only. | Each | $0.98 | 24 | $23.52 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 380 - Windbreak/Shelterbelt Establishment and Renovation

**Scenario** #116 - Renovation - Tree/shrub removal with chainsaw followed by hand planting

**Scenario Description:**

Windbreak/shelterbelt renovation to remove and replace deteriorated, damaged, diseased, or unsuitable trees or shrubs. The treatment may include removal of entire rows, or removal of selected trees/shrubs in order to prepare for the necessary planting of replacement trees and shrubs within the footprint of an existing windbreak, to improve the health and function of the windbreak. Supplemental plantings of bare root and/or containerized trees/shrubs, of conifer and/or deciduous species, or mixtures, are applied to improve the effectiveness and longevity of the windbreak. Windbreak width of 60' and length of 726' are used in calculations; this is equivalent to an area of 1 acre. For planting that expands the footprint of an existing windbreak, use scenarios for Windbreak/Shelterbelt Establishment. Resource concerns include: Plant pest pressure, Plant productivity and health, Inadequate livestock shelter, Wind erosion.

**Before Situation:**

The health of trees and/or shrubs in a windbreak/shelterbelt has degraded as plants age, or plants may have been damaged by weather events or pests, decreasing the effectiveness of the original windbreak design. Plants lack leaf cover, have dead branches, gaps with no live green material, or may be completely dead. Wind moves freely through areas that lack foliage.

**After Situation:**

The integrity of 726 linear feet (one acre) of windbreak/shelterbelt has been restored and is functioning properly to reduce wind impacts to plants, animals, humans, and structures.

**Feature Measure:** Length of Renovation

**Scenario Unit:** Feet

**Scenario Typical Size:** 726.00

**Scenario Total Cost:** $3,104.56

**Scenario Cost/Unit:** $4.28

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 10 | $69.20 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 18 | $230.58 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 10 | $304.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 28 | $629.44 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Shrub, Seedling, Large | 1508 | Bare root shrub seedling, 36 to 60 inches tall; includes containerized seedlings larger than 20 cubic inches. Includes materials and shipping only. | Each | $3.32 | 36 | $119.52 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 36 | $68.40 |
| Tree, Conifer, Seedling, Large | 1515 | Containerized conifer seedlings, 15 or 20 cubic inches; or bare root conifer seedlings 2+1 (three-year old seedlings that grew two years in the original seedbed and another year in a transplant bed) or bare root seedlings 3+0 and older (three-year or older seedlings grown in their original seedbed, or transplanted seedlings). Includes materials and shipping only. | Each | $1.56 | 36 | $56.16 |
| Tree, Hardwood, Potted, Small | 1529 | Potted hardwood seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $8.88 | 36 | $319.68 |
| Tree, Conifer, Potted, Small | 1534 | Potted conifer seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $7.01 | 36 | $252.36 |
| Tree shelter, mesh tree tube, 24 in. | 1555 | 24 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only. | Each | $0.48 | 90 | $43.20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Tree shelter, solid tube type, 3-1/4 in. x 30 in. | 1560 | 3-1/4 inch x 30 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $3.05 | 90 | $274.50 |
| Stakes, wood, 3/4 in. x 3/4 in. x 36 in. | 1581 | 3/4 in. x 3/4 in. x 36 in. wood stakes to fasten items in place. Includes materials only. | Each | $1.57 | 90 | $141.30 |
| Stake, bamboo, 3/8 in. x 36 in. | 1584 | 3/8 in. x 36 in. bamboo stakes to anchor items in place. Inlcudes materials and shipping only. | Each | $0.17 | 90 | $15.30 |

**Practice:** 380 - Windbreak/Shelterbelt Establishment and Renovation

**Scenario** #125 - 1 row windbreak - small acreage

**Scenario Description:**
One row of containerized shrubs planted to address resource concerns; Inefficient Energy Use, Air Quality Impacts and/or Fish and Wildlife Habitat. This practice is typically applied on cropland at field edges and around homesteads.

**Before Situation:**
Agricultural field or farmstead needing protections from wind, additional wildlife food and cover, odor mitigation, visual screening. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

**After Situation:**
A windbreak of containerized shrubs is installed by hand planting shrubs 6 ft apart. Wind velocity suitably diminished to reduce soil erosion or energy loss. Additional wildlife food and cover, mixing of odor plumes and visual screening. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

**Feature Measure:** Length of windbreak row

**Scenario Unit:** Feet

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $386.37

**Scenario Cost/Unit:** $3.86

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 2 | $25.62 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 3 | $67.44 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| **Materials** | | | | | | |
| Shrub, Potted, Medium | 1527 | Potted shrub seedling, 2 gallons or larger. Includes materials and shipping only. | Each | $12.84 | 17 | $218.28 |
| Wire flags | 1586 | Small vinyl flags attached to wire stakes, typically, 36 in. length, for marking tree rows | Each | $0.12 | 17 | $2.04 |
| Fertilizer, tree, slow release, premix packet or spike | 1594 | 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 | $0.54 | 17 | $9.18 |
| Micro Irrigation, drip irrigation system, small scale | 2170 | An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only. | Square Feet | $0.08 | 200 | $16.00 |

**Practice:** 380 - Windbreak/Shelterbelt Establishment and Renovation

**Scenario** #239 - Renovation-Thinning or tree removal with Dozer (trees > 8 inches DBH) followed by hand planting

**Scenario Description:**

Windbreak/shelterbelt renovation to remove and replace deteriorated, damaged, diseased, or unsuitable trees or shrubs. The treatment may include removal of entire rows, or removal of selected trees/shrubs in order to prepare for the necessary planting of replacement trees and shrubs within the footprint of an existing windbreak, to improve the health and function of the windbreak. The treatment uses mechanized equipment to remove trees and/or shrubs with average DBH >8 inches. Trees and shrubs are cleared with a Dozer. All woody debris from cutting and pruning is either scattered and crushed, piled and crushed, chipped, or removed from the treatment area. Hand planting is used to replace the trees/shrubs that were removed, improving the effectiveness and longevity of the windbreak. Various types and combinations of plant materials may be used, including bare root and/or containerized trees/shrubs, and conifer and/or deciduous species or mixtures. Windbreak width of 60' and length of 726' are used in calculations; this is equivalent to an area of 1 acre. For planting that expands the footprint of an existing windbreak, use scenarios for Windbreak/Shelterbelt Establishment. Resource concerns include: Plant pest pressure, Plant productivity and health, Inadequate livestock shelter, Wind erosion.

**Before Situation:**

The health of trees and/or shrubs in a windbreak/shelterbelt has degraded as plants age, or plants may have been damaged by weather events or pests, decreasing the effectiveness of the original windbreak design. Plants lack leaf cover, have dead branches, gaps with no live green material, or may be completely dead. Wind moves freely through areas that lack foliage.

**After Situation:**

The integrity of 726 linear feet (one acre) of windbreak/ shelterbelt has been restored and is functioning properly to reduce wind impacts to plants, animals, humans, and structures.

**Feature Measure:** Length of Renovation

**Scenario Unit:** Feet

**Scenario Typical Size:** 726.00

**Scenario Total Cost:** $4,068.08

**Scenario Cost/Unit:** $5.60

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 8 | $839.28 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 18 | $230.58 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 26 | $584.48 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 8 | $281.04 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Shrub, Seedling, Large | 1508 | Bare root shrub seedling, 36 to 60 inches tall; includes containerized seedlings larger than 20 cubic inches. Includes materials and shipping only. | Each | $3.32 | 36 | $119.52 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 36 | $68.40 |
| Tree, Conifer, Seedling, Large | 1515 | Containerized conifer seedlings, 15 or 20 cubic inches; or bare root conifer seedlings 2+1 (three-year old seedlings that grew two years in the original seedbed and another year in a transplant bed) or bare root seedlings 3+0 and older (three-year or older seedlings grown in their original seedbed, or transplanted seedlings). Includes materials and shipping only. | Each | $1.56 | 36 | $56.16 |
| Tree, Hardwood, Potted, Small | 1529 | Potted hardwood seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $8.88 | 36 | $319.68 |
| Tree, Conifer, Potted, Small | 1534 | Potted conifer seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $7.01 | 36 | $252.36 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Tree shelter, mesh tree tube, 24 in. | 1555 | 24 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only. | Each | $0.48 | 90 | $43.20 |
| Tree shelter, solid tube type, 3-1/4 in. x 30 in. | 1560 | 3-1/4 inch x 30 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $3.05 | 90 | $274.50 |
| Stakes, wood, 3/4 in. x 3/4 in. x 36 in. | 1581 | 3/4 in. x 3/4 in. x 36 in. wood stakes to fasten items in place. Includes materials only. | Each | $1.57 | 90 | $141.30 |
| Stake, bamboo, 3/8 in. x 36 in. | 1584 | 3/8 in. x 36 in. bamboo stakes to anchor items in place. Inlcudes materials and shipping only. | Each | $0.17 | 90 | $15.30 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 382 - Fence

**Scenario** #1 - Barbed Wire, Multi-strand

**Scenario Description:**

Multi-strand, Barbed Wire - Installation of fence will allow for implementation of a grazing management plan that allows for an adequate rest and recovery period, protection of sensitive area, improved water quality, reduction of noxious and invasive weeds. Constructed using fencing materials rather than a pre-manufactured gate. The fence is typically 4 strands over 3/4 of a mile (3,960 ft).

**Before Situation:**

On grazing lands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases the opportunity for the encroachment of noxious and invasive weeds.

**After Situation:**

Installation of interior fencing will allow for implementation of a grazing management plan that allows adequate rest and recovery periods, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, etc. Four strand wire is commonly installed. Fence will be installed with wildlife friendly considerations.

**Feature Measure:** Length of Fence

**Scenario Unit:** Feet

**Scenario Typical Size:** 3,960.00

**Scenario Total Cost:** $10,747.08

**Scenario Cost/Unit:** $2.71

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 20 | $199.80 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 20 | $513.60 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 21 | $591.15 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 120 | $2,697.60 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 40 | $1,176.80 |
| **Materials** | | | | | | |
| Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll | 1 | Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only. | Each | $127.46 | 12 | $1,529.52 |
| Post, Wood, CCA treated, 4 in x 8 ft | 10 | Wood Post, Line 4 inch X 8 foot, CCA Treated. Includes materials and shipping only. | Each | $13.16 | 87 | $1,144.92 |
| Post, Wood, CCA treated, 5 in. x 8 ft. | 11 | Wood Post, End 5 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $18.56 | 10 | $185.60 |
| Post, Wood, CCA treated, 6 in. x 8 ft. | 12 | Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $24.11 | 10 | $241.10 |
| Post, Steel T, 1.33 lbs, 6 ft. | 15 | Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only. | Each | $7.39 | 160 | $1,182.40 |
| Fence, Wire Assembly, Barbed Wire | 30 | Brace pins, battens, clips, staples. Includes materials and shipping only. | Feet | $0.21 | 5280 | $1,108.80 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 382 - Fence

**Scenario** #2 - Barbed Wire, Multi-strand with Fence Markers

**Scenario Description:**

Multi-strand, Barbed Wire - Installation of fence will allow for implementation of a grazing management plan that allows for an adequate rest and recovery period, protection of sensitive areas, improved water quality, and reduction of noxious and invasive weeds. Constructed using fencing materials rather than a pre-manufactured gate. The fence is typically 4 strands with wildlife markers, over 3/4 of a mile (3,960 ft).

**Before Situation:**

On grazing lands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases the opportunity for the encroachment of noxious and invasive weeds.

**After Situation:**

Installation of interior fencing will allow for implementation of a grazing management plan that allows for an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, etc. Four strand wire is commonly installed. Fence will be installed with wildlife friendly considerations. The after condition includes markers placed on the fence to protect and deter wildlife, primarily protected wildlife include Sage grouse, Lesser Prairie Chicken, etc.

**Feature Measure:** Length of Fence

**Scenario Unit:** Feet

**Scenario Typical Size:** 3,960.00

**Scenario Total Cost:** $11,380.68

**Scenario Cost/Unit:** $2.87

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 20 | $199.80 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 20 | $513.60 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 21 | $591.15 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 120 | $2,697.60 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 40 | $1,176.80 |
| **Materials** | | | | | | |
| Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll | 1 | Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only. | Each | $127.46 | 12 | $1,529.52 |
| Post, Wood, CCA treated, 4 in x 8 ft | 10 | Wood Post, Line 4 inch X 8 foot, CCA Treated. Includes materials and shipping only. | Each | $13.16 | 87 | $1,144.92 |
| Post, Wood, CCA treated, 5 in. x 8 ft. | 11 | Wood Post, End 5 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $18.56 | 10 | $185.60 |
| Post, Wood, CCA treated, 6 in. x 8 ft. | 12 | Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $24.11 | 10 | $241.10 |
| Post, Steel T, 1.33 lbs, 6 ft. | 15 | Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only. | Each | $7.39 | 160 | $1,182.40 |
| Fence, Wire Assembly, Barbed Wire | 30 | Brace pins, battens, clips, staples. Includes materials and shipping only. | Feet | $0.21 | 5280 | $1,108.80 |
| Vinyl Undersill Strips | 241 | Marking material using the undersill strips of vinyl siding. Priced per foot of fence per each wire. Materials only. | Feet | $0.08 | 7920 | $633.60 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 382 - Fence

**Scenario** #7 - Electric, high tensile with energizer

**Scenario Description:**

Electric - Installation of fence will allow for implementation of a grazing management plan that allows for an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Includes 3 strands of high tensile wire with energizer.

**Before Situation:**

On grazinglands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing, and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases opportunity for encroachment of noxious and invasive weeds.

**After Situation:**

Installation of interior fencing will allow for implementation of grazing management that allows for an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, fence charger, etc. Two to three strand wire is commonly installed. Fence will be installed with wildlife friendly considerations.

**Feature Measure:** Length of Fence

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,640.00

**Scenario Total Cost:** $3,351.08

**Scenario Cost/Unit:** $1.27

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 4 | $39.96 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 10 | $256.80 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 6 | $168.90 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 6 | $176.52 |
| **Materials** | | | | | | |
| Wire, High Tensile, 12.5 Gauge, 4,000' roll | 2 | High Tensile 12.5 gauge, 4,000' roll. Includes materials and shipping only. | Each | $167.24 | 2 | $334.48 |
| Post, Wood, CCA treated, 4 in x 8 ft | 10 | Wood Post, Line 4 inch X 8 foot, CCA Treated. Includes materials and shipping only. | Each | $13.16 | 4 | $52.64 |
| Post, Wood, CCA treated, 5 in. x 8 ft. | 11 | Wood Post, End 5 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $18.56 | 8 | $148.48 |
| Post, Steel T, 1.33 lbs, 6 ft. | 15 | Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only. | Each | $7.39 | 35 | $258.65 |
| Electric, Ground Rods | 20 | Electric, Ground Rod for electric fence. Includes materials and shipping only. | Each | $14.39 | 1 | $14.39 |
| Electric, Ground Rod Clamps | 21 | Electric, Ground Rod Clamps for electric fence. Includes materials and shipping only. | Each | $2.58 | 2 | $5.16 |
| Electric, Energizer, 6 joule | 29 | Electric, Energizer, 6 joule for electric fence. Includes materials and shipping only. | Each | $397.71 | 1 | $397.71 |
| Fence, Wire Assembly, High Tensile, Electric, 3 Strand | 34 | Brace pins, springs, strainers, battens, clips, crimp sleeves, staples, insulators, wrap around sleeves. Includes materials and shipping only. | Feet | $0.16 | 2640 | $422.40 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 382 - Fence

**Scenario** #8 - Electric, high tensile with energizer and fence markers

**Scenario Description:**

Electric - Installation of fence will allow for implementation of grazing management that allows for an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Includes 3 strands of high-tensile wire with energizer.

**Before Situation:**

On grazing lands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing, and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases opportunity for encroachment of noxious and invasive weeds.

**After Situation:**

Installation of interior fencing will allow for implementation of grazing management that allows for an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, fence charger, etc. Two to three strand wire is commonly installed. Fence will be installed with wildlife friendly considerations. The after condition includes markers placed on the fence to protect and deter wildlife, protected wildlife species include Sage grouse, Lesser Prairie Chicken, etc.

**Feature Measure:** Length of Fence

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,640.00

**Scenario Total Cost:** $3,818.44

**Scenario Cost/Unit:** $1.45

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 4 | $39.96 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 10 | $256.80 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 6 | $168.90 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 42 | $944.16 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 6 | $176.52 |
| **Materials** | | | | | | |
| Wire, High Tensile, 12.5 Gauge, 4,000' roll | 2 | High Tensile 12.5 gauge, 4,000' roll. Includes materials and shipping only. | Each | $167.24 | 2 | $334.48 |
| Post, Wood, CCA treated, 4 in x 8 ft | 10 | Wood Post, Line 4 inch X 8 foot, CCA Treated. Includes materials and shipping only. | Each | $13.16 | 4 | $52.64 |
| Post, Wood, CCA treated, 5 in. x 8 ft. | 11 | Wood Post, End 5 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $18.56 | 8 | $148.48 |
| Post, Steel T, 1.33 lbs, 6 ft. | 15 | Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only. | Each | $7.39 | 35 | $258.65 |
| Electric, Ground Rods | 20 | Electric, Ground Rod for electric fence. Includes materials and shipping only. | Each | $14.39 | 1 | $14.39 |
| Electric, Ground Rod Clamps | 21 | Electric, Ground Rod Clamps for electric fence. Includes materials and shipping only. | Each | $2.58 | 2 | $5.16 |
| Electric, Energizer, 6 joule | 29 | Electric, Energizer, 6 joule for electric fence. Includes materials and shipping only. | Each | $397.71 | 1 | $397.71 |
| Fence, Wire Assembly, High Tensile, Electric, 3 Strand | 34 | Brace pins, springs, strainers, battens, clips, crimp sleeves, staples, insulators, wrap around sleeves. Includes materials and shipping only. | Feet | $0.16 | 2640 | $422.40 |
| Vinyl Undersill Strips | 241 | Marking material using the undersill strips of vinyl siding. Priced per foot of fence per each wire. Materials only. | Feet | $0.08 | 5280 | $422.40 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 382 - Fence

**Scenario** #11 - Portable Fence

**Scenario Description:**

One or two strands of polywire and step-in fiberglass fence posts. Typically used as cross-fencing on the interior of larger paddocks built with permanent perimeter fencing. Installation of portable, temporary, fencing will allow for the implementation of a grazing management system that provides adequate rest and recovery periods, improved water quality, reduction of noxious and invasive weeds, and better management of soil health. Portable fencing allows for more flexibility than standard fencing; this allows the manager to apply adaptive management (managing the grazing based on current conditions rather than a predetermined grazing system).

**Before Situation:**

Grazing lands health and vigor are negatively impacted by poor grazing distribution, timing of grazing, and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases opportunity for encroachment of noxious and invasive weeds.

**After Situation:**

Installation of portable fencing will allow for implementation of a grazing management plan that provides for an adequate rest and recovery periods, improved water quality, reduction of noxious and invasive weeds, and better management of soil health. Portable fencing includes step-in fiberglass posts, polywire, an energizer, and grounding rods. One strand of polywire is common, but sometimes two strands are appropriate, depending on class of livestock and other considerations.

**Feature Measure:** Length of Fence

**Scenario Unit:** Feet

**Scenario Typical Size:** 5,280.00

**Scenario Total Cost:** $1,484.41

**Scenario Cost/Unit:** $0.28

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 5 | $96.40 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 4 | $234.16 |
| Electric, Ground Rods | 20 | Electric, Ground Rod for electric fence. Includes materials and shipping only. | Each | $14.39 | 2 | $28.78 |
| Electric, Ground Rod Clamps | 21 | Electric, Ground Rod Clamps for electric fence. Includes materials and shipping only. | Each | $2.58 | 4 | $10.32 |
| Electric, Energizer, 6 joule | 29 | Electric, Energizer, 6 joule for electric fence. Includes materials and shipping only. | Each | $397.71 | 1 | $397.71 |
| Post, Step-In, Plastic | 2574 | UV-stabilized plastic treadins with up to 9 lugs for positioning Polywire and Poly Tape up to 1 1/2 inches wide, 42 inches high (including stake) to control domestic and wild animals. | Each | $3.34 | 132 | $440.88 |

**Practice:** 382 - Fence

**Scenario** #74 - Refabrication of existing fence for multispecies diversity

**Scenario Description:**

Multi-strand, Barbed Wire, Woven Wire - Installation of additional strands to fence will allow for implementation of a grazing management plan including multispecies animals that allows for an adequate rest and recovery period, protection of sensitive area, improved water quality, reduction of noxious and invasive weeds. Constructed using fencing materials rather than a pre-manufactured gate. The fence is typically 4 strands over a mile (5,280 ft).

**Before Situation:**

On grazing lands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, because of over grazing/improper distribution, increases the opportunity for the encroachment of noxious and invasive weeds.

**After Situation:**

Installation of additional strands to interior fencing will allow for implementation of a grazing management plan for a multi specie grazing system that allows adequate rest and recovery periods, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds by supporting diverse specie grazing application. Each grazing specie targets different types of forages and when managed properly, will improve plant diversity and vigor. Fence includes posts, wire, fasteners, gates, etc. Four strand wire is commonly installed. Fence will be installed with wildlife friendly considerations.

**Feature Measure:** 5280

**Scenario Unit:** Feet

**Scenario Typical Size:** 5,280.00

**Scenario Total Cost:** $5,537.89

**Scenario Cost/Unit:** $1.05

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 10 | $99.90 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 10 | $256.80 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 60 | $1,348.80 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 20 | $588.40 |
| **Materials** | | | | | | |
| Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll | 1 | Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only. | Each | $127.46 | 6 | $764.76 |
| Post, Wood, CCA treated, 4 in x 8 ft | 10 | Wood Post, Line 4 inch X 8 foot, CCA Treated. Includes materials and shipping only. | Each | $13.16 | 43 | $565.88 |
| Post, Wood, CCA treated, 5 in. x 8 ft. | 11 | Wood Post, End 5 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $18.56 | 5 | $92.80 |
| Post, Wood, CCA treated, 6 in. x 8 ft. | 12 | Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $24.11 | 5 | $120.55 |
| Post, Steel T, 1.33 lbs, 6 ft. | 15 | Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only. | Each | $7.39 | 80 | $591.20 |
| Fence, Wire Assembly, Barbed Wire | 30 | Brace pins, battens, clips, staples. Includes materials and shipping only. | Feet | $0.21 | 5280 | $1,108.80 |

**Practice:** 383 - Fuel Break

**Scenario** #1 - Fuel Break

**Scenario Description:**

Fuel Break installation requires tree thinning, treating woody residue, pruning, and mowing. Thinning treatment and pruning is done by hand, treating woody residue (piling/burning, crushing, or off-site removal) and mowing are mechanized. Resource concerns are degraded plant condition - wildfire hazard, excess biomass accumulation & undesirable productivity and health.

**Before Situation:**

Forest stand is overstocked with desirable and undesirable trees. Overstocking creates conditions conducive to wildfire movement across the landscape, and severe loss/damage of the forest stand. Shrub levels are high and significanly increase wildfire risk. Tree crowns are touching, trees retain limbs down to understory vegetation creating a "ladder" for fire movement into the overstory, and understory vegetation (brush and grasses) create a significant fuel load to rate a high to severe fire hazard. The terrain is moderately to steeply sloped (1-30%), increasing difficulty as slope steepens.

**After Situation:**

Fuel Break is installed at the property line or a key locations to reduce crown fire spread. Size of fuel break is 4 acres; the width varies due to site conditions. The trees are thinned so open gaps are created in crown overstory, branches on remaining trees are pruned to 8 to 10 feet in height, all woody residue (thinned trees and pruned branches) are treated (piled/burned or lopped/scattered) so little remains in the fuel break and understory vegetation is mowed down to less than 1 foot in height. Cut stumps have been chemically treated to control sprouting.

**Feature Measure:** Area of Treatment

**Scenario Unit:** Acres

**Scenario Typical Size:** 4.00

**Scenario Total Cost:** $6,783.15

**Scenario Cost/Unit:** $1,695.79

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 10 | $1,049.10 |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 80 | $553.60 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 8 | $205.44 |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 8 | $254.56 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 8 | $547.20 |
| Pruning tools, hand tools | 1318 | Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included. | Hours | $2.35 | 8 | $18.80 |
| Pruning tool, pole saw | 1319 | Gasoline powered pole chainsaw. Labor not included. | Hours | $9.68 | 8 | $77.44 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 80 | $1,798.40 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 8 | $235.36 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 10 | $351.30 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 20 | $956.20 |
| **Materials** | | | | | | |
| Tree Marking Paint | 313 | Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only. | Acres | $10.43 | 4 | $41.72 |
| Herbicide, Triclopyor | 338 | Refer to WIN-PST for product names and active ingredients. Materials and shipping | Acres | $39.22 | 4 | $156.88 |
| **Mobilization** | | | | | | |
| Mobilization, Material, distance > 50 miles | 1043 | Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price. | Dollars | $1.00 | 100 | $100.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 383 - Fuel Break

**Scenario** #6 - Non Forested Fuel Break

**Scenario Description:**

A non forest fuel break occurs outside of forestlands where brush, grass and forbs dominate. Landuses where this scenario will be applied may be range, pasture or wetlands. The fuel break area is mowed/bushhog so standing vegetation is reduced to a low height. Resource concerns are degraded plant condition - wildfire hazard.

**Before Situation:**

Wildfire movement is a concern within the designated area. Vegetation is tall, dense and continuous creating conditions conducive for fire movement across the landscape.

**After Situation:**

A fuel break is installed by shredding/mowing/bushhogging a defined width at property lines, around structures, at roadways, or other key locations to reduce continuity of vegetation cover. Width of fuel break varies based on site conditions.

**Feature Measure:** Area of Treatment

**Scenario Unit:** Acres

**Scenario Typical Size:** 4.00

**Scenario Total Cost:** $1,240.83

**Scenario Cost/Unit:** $310.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 8 | $254.56 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 8 | $235.36 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 384 - Woody Residue Treatment

**Scenario** #13 - Chipping and hauling off-site

**Scenario Description:**

Reducing woody waste created during forestry, agroforestry activities by gathering, chipping, and hauling off site to achieve management objectives. Does not include transport from property to a commercial facility. Resource concerns include potential Emissions of particulate matter, potential Excessive plant pest pressure, and Wildfire hazard from excessive biomass accumulation .

**Before Situation:**

Woody residue causes management issues including resource access, fire hazard and sites for harboring pests.

**After Situation:**

Fire and pest issues are reduced. Air and energy resources are conserved.

**Feature Measure:** Acres treated

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $5,618.85

**Scenario Cost/Unit:** $280.94

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 20 | $138.40 |
| Brush Chipper, 6 in. capacity | 938 | Brush Chipper, 6 inch capacity, typically 35 HP. Includes chipper and power unit. Labor not included. | Hours | $33.85 | 20 | $677.00 |
| Log skidder | 942 | Equipment and power unit costs. Labor not included. | Hours | $58.41 | 10 | $584.10 |
| Truck, dump, 8 CY | 1401 | Dump truck for moving bulk material. Typically capacity is 12 ton or 8 cubic yards. Includes equipment only. | Hours | $55.89 | 20 | $1,117.80 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 60 | $1,765.20 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 384 - Woody Residue Treatment

**Scenario** #16 - Forest Slash Treatment - Med/Heavy

**Scenario Description:**

Treating an area of significant woody plant residues to reduce hazardous fuels and the risk of insect and disease, improve organic matter, decrease unwanted habitat, and reduce erosion while improving water quality. Slash is to be lopped/treated/crushed within a foot of the ground or moved off site to meet state fire hazard reduction standards. Typically heavy equipment are used such as masticators, mulchers, drum choppers, etc. Hand work with chainsaws are used on steep slopes. Resource concerns include potential Emission of particulate matter, Wildfire hazard from excessive biomass accumulation, Excessive plant pest pressure, and Habitat degradation.

**Before Situation:**

Heavy woody material (difficult to walk through) resulting from silvicultural/management operations caused both fire hazard, access, potential harm to humans and animals, and pest issues.

**After Situation:**

Fire, access, and pest issues are reduced with slash spread out and in contact with the ground. An additional benefit is reduced soil movement.

**Feature Measure:** Acres treated

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $10,397.16

**Scenario Cost/Unit:** $259.93

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 40 | $276.80 |
| Heavy mechanical site prep, drum chopping | 1316 | Mechanical operations that pushing trees and vegetation and crushing them with a water filled roller chopper. Requires heavy equipment such as dozers. Includes equipment, power unit and labor costs. | Acres | $182.10 | 40 | $7,284.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 40 | $1,176.80 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 386 - Field Border

**Scenario** #31 - Field Border, Native Species, Forgone Income

**Scenario Description:**

A strip of permanent vegetation established at the edge or around the perimeter of an agricultural field. Practice includes seedbed prep and planting of native species. The area of the field border is taken out of production.

**Before Situation:**

Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

**After Situation:**

The 386 Implementation Requirements have been developed and applied for the site. This practice when applied around a field may support and connect other buffer practices within and between fields. Native grasses, legumes and forbs will be established in the field borders to the extent needed to meet the resource needs and producer objectives. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Native species shall be selected that do not function as a host for diseases of a field crop and have physical characteristics necessary to control wind and water erosion to tolerable levels on the field border area.

**Feature Measure:** number of acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $458.29

**Scenario Cost/Unit:** $458.29

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 3 | $39.63 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.5 | $146.73 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.5 | $122.93 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Low Density | 2750 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $126.91 | 1 | $126.91 |

**Practice:** 386 - Field Border

**Scenario** #32 - Field Border, Introduced Species, Forgone Income

**Scenario Description:**

A strip of permanent vegetation established at the edge or around the perimeter of an agricultural field. Practice includes seedbed prep and planting of introduced species. The area of the field border is taken out of production.

**Before Situation:**

Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

**After Situation:**

The 386 Implementation Requirements have been developed and applied for the site. This practice when applied around a field may support and connect other buffer practices within and between fields. Introduced grasses and legumes will be established for the field border to the extent needed to meet the resource needs and producer objectives. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Introduced species of grasses, legumes, forbs or shrubs shall be selected that are adapted to site, will not function as a host for diseases of a field crop and have physical characteristics necessary to control wind and water erosion to tolerable levels on the field border area.

**Feature Measure:** Number of acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $392.01

**Scenario Cost/Unit:** $392.01

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.5 | $146.73 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.5 | $122.93 |
| **Materials** | | | | | | |
| Nitrogen (N), Urea | 71 | Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.94 | 30 | $28.20 |
| Phosphorus, P2O5 | 73 | Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.67 | 20 | $13.40 |
| Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2747 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $45.45 | 1 | $45.45 |

**Practice:** 386 - Field Border

**Scenario** #33 - Field Border, Pollinator, Forgone Income

**Scenario Description:**

A strip of permanent vegetation established at the edge or around the perimeter of an agricultural field. Practice includes seedbed prep and planting of pollinator friendly herbaceous species. The area of the field border is taken out of production.

**Before Situation:**

Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

**After Situation:**

The 386 Implementation Requirements have been developed and applied for the site. This practice when applied around a field may support and connect other buffer practices within and between fields. Pollinator herbaceous plantings will provide species which flower throughout the growing season. This provides a source of nectar for adult pollinators and a diversity of herbaceous material for immature pollinator life stages and for nesting. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Species selected shall meet the pollinator habitat requirements of the state and be adapted to site; not function as a host for diseases of a field crop and; have physical characteristics necessary to control wind and water erosion to tolerable levels on the field border area.

**Feature Measure:** Number of acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $774.25

**Scenario Cost/Unit:** $774.25

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 3 | $39.63 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.5 | $146.73 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.5 | $122.93 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability | 2619 | Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping. | Acres | $442.87 | 1 | $442.87 |

**Practice:** 386 - Field Border

**Scenario** #81 - Small Scale Field Border

**Scenario Description:**
A strip of permanent vegetation established at the edge or around the perimeter of an agricultural field. Practice includes seedbed prep and planting of introduced plant species.

**Before Situation:**
Before practice conditions may vary based on farm size and location. Fields may have erosion by wind or water. Site provides little wildlife food or cover or pollinator habitat. Site soil organic matter is depleting. Particulate matter as dust is generated by field activity.

**After Situation:**
The 386 Implementation Requirements have been developed and applied for the site. Field border widths are based on NRCS local design criteria specific to the purpose for installing the practices. Species selected shall be adapted to site and not host disease or pests of the adjacent field crop. Species have physical characteristics necessary to control wind and water erosion to tolerable levels on the field border area.

**Feature Measure:** planted area

**Scenario Unit:** 1,000 Square Foot

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $134.81

**Scenario Cost/Unit:** $67.41

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 0.05 | $0.66 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 0.05 | $1.10 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 5 | $112.40 |
| **Materials** | | | | | | |
| Nitrogen (N), Urea | 71 | Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.94 | 10 | $9.40 |
| Phosphorus, P2O5 | 73 | Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.67 | 10 | $6.70 |
| Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2747 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $45.45 | 0.1 | $4.55 |

**Practice:** 390 - Riparian Herbaceous Cover

**Scenario** #2 - Native Species with foregone income

**Scenario Description:**

Native Species: This scenario addresses inadequate herbaceous plant community function or diversity within the specific transitional zone between terrestrial and aquatic habitats in rangeland, pasture, cropland, and forest where natural seeding methods and/or management is unlikely to improve the plant community within a reasonable time period. This scenario applies to work not covered under NRCS Conservation Practice Range Planting (550), Forage and Biomass Planting (512), Critical Area Planting (342), Filter Strip (393), Restoration and Management of Rare and Declining Habitats (643), Streambank and Shoreline Protection ( 580), Vegetated Treatment Area (635), Wetland Enhancement ( 659), or Wetland Restoration (657). The typical setting for this scenario is a narrow strip between the aquatic and terrestrial habitats, subject to intermittant flooding and saturated soils, where the exising plant community has been disturbed, destroyed, or the species diversity is unable to provide proper function and/or adequate habitat. Where the establishment of a diverse riparian herbaceous plant community is desired, an adapted mix of native grasses, legumes, and/or forbs tolerant to the site conditions will be planted, by broadcast and/or no-till or range drill seeding methods as necessary, to accomplish the intended purpose(s). Where chemical control of undesirable vegetation, including invasives, is required to reduce competition for the desired plant community, the Herbaceous Weed Control (315) practice should be used. Seedbed preparation may require LIGHT TILLAGE (disking). WHEN POLLINATOR HABITAT IS A CONSIDERATION: Include 5-10 adapted forb species that bloom sequentially throughout the growing season where feasible. All grazing will be deferred during plant establishment which will consist of a minimum of one year, and in many cases longer. Typically there is no haying, and the only clipping during establishment will be for removal of weeds.

**Before Situation:**

The riparian zone, the specific area between terrestrial and aquatic habitats, is currently an undesirable or inadequate stand of perennial or annual vegetation and natural reseeding or vegetation management is unlikely to improve the plant community within a reasonable amount of time to adequately address streambank and/or shoreline stability, dissipate stream energy and trap sediment, improve and/or maintain water quality, and/or provide adequate habitat corridors, food and/or cover for fish, wildlife, pollinators, and/or livestock resource concern(s). Existing conditions often require suppression or eradication of current vegetation by conventional mechanical or chemical (Herbaceous Weed Control (315)) methods to ensure establishment success of the new planting. Soil quality may be reduced due to compaction and may require light tillage to prepare a proper seedbed.

**After Situation:**

The riparian zone, the transitional zone between the terrestrial and aquatic habitats, is established to an adapted, diverse vegetative plant community and is under close management to ensure long term survival and ecological succession. The quality and quantity of the riparian zone components are managed to support the species that depend on it for habitat as well as the functions it performs for stabilizing the streambank and/or shoreline, dissipating stream energy and trapping sediment, and improving and/or maintaining water quality. These functions include: stream temperature moderation through shading, recruitment of non-woody organic matter, habitat for terrestrial insects and other riparian dependent species, streambank integrity, and filtration of contaminants from surface run-off into the stream. All grazing will be deferred during plant establishment which will consist of a minimum of one year, and in many cases longer. Typically there is no haying, and the only clipping during establishment will be for removal of weeds.

**Feature Measure:** Acres of Riparian Herbaceous Cove

**Scenario Unit:** Acres

**Scenario Typical Size:** 5.00

**Scenario Total Cost:** $1,012.46

**Scenario Cost/Unit:** $202.49

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 5 | $66.05 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 5 | $110.45 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 5 | $156.45 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Low Density | 2750 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $126.91 | 5 | $634.55 |

**Practice:** 390 - Riparian Herbaceous Cover

**Scenario** #4 - Native Species, Pollinator Planting, Forgone Income

**Scenario Description:**

Native Species: This scenario addresses inadequate herbaceous plant community function or diversity within the specific transitional zone between terrestrial and aquatic habitats in rangeland, pasture, cropland, and forest where natural seeding methods and/or management is unlikely to improve the plant community within a reasonable time period. This scenario applies to work not covered under NRCS Conservation Practice Range Planting (550), Forage and Biomass Planting (512), Critical Area Planting (342), Filter Strip (393), Restoration and Management of Rare and Declining Habitats (643), Streambank and Shoreline Protection ( 580), Vegetated Treatment Area (635), Wetland Enhancement ( 659), or Wetland Restoration (657). The typical setting for this scenario is usually a narrow strip between the aquatic and terrestrial habitats subject to intermittant flooding and saturated soils where the exising plant community has been disturbed, destroyed, or the species diversity is unable to provide proper function and/or adequate habitat. Where the establishment of a diverse riparian herbaceous plant community is desired, an adapted mix of native grasses, legumes, and/or forbs tolerant to the site conditions will be planted by broadcast and/or no-till or range drill seeding methods as necessary to accomplish the intended purpose(s). Where chemical control of undesirable vegetation, including invasives, is required to reduce competition for the desired plant community, the Herbaceous Weed Control (315) practice should be used. Seedbed preparation may require LIGHT TILLAGE (disking). WHEN POLLINATOR HABITAT IS A CONSIDERATION: Include 5-10 adapted forb species that bloom sequentially throughout the growing season where feasible. All grazing will be deferred during plant establishment which will consist of a minimum of one year, and in many cases longer. Typically there is no haying, and the only clipping during establishment will be for removal of weeds.

**Before Situation:**

The riparian zone, the specific area between terrestrial and aquatic habitats, is currently an undesirable or inadequate stand of perennial or annual vegetation and natural reseeding or vegetation management is unlikely to improve the plant community within a reasonable amount of time to adequately address streambank and/or shoreline stability, dissipate stream energy and trap sediment, improve and/or maintain water quality, and/or provide adequate habitat corridors, food and/or cover for fish, wildlife, pollinators, and/or livestock resource concern(s). Existing conditions often require suppression or eradication of current vegetation by conventional mechanical or chemical (Herbaceous Weed Control (315)) methods to ensure establishment success of the new planting. Soil quality may be reduced due to compaction and may require light tillage to prepare a proper seedbed.

**After Situation:**

The riparian zone, the transitional zone between the terrestrial and aquatic habitats, is established to an adapted, diverse vegetative plant community and is under close management to ensure long term survival and ecological succession. The quality and quantity of the riparian zone components are managed to support the species that depend on it for habitat as well as the functions it performs for stabilizing the streambank and/or shoreline, dissipating stream energy and trapping sediment, and improving and/or maintaining water quality. These functions include: stream temperature moderation through shading, recruitment of non-woody organic matter, habitat for terrestrial insects and other riparian dependent species, streambank integrity, and filtration of contaminants from surface run-off into the stream. All grazing will be deferred during plant establishment which will consist of a minimum of one year, and in many cases longer. Typically there is no haying, and the only clipping during establishment will be for removal of weeds.

**Feature Measure:** Acres of Riparian Herbaceous Cove

**Scenario Unit:** Acres

**Scenario Typical Size:** 5.00

**Scenario Total Cost:** $1,263.65

**Scenario Cost/Unit:** $252.73

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 5 | $66.05 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 5 | $110.45 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 5 | $156.45 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability | 2619 | Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping. | Acres | $442.87 | 2 | $885.74 |

**Practice:** 391 - Riparian Forest Buffer

**Scenario** #16 - Cuttings

**Scenario Description:**

Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and associated benefits. The buffer will be located adjacent to and up-gradient from a watercourse or water body extending a minimum of 35 feet wide. The planting will consist of tree and/or shrub poles and live stakes (whips) planted by hand. Materials will be from a nearby, off-site location. The ratio of whips to poles will be 5:1. The cuttings will be planted in a mosaic pattern while still dormant. Tree mesh will be placed on the large cuttings. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

**Before Situation:**

Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for wildlife.

**After Situation:**

A buffer of trees and shrubs will be established along the riparian corridor which will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns.

**Feature Measure:** Area of planting

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,985.79

**Scenario Cost/Unit:** $4,985.79

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 10 | $99.90 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 10 | $256.80 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 10 | $192.80 |
| Tractor, agricultural, 30 HP | 1501 | Agricultural tractor with horsepower range of less than 50. Equipment and power unit costs. Labor not included. | Hours | $9.31 | 10 | $93.10 |
| Trailer, flatbed, small | 1505 | Small flatbed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $10.48 | 10 | $104.80 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 10 | $128.10 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 70 | $1,573.60 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 10 | $294.20 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Tree & Shrub, Woody, Cuttings, Medium | 1308 | Woody cuttings, live stakes or whips typically 1/4 to 1 inch diameter and 24 to 48 inches long. Includes materials and shipping only. | Each | $1.67 | 250 | $417.50 |
| Tree & Shrub, Woody, Cuttings, Large | 1309 | Woody pole cuttings or posts 2 to 6 inches in diameter and 6 ft. long. Includes materials and shipping only. | Each | $12.18 | 50 | $609.00 |
| Tree shelter, mesh tree tube, 48 in. | 1556 | 48 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only. | Each | $1.26 | 50 | $63.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 391 - Riparian Forest Buffer

**Scenario** #17 - Bare-root, hand planted

**Scenario Description:**

Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and associated benefits. The buffer will be located adjacent to and up-gradient from a watercourse or water body extending a minimum of 35 feet wide. The planting will consist of hand planted bare-root shrubs, evergreen, and deciduous trees. One third of the area will be planted to each woody plant type. Planting for shrubs will be done at 6' x 6' spacing, evergreen tree spacing will be 12' x 15' and deciduous tree spacing at 15' x 15'. Tree shelters will be placed on the hardwoods and evergreens. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

**Before Situation:**

Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for wildlife.

**After Situation:**

A buffer of trees and shrubs will be established along the riparian corridor which will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns.

**Feature Measure:** Area of planting

**Scenario Unit:** Acres

**Scenario Typical Size:** 3.00

**Scenario Total Cost:** $9,014.24

**Scenario Cost/Unit:** $3,004.75

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 16 | $410.88 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 16 | $308.48 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 16 | $218.72 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 16 | $204.96 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 112 | $2,517.76 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 16 | $764.96 |
| **Materials** | | | | | | |
| Shrub, Seedling, Medium | 1507 | Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.69 | 1210 | $2,044.90 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 194 | $368.60 |
| Tree, Conifer, Seedling, Small | 1512 | Containerized conifer seedlings, 4 or 6 cubic inches; or bare root conifer seedlings 1+0 (one-year old seedlings grown in their original seedbed). Includes materials and shipping only. | Each | $0.79 | 242 | $191.18 |
| Tree shelter, solid tube type, 4 in. x 36 in | 1565 | 4 inch x 36 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $3.54 | 436 | $1,543.44 |
| Stakes, wood, 1 in. x 1 in. x 36 in. | 1577 | 1 in. x 1 in. x 36 in. wood stakes to fasten items in place. Includes materials only. | Each | $1.01 | 436 | $440.36 |

**Practice:** 391 - Riparian Forest Buffer

**Scenario** #18 - Bare-root, machine planted

**Scenario Description:**

Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and associated benefits. The buffer will be located adjacent to and up-gradient from a watercourse or water body extending a minimum of 35 feet wide. The planting will consist of machine planted bare-root shrubs, evergreen, and deciduous trees. One third of the area will be planted to each woody plant type. Planting for shrubs will be done at 6' x 6' spacing, evergreen tree spacing will be 12' x 15' and deciduous tree spacing at 15' x 15'. Tree shelters will be placed on the hardwoods and evergreens. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

**Before Situation:**

Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for wildlife.

**After Situation:**

A buffer of trees and shrubs will be established along the riparian corridor which will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns.

**Feature Measure:** Area of planting

**Scenario Unit:** Acres

**Scenario Typical Size:** 3.00

**Scenario Total Cost:** $6,174.00

**Scenario Cost/Unit:** $2,058.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 8 | $225.20 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 8 | $154.24 |
| Mechanical tree planter | 1600 | Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor. | Hours | $6.09 | 8 | $48.72 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 24 | $539.52 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 8 | $235.36 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Shrub, Seedling, Medium | 1507 | Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.69 | 1210 | $2,044.90 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 194 | $368.60 |
| Tree, Conifer, Seedling, Small | 1512 | Containerized conifer seedlings, 4 or 6 cubic inches; or bare root conifer seedlings 1+0 (one-year old seedlings grown in their original seedbed). Includes materials and shipping only. | Each | $0.79 | 242 | $191.18 |
| Tree shelter, solid tube type, 4 in. x 36 in | 1565 | 4 inch x 36 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $3.54 | 436 | $1,543.44 |
| Stakes, wood, 1 in. x 1 in. x 36 in. | 1577 | 1 in. x 1 in. x 36 in. wood stakes to fasten items in place. Includes materials only. | Each | $1.01 | 436 | $440.36 |

**Practice:** 391 - Riparian Forest Buffer

**Scenario** #21 - Large container, hand planted

**Scenario Description:**

Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and provide conservation benefits. The buffer will be located adjacent to a watercourse or waterbody and designed with dimensions and plant spacings that fully implement the practice. The planting will consist of hand-planted large shrubs, evergreen, and deciduous trees. Tree shelters will be placed on all trees and shrubs. Resource concerns include: Plant productivity and health, Plant structure and composition, Sediment transported to surface water, Nutrients transported to surface water, Elevated water temperature, Pesticides transported to surface water, Pathogens and chemicals from manure, biosolids, or compost applications transported to surface water, Bank erosion from streams, shorelines, or water conveyance channels, Terrestrial habitat for wildlife and invertebrates, Aquatic habitat for fish and other organisms.

**Before Situation:**

Typical settings include degraded or converted riparian forests, and nonforest conditions with undesirable amounts or types of vegetation. Active bank erosion is contributing sediment, nutrients, pesticides, pathogens, chemicals, or organics into surface waters. Water temperature is elevated due to lack of shade. Habitat is not desirable for fish, wildlife or invertebrates.

**After Situation:**

A riparian buffer of trees and shrubs has been restored and is functioning properly to provide stability, filtration, shade, and desirable habitat to address identified resource concerns.

**Feature Measure:** Area of planting

**Scenario Unit:** Acres

**Scenario Typical Size:** 3.00

**Scenario Total Cost:** $9,055.00

**Scenario Cost/Unit:** $3,018.33

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 8 | $205.44 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 12 | $231.36 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 35 | $478.45 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 70 | $896.70 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 70 | $1,573.60 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 35 | $1,673.35 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Shrub, Potted, Medium | 1527 | Potted shrub seedling, 2 gallons or larger. Includes materials and shipping only. | Each | $12.84 | 100 | $1,284.00 |
| Tree, Hardwood, Potted, Medium | 1532 | Potted hardwood seedling, 2 gallons or larger. Includes materials and shipping only. | Each | $14.29 | 50 | $714.50 |
| Tree, Conifer, Potted, Medium | 1537 | Potted conifer seedling, 2 gallons or larger. Includes materials and shipping only. | Each | $12.97 | 50 | $648.50 |
| Tree shelter, mesh tree tube, 48 in. | 1556 | 48 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only. | Each | $1.26 | 50 | $63.00 |
| Tree shelter, solid tube type, 4 in. x 24 in. | 1563 | 4 inch x 24 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $2.49 | 100 | $249.00 |
| Tree shelter, solid tube type, 4 in. x 60 in. | 1567 | 4 inch x 60 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $5.64 | 50 | $282.00 |
| Cable ties, plastic | 1575 | Plastic cable ties (typ. 8-12 in.) to assist in securing items. Materials only. | Each | $0.07 | 400 | $28.00 |
| Stakes, wood, 3/4 in. x 3/4 in. x 60 in. | 1583 | 3/4 in. x 3/4 in. x 60 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.44 | 200 | $488.00 |

**Practice:** 393 - Filter Strip

**Scenario** #25 - Filter Strip, Native species, Forgone Income

**Scenario Description:**

A strip or area of herbaceous vegetation that removes contaminants from overland flow. Practice includes seedbed prep and planting of native species. The area of the filter strip is taken out of production.

**Before Situation:**

Annual cropland, grazing land, or disturbed land (including forestland) allows for runoff of suspended solids, dissolved and/or associated contaminants into environmentally-sensitive areas such as wetlands, riparian zones, critical habitat and neighboring non-ag properties. Water Quality resource concerns are associated with this practice.

**After Situation:**

The 393 Implementation Requirements are developed for the site and applied. The planned filter strip will be established and maintained per the practice plan that will meet the criteria for the planned purpose(s). The vegetation will consist of native species. The filter strip will have adequate width to filter the planned pollutants. The practice includes seedbed preparation, seeding, and seed. Species selected shall be able to withstand partial burial by sediment and tolerant of herbicides used on the contribution area while protecting environmentally-sensitive areas. The area of the filter strip is taken out of production.

**Feature Measure:** number of acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $541.60

**Scenario Cost/Unit:** $541.60

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 3 | $39.63 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 1.5 | $28.92 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.5 | $146.73 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.5 | $122.93 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Medium Density | 2751 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Includes material and shipping. | Acres | $181.30 | 1 | $181.30 |

**Practice:** 393 - Filter Strip

**Scenario** #26 - Filter Strip, Introduced species, Forgone Income

**Scenario Description:**

A strip or area of herbaceous vegetation that removes contaminants from overland flow. Practice includes seedbed prep and planting of introduced species. The area of the filter strip is taken out of production.

**Before Situation:**

Annual cropland, grazing land, or disturbed land (including forestland) allows for runoff of suspended solids, dissolved and/or associated contaminants into environmentally-sensitive areas such as wetlands, riparian zones, critical habitat and neighboring non-ag properties. Water Quality resource concerns are associated with this practice.

**After Situation:**

The 393 Implementation Requirements are developed for the site and applied. The planned filter strip will be established and maintained per the practice plan that will meet the criteria for the planned purpose(s). The vegetation will consist of introduced species. The filter strip will have adequate width to filter the planned pollutants. The practice includes seedbed preparation, seeding, and seed. Species selected shall be able to withstand partial burial by sediment and tolerant of herbicides used on contribution area while protecting environmentally-sensitive areas. The area of the filter strip is taken out of production.

**Feature Measure:** Number of acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $493.85

**Scenario Cost/Unit:** $493.85

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 3 | $39.63 |
| Fertilizer, ground application, dry bulk | 950 | Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $7.54 | 1 | $7.54 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 1.5 | $28.92 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.5 | $146.73 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.5 | $122.93 |
| **Materials** | | | | | | |
| Nitrogen (N), Urea | 71 | Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.94 | 30 | $28.20 |
| Phosphorus, P2O5 | 73 | Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.67 | 20 | $13.40 |
| Introduced Perennial Grasses, Legumes and/or Forbs, High Density | 2749 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at high density (greater than 60 pure live seeds/sq ft). Includes material and shipping. | Acres | $84.41 | 1 | $84.41 |

**Practice:** 394 - Firebreak

**Scenario** #2 - Mowing

**Scenario Description:**

Installation of a short vegetative firebreak a minimum width of 30' around a 40 acre field/farm using a bush-hog mower. Generally water control devices such as water bars are not needed due either to the lack of steep terrain or the temporary nature of the firebreak. Resource concerns include Wildfire hazard from excessive biomass accumulation, Undesirable plant productivity and health, Inadequate plant structure and composition, and Habitat degradation.

**Before Situation:**

Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn.

**After Situation:**

The property is adequately protected from wildfire or can be safely prescribe burned.

**Feature Measure:** Length of firebreak

**Scenario Unit:** 100 Foot

**Scenario Typical Size:** 53.00

**Scenario Total Cost:** $162.90

**Scenario Cost/Unit:** $3.07

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 3 | $95.46 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 3 | $67.44 |

**Practice:** 394 - Firebreak

**Scenario** #6 - Constructed, tree clearing

**Scenario Description:**

Installation of a short vegetative firebreak a minimum width of 50' on the upwind side of unit and 100' on the downwind side of unit around an entire 160 acre field/farm using mechanical trees shears, chainsaws, and bush hog mowers. Vegetation is reduced in height but not down to bare mineral soil. Generally water control devices such as water bars are not needed due either to the lack of steep terrain or the temporary nature of the firebreak. Typical slopes are between 5 and 45%. Resource concerns include Wildfire hazard from excessive biomass accumulation, Undesirable plant productivity and health, Inadequate plant structure and composition, and Habitat degradation.

**Before Situation:**

Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn.

**After Situation:**

The property is adequately protected from wildfire or can be safely prescribe burned.

**Feature Measure:** Length of firebreak

**Scenario Unit:** Feet

**Scenario Typical Size:** 10,560.00

**Scenario Total Cost:** $9,330.40

**Scenario Cost/Unit:** $0.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 20 | $1,202.40 |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 20 | $138.40 |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 10 | $318.20 |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 40 | $4,288.40 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 24 | $539.52 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 70 | $2,059.40 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 3 | $784.08 |

**Practice:** 394 - Firebreak

**Scenario** #15 - Constructed - Wide, bladed or disked firebreak

**Scenario Description:**

Installing a bare-ground firebreak with a width of 30' or more on gently to strongly sloping slopes with equipment such as a dozer with a heavy disk. Using smaller equipment, erosion control devices such as water bars will be installed at approximately 15 to 25 per 1,000 feet of firebreak length. Devices will have stable outlets. Resource concerns include Wildfire hazard from excessive biomass accumulation, Undesirable plant productivity and health, Inadequate plant structure and composition, Habitat degradation, Soil erosion, and Excessive sediment in surface waters.

**Before Situation:**

Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn. Wide firebreaks are needed due to topography, high wildfire risk or to their use as down-wind breaks for prescribed burns. Conditions such as topography, the presence of brush and trees, etc. make the use of typical farm equipment impractical. As slopes increase, the potential for excessive erosion increases from soil disturbances. Therefore the installation of water control devices such as water bars will be important in protecting the resource base.

**After Situation:**

The property is adequately protected from wildfire or can be safely prescribe burned and the potential for excessive erosion from the firebreak is minimized.

**Feature Measure:** Length of firebreak

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $4,179.48

**Scenario Cost/Unit:** $4.18

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 8 | $611.04 |
| Fire Plow | 1306 | Heavy wildland plow or disk used for installing firebreaks. Equipment costs only for plow, use with a dozer component. Labor not included. | Hours | $37.97 | 4 | $151.88 |
| Water Bars | 1500 | Installation of graded trail water controlling structures such as water bars, broad based dips for erosion control. Typical cross section is 1.5 feet high with 4:1 side slopes yielding about 0.33 CY/ft of length. | Feet | $3.12 | 800 | $2,496.00 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 12 | $421.56 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #1 - Embankment, No PS

**Scenario Description:**

An earthen embankment dam without a principal spillway pipe. A low flow tube of 6 inches or less to reduce saturation of the auxiliary spillway is installed, anti-seep collars or sand diaphragms are not required. To stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a typical amount of earthfill of 2,000 cubic yards, and 80 feet of pipe 6" PVC pipe. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Pumping Plant (533), Watering Facility (614), and Livestock Pipeline (516) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Cubic Yards of Earthfill

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 2,000.00

**Scenario Total Cost:** $10,296.75

**Scenario Cost/Unit:** $5.15

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 2000 | $7,860.00 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 5 | $650.10 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 260 | $221.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 5 | $152.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 1 | $22.48 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 5 | $175.65 |
| **Materials** | | | | | | |
| Pipe, PVC, 6 in., SDR 26 | 990 | Materials: - 6 inch - PVC - SDR 26 160 psi - ASTM D2241 | Feet | $8.66 | 80 | $692.80 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #2 - Embankment, Pipe <24 inch

**Scenario Description:**

An earthen embankment dam with a principle spillway pipe less than 24 inches, anti-seep collars or sand diaphragm, and excavated plunge pool basin. Installed to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a typical amount of earthfill of 4000 cubic yards, 90 feet of 18" PVC, pipe with a canopy inlet, and 3 cubic yard sand diaphragm. A non-lined plunge pool protects the outlet channel. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Pumping Plant (533), Watering Facility (614), and Livestock Pipeline (516) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Cubic Yards of Earthfill

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 4,000.00

**Scenario Total Cost:** $27,634.16

**Scenario Cost/Unit:** $6.91

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 4000 | $15,720.00 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 29 | $173.42 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 10 | $1,300.20 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 18 | $547.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 9 | $202.32 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 10 | $351.30 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 22 | $2,956.80 |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 11 | $204.60 |
| Pipe, PVC, 18 in., SCH 40 | 1373 | Materials: - 18 inch - PVC - SCH 40 - ASTM D1785 | Feet | $62.84 | 90 | $5,655.60 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #3 - Embankment, Pipe >=24 inch

**Scenario Description:**

An earthen embankment dam with a principle spillway pipe equal to or greater than 24 inches. Installed to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a typical amount of earthfill of 10,000 cubic yards,corrugated metal drop inlet principle spillway with a 11 ft riser and 100 ft barrel, and 82 Square feet of anti-seep collars. A rock lined plunge pool protects the outlet channel. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Pumping Plant (533), Watering Facility (614), and Livestock Pipeline (516) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Cubic Yards of Earthfill

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 10,000.00

**Scenario Total Cost:** $55,825.82

**Scenario Cost/Unit:** $5.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 1 | $242.13 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 2 | $1,223.54 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 10000 | $39,300.00 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 129 | $771.42 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 13 | $1,690.26 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 36 | $1,094.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 18 | $404.64 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 13 | $456.69 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 46 | $6,182.40 |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 11 | $204.60 |
| Dimension Lumber, Treated | 1044 | Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners | Board Feet | $2.17 | 30 | $65.10 |
| Pipe, CMP, 24 in., 12 Gauge | 1417 | 24 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $31.92 | 100 | $3,192.00 |
| Pipe, CMP, 30 in., 12 Gauge | 1824 | 30 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $39.66 | 12 | $475.92 |
| **Mobilization** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #4 - Pipe Drop, Plastic - NP Reg 1

**Scenario Description:**

A pipe drop (ie: riser and barrel) grade stabilization structure designed and constructed using plastic pipe without anti-seep collars. This is typically an earthen dry dam structure with no permanent storage (water or sediment), however some structures may have some permanent pool / storage but do not have 35 years of sediment life. Payment rate is based upon the riser weir length (Diameter x 3.14) in feet times the length of the pipe barrel in (feet). Installed to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a 2000 CY structure with a 6 ft high 24" (2') PVC riser with a 40 ft long barrel (2' x 3.14 x 40' = 251 SF). Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (356), Grassed Waterway (412), Structure for Water Control (587), and Irrigation Canal or Lateral (320) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Riser Weir Length x Barrel Length

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 251.00

**Scenario Total Cost:** $17,607.43

**Scenario Cost/Unit:** $70.15

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 1 | $611.77 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 2000 | $7,860.00 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 20 | $119.60 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 2 | $260.04 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 9 | $202.32 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 2 | $70.26 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 7 | $130.20 |
| Pipe, PVC, 18 in., SCH 40 | 1373 | Materials: - 18 inch - PVC - SCH 40 - ASTM D1785 | Feet | $62.84 | 40 | $2,513.60 |
| Coupling, PVC, Tee, 24x18, SCH 40 | 1374 | Materials: - Tee, 24 x 18 inch - PVC - SCH 40 - ASTM D1785 | Each | $4,700.60 | 1 | $4,700.60 |
| Pipe, PVC, 24 in., SCH 40 | 2046 | Materials: - 24 inch - PVC - SCH 40 - ASTM D1785 | Feet | $102.72 | 6 | $616.32 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #5 - Pipe Drop, CMP

**Scenario Description:**

A pipe drop (ie: riser and barrel) grade stabilization structure designed and constructed with a metal anti-seep collar. This is typically a earthen dry dam structure with no permanent storage (water or sediment), however some structures may have some permanent pool / storage but do not have 35 years of sediment life. Payment rate is based upon the riser weir length (Diameter x 3.14) in feet times the length of the pipe barrel in (feet). Installed to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a corrugated metal pipe drop structure with a 30", 12' tall riser and a 100' long 24" barrel (Riser Weir length x Barrel Length = 2.5ft x 3.14 x 100ft = 785). Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (356), Grassed Waterway (412), Structure for Water Control (587), and Irrigation Canal or Lateral (320) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Riser Weir Length x Barrel Length

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 785.00

**Scenario Total Cost:** $17,420.98

**Scenario Cost/Unit:** $22.19

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 1 | $242.13 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 2 | $1,223.54 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 1500 | $5,895.00 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 129 | $771.42 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 13 | $1,690.26 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 42 | $1,276.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 59 | $1,326.32 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 13 | $456.69 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 11 | $204.60 |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 1 | $19.08 |
| Pipe, CMP, 24 in., 12 Gauge | 1417 | 24 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $31.92 | 100 | $3,192.00 |
| Lumber, planks, posts and timbers, treated | 1609 | Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor. | Board Feet | $4.15 | 30 | $124.50 |
| Pipe, CMP, 30 in., 12 Gauge | 1824 | 30 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $39.66 | 12 | $475.92 |

**Mobilization**

| | | | | | | |
|---|---|---|---|---|---|---|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #6 - Concrete Box Drop

**Scenario Description:**

A Straight, semicircular, or Box Drop structure composed of reinforced concrete used to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a wall structure with a drop of 4 ft and weir length of 6 ft wide and is 6 ft deep with 3 ft above the crest. The unit of payment measurement is defined as cubic yards of concrete. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (356), Grassed Waterway (412), Structure for Water Control (587), Subsurface Drain (606), and Underground Outlet (620) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Cubic Yards of Concrete

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 11.00

**Scenario Total Cost:** $12,440.32

**Scenario Cost/Unit:** $1,130.94

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 11 | $6,729.47 |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | $1.30 | 46 | $59.80 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 800 | $3,144.00 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 5 | $650.10 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 12 | $364.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 6 | $134.88 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 5 | $175.65 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 7.5 | $139.50 |
| Rock Riprap, graded, angular, material and shipping | 1200 | Graded Rock Riprap for all gradation ranges. Includes materials and local delivery within 20 miles of quarry. Placement costs are not included. | Ton | $37.10 | 14 | $519.40 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #7 - Sheet Pile Weir Drop

**Scenario Description:**

A Straight structure composed of sheet pile metal used to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a structure with a crest of 30 ft. The unit of payment measurement is defined as the area of sheet piling in square feet. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (356), Grassed Waterway (412), Structure for Water Control (587), Subsurface Drain (606), and Underground Outlet (620) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Area of Sheet piling

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 350.00

**Scenario Total Cost:** $22,775.50

**Scenario Cost/Unit:** $65.07

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 500 | $1,200.00 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 1500 | $5,895.00 |
| Sheet piling, steel, 15 ft. | 1337 | Steel sheet pile, panels or barrier driven up to 15 feet and left in place. Includes materials, equipment and labor. | Square Feet | $30.43 | 350 | $10,650.50 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 30 | $4,032.00 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #8 - Gabion Rock Drop Structures

**Scenario Description:**

A Straight Drop structure constructed of rock riprap held in place by galvanized wire, such as, gabion baskets, fence panels, or "sausage" baskets. These structures are used to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a gabion wall structure with a drop of 3ft and weir length of 18ft (54 square feet). The unit of payment measurement is defined as volume of rock used in the gabion basket or mat. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (356), Grassed Waterway (412), Structure for Water Control (587), Subsurface Drain (606), and Underground Outlet (620) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Volume of Gabion Rock

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 72.00

**Scenario Total Cost:** $14,076.90

**Scenario Cost/Unit:** $195.51

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | $1.30 | 60 | $78.00 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 100 | $240.00 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 250 | $982.50 |
| **Materials** | | | | | | |
| Gabion basket or mat | 1378 | Gabion baskets or mats installed and filled on grade, includes materials, transport, equipment, and labor, does not include geotextile fabric. | Cubic Yards | $170.19 | 72 | $12,253.68 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #10 - Modular Concrete Block Drop

**Scenario Description:**

A drop structure constructed of precast modular blocks, typically 2'x2'x4, 2.5'x2.5'x5', or 2'x2'x6'. These structures are used to stabilize the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a concrete block structure with a drop of 5 feet and a weir width of 12 feet with a stepped slope of 2:1 (H:V), for a total of 67 modular blocks. The unit of payment measurement is defined as the volume of concrete blocks in cubic yards. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (356), Grassed Waterway (412), Structure for Water Control (587), Subsurface Drain (606), and Underground Outlet (620) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Volume of Blocks

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 60.00

**Scenario Total Cost:** $14,013.70

**Scenario Cost/Unit:** $233.56

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 210 | $504.00 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 430 | $1,689.90 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 12 | $1,560.24 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 28 | $629.44 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 4 | $74.40 |
| Geotextile, non-woven, heavy weight | 1210 | Non-woven greater than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only. | Square Yard | $1.11 | 40 | $44.40 |
| Block, pre-cast concrete, modular | 1496 | Pre-cast concrete blocks, typically 2ft x 2ft x 6ft , includes installation and delivery. | Cubic Yards | $149.81 | 60 | $8,988.60 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #11 - Rock Chute

**Scenario Description:**

A trapezoidal structure constructed of rock riprap with a geotextile base. These structures are used to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a rock chute with a vertical drop of 6.5 feet and a width of 12'. The unit of payment measurement is defined as the volume of rock used in the chute in cubic yards. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (356), Grassed Waterway (412), Structure for Water Control (587), Subsurface Drain (606), and Underground Outlet (620) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Volume of Rock

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 144.00

**Scenario Total Cost:** $19,779.92

**Scenario Cost/Unit:** $137.36

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 50 | $120.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 144 | $19,353.60 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #12 - Tied Concrete Block Mat

**Scenario Description:**

A drop structure placed in a water course constructed of concrete blocks joined by cable or other means to form a flexible mat. These structures are used to stabilize the grade and control erosion in natural or artificial channels, prevent the formation/advancement of gullies, and enhance water quality and reduce pollution hazards. These are generally applied in areas where the concentration and flow velocity of water require structures to stabilize the grade, and vegetation alone will not protect the structure from erosion. The typical structure is 16' wide and removes 5' of grade in the channel with a 4:1 outlet slope. The unit of payment is the area of matting installed and includes inlet and outlet transition areas and side slopes. All associated earthwork and materials are included in the cost. Required re-vegetation of disturbed areas will use Critical Area Planting (342) or other appropriate seeding practices. Resource concerns addressed: gully erosion, concentrated flow erosion, degraded water quality due to suspended solids.

**Before Situation:**

The operator currently has gullies forming and/or advancing into crop or pasture land which negatively impacts the land use and downstream water quality. Erosion from the gullies results in soil loss and allows soil and nutrients to be transported to downstream receiving waters, degrading water quality.

**After Situation:**

The advancement of and/or formation of gullies is stopped, and soil from gullies no longer leaves the field. Land use is restored or maintained and sedimentation and other pollution hazards are decreased, and downstream water quality is protected. Other associated practices include: Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (366), Grassed waterway (412), Structure for Water Control (587), Subsurface Drain (606), and Underground Outlet (620).

**Feature Measure:** Square Feet of Mat.

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 1,350.00

**Scenario Total Cost:** $15,571.69

**Scenario Cost/Unit:** $11.53

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 4 | $520.08 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 3 | $67.44 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 4 | $140.52 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| **Materials** | | | | | | |
| Pipe, HDPE, 6 in., CPT, Single Wall | 1242 | Pipe, Corrugated Plastic Tubing, Single Wall, 6 inch diameter - ASTM F405. Material cost only. | Feet | $1.64 | 100 | $164.00 |
| Articulated precast concrete block | 1906 | Articulated precast concrete blocks with a typical thickness of 4.5 to 6 inches. Includes materials and shipping. | Square Feet | $10.79 | 1350 | $14,566.50 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 0.25 | $65.34 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #29 - Rehab Embankment Pond, With Principal Spillway

**Scenario Description:**

A previously built earthen embankment dam witha principal spillway pipe that is greater than 24" in diameter. Previously installed structure had embankment and pipe failure, and is in need of new pipe installation and embankment repair. Cost estimate is based upon shaping side slopes, replacing pipe and riser, and replacing with a typical amount of earthfill of 4250 cubic yards. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the structure and impacting the downstream water quality. Also presents a safety hazard of potential dam failure. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Pumping Plant (533), Watering Facility (614), and Livestock Pipeline (516) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Diameter Inch Foot of Barrel

**Scenario Unit:** Diameter Inch Foot

**Scenario Typical Size:** 2,400.00

**Scenario Total Cost:** $33,163.22

**Scenario Cost/Unit:** $13.82

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 1 | $242.13 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 2 | $1,223.54 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 4250 | $16,702.50 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 129 | $771.42 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 13 | $1,690.26 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 36 | $1,094.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 18 | $404.64 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 13 | $456.69 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 46 | $6,182.40 |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 11 | $204.60 |
| Pipe, CMP, 24 in., 12 Gauge | 1417 | 24 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $31.92 | 100 | $3,192.00 |
| Pipe, CMP, 30 in., 12 Gauge | 1824 | 30 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $39.66 | 12 | $475.92 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 410 - Grade Stabilization Structure

**Scenario** #32 - Drop Structure, Metal

**Scenario Description:**

A Straight, semicircular, or Box Drop structure composed of metal and used to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a semicircular steel toe wall structure with a drop of 3ft and total weir length of 30 ft (13.4 feet in diameter with 4.5 foot sidewall extensions) and 11.3 foot long by 5.4 foot high headwalls. The unit of payment measurement is defined as the area of metal used to construct the headwalls and semicircular weir. Example: 30*3 (weir length * drop) + 2*(11.3*5.4) (two headwalls) = 212.04 (round to nearest foot). Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

**After Situation:**

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (356), Grassed Waterway (412), Structure for Water Control (587), Subsurface Drain (606), and Underground Outlet (620) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Total Area of Metal Walls and Weir

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 212.00

**Scenario Total Cost:** $13,622.92

**Scenario Cost/Unit:** $64.26

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 9 | $5,505.93 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 75 | $294.75 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 8 | $1,040.16 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 10 | $304.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 30 | $674.40 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 8 | $281.04 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 3 | $57.24 |
| Rock Riprap, graded, angular, material and shipping | 1200 | Graded Rock Riprap for all gradation ranges. Includes materials and local delivery within 20 miles of quarry. Placement costs are not included. | Ton | $37.10 | 11 | $408.10 |
| Corrugated Steel, 12 Gauge, galvanized | 1376 | Corrugated Steel, 12 gauge, 3 inch by 1 inch corrugations, galvanized, meets ASTM A 929. Materials only. | Square Feet | $21.28 | 212 | $4,511.36 |
| Pipe, CMP, 12 in., 14 Gauge | 1377 | 12 inch - Corrugated Steel Pipe. Galvanized, uncoated, 14 Gauge. Materials only. | Feet | $11.61 | 2 | $23.22 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 412 - Grassed Waterway

**Scenario** #1 - Waterway, less than 25 ft2

**Scenario Description:**

Typical practice is 1500 ' long, 12' bottom, 8:1 side slopes, 1.1' depth. A grass waterway that is a shaped or graded channel and is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. Waterway area measured from top of bank to top of bank. Seeding will be completed under the Critical Area Planting (342) Practice Standard with seeding area up to 20% greater than waterway area to account for buffer area along the waterway. Costs include excavation and associated work to construct the overall shape and grade of the waterway. This scenario would apply to Grassed Waterways with a design cross sectional area less than 25 square feet per lineal foot of waterway.

**Before Situation:**

The field has a small gulley which is cutting deeper into the field as time goes on, so it needs to be stopped or controlled. Excessive sedimentation and soil erosion as a result from ephemeral or classic gully erosion. Gully has formed in field as a result of excessive runoff and/or poor cropping techniques. Grassed waterway is also commonly installed to covey runoff from concentrated flows, terrarces, diversions, or water control structures or similar practices to a suitable, stable outlet.

**After Situation:**

Installed grassed waterway is 1500 ' long, 12' bottom, 8:1 side slopes, 1.1' depth. The practice is installed using a dozer and/or scraper, with final grading with motor grader. Use Critical Area Planting (342) for establishment of waterway vegetation. If erosion control blankets or mulching for seedbed establishment/protection are needed, use conservation practice Mulching (484). Drainage tile, if needed, will be installed accoring to Subsurface Drain (606). Outlets, if needed will be installed using Structure for Water Control (587). If inlet Structures are needed with the drainage tile, then those will be installed using Underground Outlet (620).

**Feature Measure:** Acre of Waterway

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,182.84

**Scenario Cost/Unit:** $4,182.84

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 411 | $349.35 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 954 | $3,434.40 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 412 - Grassed Waterway

**Scenario** #2 - Waterway, 25 to 50 ft2

**Scenario Description:**

Typical practice is 1500 ' long, 12' bottom, 8:1 side slopes, 1.5' depth. A grass waterway that is a shaped or graded channel and is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. Waterway area measured from top of bank to top of bank. Seeding will be completed under the Critical Area Planting (342) Practice Standard with seeding area up to 20% greater than waterway area to account for buffer area along the waterway. Costs include excavation and associated work to construct the overall shape and grade of the waterway. This scenario would apply to Grassed Waterways with a design cross sectional area greater than 25 square feet up to 50 square feet per lineal foot of waterway.

**Before Situation:**

The field has a small gulley which is cutting deeper into the field as time goes on, so it needs to be stopped or controlled. Excessive sedimentation and soil erosion as a result from ephemeral or classic gully erosion. Gully has formed in field as a result of excessive runoff and/or poor cropping techniques. Grassed waterway is also commonly installed to covey runoff from concentrated flows, terrarces, diversions, or water control structures or similar practices to a suitable, stable outlet.

**After Situation:**

Installed grassed waterway is 1500 ' long, 12' bottom, 8:1 side slopes, 1.5' depth. The practice is installed using a dozer and/or scraper, with final grading with motor grader. Use Critical Area Planting (342) for establishment of waterway vegetation. If erosion control blankets or mulching for seedbed establishment/protection are needed, use conservation practice Mulching (484). Drainage tile, if needed, will be installed accoring to Subsurface Drain (606). Outlets, if needed will be installed using Structure for Water Control (587). If inlet Structures are needed with the drainage tile, then those will be installed using Underground Outlet (620).

**Feature Measure:** Acre of Waterway

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,361.82

**Scenario Cost/Unit:** $6,361.82

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 500 | $425.00 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 1500 | $5,400.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 412 - Grassed Waterway

**Scenario** #3 - Waterway, 50 to 100 ft2

**Scenario Description:**

Typical practice is 2000 ' long, 40' bottom, 6:1 side slopes, 1.6' depth. A grass waterway that is a shaped or graded channel and is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. Waterway area measured from top of bank to top of bank. Seeding will be completed under the Critical Area Planting (342) Practice Standard with seeding area up to 20% greater than waterway area to account for buffer area along the waterway. Costs include excavation and associated work to construct the overall shape and grade of the waterway. This scenario would apply to Grassed Waterways with a design cross sectional area from 51 square feet up to 100 square feet per lineal foot of waterway.

**Before Situation:**

The field has a small gulley which is cutting deeper into the field as time goes on, so it needs to be stopped or controlled. Excessive sedimentation and soil erosion as a result from ephemeral or classic gully erosion. Gully has formed in field as a result of excessive runoff and/or poor cropping techniques. Grassed waterway is also commonly installed to covey runoff from concentrated flows, terrarces, diversions, or water control structures or similar practices to a suitable, stable outlet.

**After Situation:**

Installed grassed waterway is 2000 ' long, 40' bottom, 6:1 side slopes, 1.8' depth. The practice is installed using a dozer and/or scraper, with final grading with motor grader. Use Critical Area Planting (342) for establishment of waterway vegetation. If erosion control blankets or mulching for seedbed establishment/protection are needed, use conservation practice Mulching (484). Drainage tile, if needed, will be installed accoring to Subsurface Drain (606). Outlets, if needed will be installed using Structure for Water Control (587). If inlet Structures are needed with the drainage tile, then those will be installed using Underground Outlet (620).

**Feature Measure:** Acre of Waterway

**Scenario Unit:** Acres

**Scenario Typical Size:** 3.00

**Scenario Total Cost:** $17,871.08

**Scenario Cost/Unit:** $5,957.03

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 1096 | $931.60 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 4411 | $15,879.60 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 12 | $573.72 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 412 - Grassed Waterway

**Scenario** #5 - Waterway with Side Dikes or Checks

**Scenario Description:**

Typical practice is 2000 ' long, 40' bottom, 6:1 side slopes, 1.6' depth. A grass waterway that is a shaped or graded channel and is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. Fabric or stone checks are installed every 100 feet along the length of the waterway perpendicular to waterflow and are 2/3 the waterway top width to reduce maintenance and provide temporary protection until vegetation is established. Fabric Checks are installed 18" deep with 12" laid over on the surface. (Alternatively, rock checks or side dikes could be installed). This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. Waterway area measured from top of bank to top of bank. Seeding will be completed under the Critical Area Planting (342) Practice Standard with seeding area up to 20% greater than waterway area to account for buffer area along the waterway. Costs include excavation and associated work to construct the overall shape and grade of the waterway.

**Before Situation:**

The field has a small gulley which is cutting deeper into the field as time goes on, so it needs to be stopped or controlled. Excessive sedimentation and soil erosion as a result from ephemeral or classic gully erosion. Gully has formed in field as a result of excessive runoff and poor cropping techniques. Grassed waterway is also commonly installed to covey runoff from concentrated flows, terrarces, diversions, or water control structures or similar practices to a suitable, stable outlet.

**After Situation:**

Installed grassed waterway is 2000 ' long, 40' bottom, 6:1 side slopes, 1.8' depth. Fabric checks are installed every 100 feet along the length of the waterway. The practice is installed using a dozer and/or scraper, with final grading with motor grader. Fabric or stone checks are installed with small backhoe and labor. Use Critical Area Planting (342) for establishment of waterway vegetation. If erosion control blankets or mulching for seedbed establishment/protection are needed, use conservation practice Mulching (484). Drainage tile, if needed, will be installed accoring to Subsurface Drain (606). Outlets, if needed will be installed using Structure for Water Control (587). If inlet Structures are needed with the drainage tile, then those will be installed using Underground Outlet (620).

**Feature Measure:** Acre of Waterway

**Scenario Unit:** Acres

**Scenario Typical Size:** 3.00

**Scenario Total Cost:** $18,621.05

**Scenario Cost/Unit:** $6,207.02

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 32 | $76.80 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 27 | $161.46 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 1096 | $931.60 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 4411 | $15,879.60 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 12 | $573.72 |
| **Materials** | | | | | | |
| Geotextile, non-woven, light weight | 1209 | Non-woven less than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only. | Square Yard | $2.11 | 125 | $263.75 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 412 - Grassed Waterway

**Scenario** #15 - Waterway, Crop Season Construction

**Scenario Description:**

Typical practice is 1500 ' long, 12' bottom, 8:1 side slopes, 1.5' depth. A grass waterway that is a shaped or graded channel and is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. Waterway area measured from top of bank to top of bank. Seeding will be completed under the Critical Area Planting (342) Practice Standard with seeding area up to 20% greater than waterway area to account for buffer area along the waterway. Costs include excavation, associated work to construct the overall shape and grade of the waterway, and foregone income for the loss of crop income due to construction of the practice during the growing season.

**Before Situation:**

The field has a small gulley which is cutting deeper into the field as time goes on, so it needs to be stopped or controlled. Excessive sedimentation and soil erosion as a result from ephemeral or classic gully erosion. Gully has formed in field as a result of excessive runoff and/or poor cropping techniques. Grassed waterway is also commonly installed to covey runoff from concentrated flows, terrarces, diversions, or water control structures or similar practices to a suitable, stable outlet.

**After Situation:**

Installed grassed waterway is 1500 ' long, 12' bottom, 8:1 side slopes, 1.5' depth. The practice is installed using a dozer and/or scraper, with final grading with motor grader. Use Critical Area Planting (342) for establishment of waterway vegetation. If erosion control blankets or mulching for seedbed establishment/protection are needed, use conservation practice Mulching (484). Drainage tile, if needed, will be installed accoring to Subsurface Drain (606). Outlets, if needed will be installed using Structure for Water Control (587). If inlet Structures are needed with the drainage tile, then those will be installed using Underground Outlet (620).

**Feature Measure:** Acre of Waterway

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,696.19

**Scenario Cost/Unit:** $6,696.19

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 500 | $425.00 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 1500 | $5,400.00 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.62 | $181.94 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.62 | $152.43 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 430 - Irrigation Pipeline

**Scenario** #1 - PVC, by the pound

**Scenario Description:**

Description: Below ground installation of PVC pipeline. Typical practice sizes range from 6-inch to 12-inch. Construct 1,300 feet of 6-inch, pressure rating 80 psi (SDR 51), PVC plastic irrigation pipe (PIP) with appurtenances, installed below ground with a minimum of 2.5 feet of ground cover. The unit is weight of pipe in pounds. 1,300 feet of 6-inch, SDR 51 PVC PIP weighs 1.49 lb/ft, or a total of 1,937 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, dog-legs (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. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant

**Before Situation:**

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

**After Situation:**

Pipeline installed to convey and/or distribute water to irrigation systems, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

**Feature Measure:** Weight of pipe

**Scenario Unit:** Pound

**Scenario Typical Size:** 1,937.00

**Scenario Total Cost:** $9,756.54

**Scenario Cost/Unit:** $5.04

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 1 | $242.13 |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 1300 | $1,859.00 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 8 | $205.44 |
| Portable Welder | 1407 | Portable field welder. Equipment only. Labor not included. | Hours | $21.01 | 8 | $168.08 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| **Materials** | | | | | | |
| Pipe, PVC, dia. < 18 in., weight priced | 1323 | Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials only. | Pound | $2.64 | 1937 | $5,113.68 |
| Pipe, steel, smooth wall, galvanized, weight priced | 1381 | Steel manufactured into galvanized smooth wall pipe | Pound | $2.50 | 220 | $550.00 |
| Valve, Alfalfa valve with riser, PVC, 8 in. | 2127 | Alfalfa valve assembly including, 8 inch diameter metal alfalfa valve, PVC tee, 36 inch PVC riser for connection to a pipeline. Materials only. | Each | $492.61 | 1 | $492.61 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 430 - Irrigation Pipeline

**Scenario** #30 - HDPE, by the pound

**Scenario Description:**

Description: Below ground installation of HDPE (Iron Pipe Size & Tubing) pipeline. HDPE (IPS & Tubing) is manufactured in sizes (nominal diameter) from ½-inch to 24-inch; typical practice sizes range from 2-inch to 24-inch; and typical scenario size is 6-inch. Construct 1/4 mile (1,320 feet) of 6-inch, Class 130 (SDR-13.5), HDPE pipeline with appurtenances, installed below ground with a minimum 2 feet of ground cover. The unit is weight of pipe material in pounds. 1,320 feet of 8-inch, Class 130 (SDR-13.5), HDPE weighs 4.024 lb/ft, or a total of 5,312 pounds. Appurtenances include: fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

**Before Situation:**

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

**After Situation:**

Pipeline installed to convey and/or distribute water to irrigation systems or reservoirs, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

**Feature Measure:** Weight of Pipe

**Scenario Unit:** Pound

**Scenario Typical Size:** 5,312.00

**Scenario Total Cost:** $24,296.24

**Scenario Cost/Unit:** $4.57

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 1320 | $1,887.60 |
| Fuser for HDPE Pipe | 1383 | Fusing machine for 1 to 12 inch diameter HDPE pipe joints. Equipment costs only. Does not include labor. | Hours | $24.79 | 16 | $396.64 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 32 | $719.36 |
| **Materials** | | | | | | |
| Pipe, HDPE, smooth wall, weight priced | 1379 | High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only. | Pound | $3.91 | 5312 | $20,769.92 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 430 - Irrigation Pipeline

**Scenario** #33 - PVC, by pound, boring

**Scenario Description:**

Below ground installation of PVC pipeline. Typical practice sizes range from 6-inch to 12-inch. Construct 1,300 feet of 6-inch, pressure rating 80 psi (SDR 51), PVC plastic irrigation pipe (PIP) with appurtenances, installed below ground with a minimum of 2.5 feet of ground cover. Includes boring 52 lineal feet under a heavily used road, such as a state or county highway which has an average of 12' wide lanes, 6' shoulder width, and 8' width sideslopes. The unit is weight of pipe in pounds. 1,300 feet of 6-inch, SDR 51 PVC PIP weighs 1.49 lb/ft, or a total of 1,937 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, dog-legs (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. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface &Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 -Pumping Plant

**Before Situation:**

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

**After Situation:**

Pipeline installed to convey and/or distribute water to irrigation systems, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

**Feature Measure:** weight of pipe

**Scenario Unit:** Pound

**Scenario Typical Size:** 1,937.00

**Scenario Total Cost:** $16,074.60

**Scenario Cost/Unit:** $8.30

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 1 | $242.13 |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 1250 | $1,787.50 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 8 | $205.44 |
| Horizontal Boring, Greater Than 3 in. diameter | 1132 | Includes equipment, labor and setup. | Feet | $117.85 | 52 | $6,128.20 |
| Portable Welder | 1407 | Portable field welder. Equipment only. Labor not included. | Hours | $21.01 | 8 | $168.08 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| **Materials** | | | | | | |
| Pipe, PVC, dia. < 18 in., weight priced | 1323 | Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials only. | Pound | $2.64 | 1937 | $5,113.68 |
| Pipe, steel, smooth wall, galvanized, weight priced | 1381 | Steel manufactured into galvanized smooth wall pipe | Pound | $2.50 | 220 | $550.00 |
| Valve, Alfalfa valve with riser, PVC, 8 in. | 2127 | Alfalfa valve assembly including, 8 inch diameter metal alfalfa valve, PVC tee, 36 inch PVC riser for connection to a pipeline. Materials only. | Each | $492.61 | 1 | $492.61 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 3 | $784.08 |

**Practice:** 430 - Irrigation Pipeline

**Scenario** #97 - PVC (Iron Pipe Size), less than or equal to 4 inch, Small Scale System

**Scenario Description:**

Below ground installation of PVC (Iron Pipe Size) pipeline. PVC (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36- inch; typical practice sizes range from 2-inch to 24-inch; and typical scenario size is 3-inch. Construct 260 feet of 3-inch, Class 125 (SDR-32.5), PVC pipeline with appurtenances, installed below ground with a minimum of 2 feet of ground cover. The unit is weight of pipe material in pounds. 260 feet of 3-inch, Class 125 (SDR-32.5) PVC pipe weighs 0.730 lb/ft, or a total of 189.8 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface &Subsurface; 447 - Irrigation and Drainage Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

**Before Situation:**

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

**After Situation:**

Pipeline installed to convey and/or distribute water to irrigation systems or reservoirs, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

**Feature Measure:** Length of Pipe

**Scenario Unit:** Linear Feet

**Scenario Typical Size:** 260.00

**Scenario Total Cost:** $1,580.58

**Scenario Cost/Unit:** $6.08

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 260 | $371.80 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 6 | $134.88 |
| **Materials** | | | | | | |
| Pipe, PVC, dia. < 18 in., weight priced | 1323 | Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials only. | Pound | $2.64 | 208.78 | $551.18 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 430 - Irrigation Pipeline

**Scenario** #99 - Surface HDPE (Iron Pipe Size and Tubing), less than or equal to 2 inch, Small Scale

**Scenario Description:**

On-ground surface installation of HDPE (Iron Pipe Size &Tubing) pipeline. HDPE (IPS &Tubing) is manufactured in sizes (nominal diameter) from ½-inch to 24-inch; and typical scenario size is 1-inch. Construct 260 feet of 1-inch, Class 130 (SDR 13.5), HDPE pipeline with appurtenances. The unit is weight of pipe material in pounds. 260 feet of 1-inch, Class 130 (SDR-13.5), HDPE weighs 0.16 lb/ft, or a total of 42 pounds. Appurtenances include: fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface &Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer

**Before Situation:**

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

**After Situation:**

Pipeline installed to convey and/or distribute water to irrigation systems or reservoirs, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

**Feature Measure:** Weight of Pipe

**Scenario Unit:** Pound

**Scenario Typical Size:** 42.00

**Scenario Total Cost:** $341.95

**Scenario Cost/Unit:** $8.14

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| **Materials** | | | | | | |
| Pipe, HDPE, smooth wall, weight priced | 1379 | High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only. | Pound | $3.91 | 46 | $179.86 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** 436 - Irrigation Reservoir

**Scenario** #1 - Embankment Dam

**Scenario Description:**

The reservoir, created by an embankment built across a natural depression, with an 18" diameter principal spillway outlet through the embankment, is controlled by a canal-style gate. Outlet structure is constructed with watertight plasatic pipe appropriate for this use, commonly PVC pipe. Outlet can also serve as overflow protection with a 12" diameter standpipe and tee to the 18" pipe. Any watershed runoff will be diverted around reservoir. It will be built with approximately 4,500 cubic yards of on-site material. It will be about 19.9 feet high and 200 feet long and hold approximately 1,000,000 gallons (3 acre-feet). The top of berm will be 10 feet wide and the embankment side slopes will be 2.5 H to 1 V up and down stream. Resource concern: Insufficient Water - Inefficient use of irrigation water. Associated practices include: 521 - Pond Sealing or Lining (various); 320 - Irrigation Canal or Lateral; 430 - Irrigation Pipeline; 428 - Irrigation Ditch Lining; 533 - Pumping Plant; 440 series - Irrigation Systems; 378 - Pond; 447 - Irrigation System, Tailwater Recovery; 484 - Mulching; and 342 - Critical Area Planting.

**Before Situation:**

Current system relies on an intermittent or low-flow rate water source. This results in untimely and/or inefficient water application. Divert water around - no spillway

**After Situation:**

This is an embankment, installed across a natural off-stream intermittent watercourse, used to store water for subsequent irrigation. It will be used to accumulate and store water for timely and efficient application of water through an irrigation system The water source could be a well, irrigation district pipeline, and/or a pump from a stream. It is designed to deliver water by gravity to an open ditch or non-pressurized pipeline, generally in excess of 5 cfs. All earthen materials will be from on-site sources.

**Feature Measure:** Volume of Compacted Eartfill

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 4,500.00

**Scenario Total Cost:** $24,066.29

**Scenario Cost/Unit:** $5.35

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 4500 | $17,685.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Pipe, HDPE, CPT, Double Wall, Soil Tight, 12 in. | 1244 | Pipe, Corrugated HDPE Double Wall, 12 inch diameter with soil tight joints - AASHTO M294. Material cost only. | Feet | $9.08 | 20 | $181.60 |
| Pipe, HDPE, CPT, Double Wall, Soil Tight, 18 in. | 1245 | Pipe, Corrugated HDPE Double Wall, 18 inch diameter with soil tight joints - AASHTO M294. Material cost only. | Feet | $16.46 | 136 | $2,238.56 |
| Screw gate, cast iron, 18 in. diameter, 10/0 head | 1917 | 18 inch diameter cast iron screw (canal) gate rated at 10 seating head 0 feet unseating head. Materials only. | Each | $1,428.93 | 1 | $1,428.93 |
| Coupling, HDPE CPT Dual Wall, Tee, 18 in. x 18 in. x 12 in. | 1921 | Tee, 18 inch x 18 inch x 12 inch - HDPE CPT Tee. Materials only. | Each | $530.68 | 1 | $530.68 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 436 - Irrigation Reservoir

**Scenario** #47 - Plastic tank, less than or equal to 1,000 gallons

**Scenario Description:**

A 1,000 Gallon, above-ground, High Density Polyethylene plastic enclosed tank, is installed on 6" of well-compacted drain rock or a 4" thick reinforced concrete support pad, to store water from a reliable source for irrigation of an area less than one acre. The scenario assumes the typical dimensions of the tank are 72" in diameter and 66" tall. The scenario also assumes a 96" diameter gravel base or concrete pad to extend a minimum of 12" past the base of tank for adequate foundation support. This cost estimate scenario is for cost of the tank and pad only and does not include estimate for pumps, pipe, or connecting fittings. Resource Concern: Insufficient Water - Inefficient use of irrigation water. Associated Practices: 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 533 - Pumping Plant; 447 - Irrigation System, Tailwater Recovery.

**Before Situation:**

Insufficient volume of water to complete an irrigation cycle at the required flow rate.

**After Situation:**

An above-ground plastic tank, constructed to withstand the elements, is used to accumulate and store water between irrigation cycles for a very small irrigation system. This allows for an improved flow rate and timing of water application. Sources of water could be a well, a domestic water system, a large roof area, a water ram , or a pump drawing water from a stream.

**Feature Measure:** Volume of Tank Storage

**Scenario Unit:** Gallons

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $4,137.21

**Scenario Cost/Unit:** $4.14

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 1 | $93.24 |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 6 | $360.72 |
| Plate compactor | 1915 | Manually guided vibratroy plate compactor. Equipment only. | Hours | $16.06 | 1 | $16.06 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 2 | $58.84 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 6 | $210.78 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 16 | $764.96 |
| **Materials** | | | | | | |
| Tank, Poly enclosed Storage, 300-1000 gal | 1074 | Water storage tanks. Includes materials and shipping only. | Gallons | $1.50 | 1000 | $1,500.00 |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $15.24 | 1 | $15.24 |
| Cable, Galvanized steel | 2182 | Galvanized steel aircraft cable in 7 x 19 strand core. Materials and shipping only. | Feet | $0.62 | 40 | $24.80 |
| Anchor, earthen, low disturbance, large | 2184 | Low disturbance, galvanized or aluminum alloy earthen anchors with holding power greather than 3,000 pounds in normal soil. Materials and shipping only. | Each | $51.19 | 4 | $204.76 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 441 - Irrigation System, Microirrigation

**Scenario** #2 - Surface PE, with emitters, trees and shrubs

**Scenario Description:**

A micro-irrigation system, utilizing surface PE tubing (can be placed on trellis or above ground) with emitters to provide irrigation for an orchard, vineyard, windbreak, or other specialty crop grown in a grid pattern. The typical system is a permanent system, installed on a 3 row 1000' windbreak on the ground surface (total of 3000' lf). The windbreak has a plant spacing of 8 feet between trees. This system utilizes emitters at each tree or plant as the water application device, amounting to 375 emitters for this system. This system typically includes a filter system, PE tubing, HDPE or PVC manifolds, emitters, etc. This practice applies to systems designed to discharge < 60 gal/hr at each individual lateral discharge point. Does not include Pump, Power source, Water source (well or reservoir). Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities. Associated Practices: 380-Windbreak/Shelterbelt Establishment, 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 433 - Irrigation Flow Measurement, 610 - Salinity & Sodic Soil Management, 434 - Soil Moisture Measurement, 328-Conservation Crop Rotation, and 590 Nutrient Management.

**Before Situation:**

A tree row has an insufficient available water source causing plant health (establishment and persistence) concerns.

**After Situation:**

A surface placed microirrigation system is utilized to provide highly efficient irrigation to a tree row to address plant health concerns.

**Feature Measure:** Number of trees or shrubs watered

**Scenario Unit:** Each

**Scenario Typical Size:** 375.00

**Scenario Total Cost:** $1,426.46

**Scenario Cost/Unit:** $3.80

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| **Materials** | | | | | | |
| Pipe, HDPE, smooth wall, weight priced | 1379 | High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only. | Pound | $3.91 | 33.6 | $131.38 |
| Micro Irrigation, surface drip tubing | 1488 | Tubing is installed above ground for surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tubing has emitters built in. | Feet | $0.34 | 3000 | $1,020.00 |
| Micro Irrigation, screen filter, < 100 gpm | 1617 | Screen filter for Micro Irrigation used in small systems. Includes filter. No controls are included or needed. | Each | $95.24 | 1 | $95.24 |

**Practice:** 441 - Irrigation System, Microirrigation

**Scenario** #75 - Small Microirrigation System

**Scenario Description:**

A small scale surface microirrigation system using drip tape or similar type micro-irrigation material placed on the soil surface to irrigate vegetables or field crops. Typically applied on a 40' by 40' plot, with 24" spaced rows, and emitters on a 12" spacing. Submains break plot into several smaller zones. System includes disk filter and chemical injection for chemigation. Water meter is not included. Natural Resource Concern(s): Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities. Associated Practices: 533 - Pumping Plant, 449 - Irrigation Water Management, 430 - Irrigation Pipeline, 436 - Irrigation Reservoir, 328 - Conservation Crop Rotation, and 590 - Nutrient Management.

**Before Situation:**

A field has an inefficient garden-hose based sprinkler irrigation system causing irrigation water loss that impacts water quality and water quantity.

**After Situation:**

A surface placed microirrigation system is utilized to provide highly efficient irrigation to a small plot. Water applications are reduced and runoff eliminated. Offsite water quality is improved, and on-site water use is reduced.

**Feature Measure:** Microirrigation area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 1,600.00

**Scenario Total Cost:** $1,620.50

**Scenario Cost/Unit:** $1.01

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 160 | $228.80 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 6 | $134.88 |
| **Materials** | | | | | | |
| Pipe, PVC, dia. < 18 in., weight priced | 1323 | Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials only. | Pound | $2.64 | 51 | $134.64 |
| Micro Irrigation, drip irrigation system, small scale | 2170 | An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only. | Square Feet | $0.08 | 1600 | $128.00 |
| Micro Irrigation, disk filter, manual flush | 2465 | Disk filter for Micro irrigation system. Includes filter, plumbing, and connections. Unit is complete and installed. Unit is each filter in a filter station that often includes 2 or more filters. | Each | $165.58 | 1 | $165.58 |
| Valve, Double Check Backflow Preventer | 2559 | Designed for installation on potable water lines to protect against both backsiphonage and backpressure of polluted water into the water supply. Includes materials and shipping only. | Each | $348.66 | 1 | $348.66 |
| Micro-irrigation, chemical injection equipment, small scale | 2788 | Chemical injection system includes complete 3/4 inch bypass and suction line kit, injector, appurtenances, backflow prevention, 2 gallon chemigation/fertigation tank. No pump needed. Materials and shipping only. | Each | $128.36 | 1 | $128.36 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** 441 - Irrigation System, Microirrigation

**Scenario** #88 - SDI (Subsurface Drip Irrigation)

**Scenario Description:**

A subsurface drip irrigation system (SDI) with a lateral spacing between 37-59 inches. This buried drip irrigation system utilizes a thinwall dripperline or tape with inline emitters at a uniform spacing for the system laterals. The dripperline or tape is normally installed by being plowed in approx 10-14 inches deep with a chisel shank type plow equipped with tape reels. This type of drip irrigation system utilizes a buried supply manifold with automated zone control valves and a buried flush manifold with manual flush valves. This permanent micro-irrigation system includes an automated filter station, flow meter, backflow prevention device, automated control box or timer, the thinwall dipperline or tape for laterals, both a supply and a flushing manifold and numerous types of water control valves. This is an all-inclusive system starting with the filter station including all required system components out to the flush valves. The water supply line from the water source to the filter station is an irrigation pipeline (430) and is not included as part of this system  Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities.  Associated Practices:  533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 433 - Irrigation Flow Measrement, 610 - Salinity & Sodic Soil Management, 434 - Soil Moisture Measurement, 328-Conservation Crop Rotation, and 590 Nutrient Management.

**Before Situation:**

Typical before irrigation situation would normally be an existing inefficient surface or sprinkler irrigation system on a cropland or hayland field. The existing irrigation system would experience poor, non-uniform irrigation applications and significant water losses affecting both water quantity and water quality

**After Situation:**

A typical practice would be the installation of a subsurface drip irrigation system (SDI) on a 60 acre cropland or hayland field. The system lateral (thinwall dripperline or tape) spacing would 40 inches. This highly efficient SDI (buried) irrigation system  provides irrigation water directly to the plant root zone eliminating application losses resulting in a very high water application efficiency and properly designed these SDI systems are capable of very uniform water applications. Typical field size is 60 acres.

**Feature Measure:** Acres in System

**Scenario Unit:** Acres

**Scenario Typical Size:** 60.00

**Scenario Total Cost:** $155,427.42

**Scenario Cost/Unit:** $2,590.46

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 6800 | $9,724.00 |
| Micro Irrigation, chemical injection equipment | 1987 | Chemical Injector Pump, plus chemigation check valve, injector ports, and appurtenances, Installation included. | Each | $1,893.41 | 1 | $1,893.41 |
| **Materials** | | | | | | |
| Pipe, PVC, dia. < 18 in., weight priced | 1323 | Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch.  Materials only. | Pound | $2.64 | 4800 | $12,672.00 |
| Micro Irrigation, Media Filter, 30 to 48 in. Dia. tank, Equipped for Automatic Flush | 1482 | Sand or media filter for Micro irrigation system. Includes plumbing, connections and automatic controller. Unit is complete and installed. Unit price per filter, not per filter station. | Each | $6,650.72 | 3 | $19,952.16 |
| Micro Irrigation, screen filter, => 100 gpm | 1484 | Screen filter for Micro irrigation system with 100 gpm or greater capacity. Includes plumbing, connections and automatic controller.?? Unit is complete and installed. Unit price per filter, not per filter station. | Each | $1,048.87 | 1 | $1,048.87 |
| Micro Irrigation, control valves and timers | 1485 | Automatic controller and timer, to turn on and off the sets for micro irrigation, installation and valves.  Based on control unit, not number of valves controlled. | Each | $427.50 | 1 | $427.50 |
| Micro Irrigation, buried drip tape | 2521 | Tape that is installed underground for sub-surface drip irrigation, includes installation, and connections to the supply and flushing laterals.?? Tape is a minimum of 10 mil thick thick and has emitters built in.  Includes labor and installtion. | Feet | $0.13 | 824108 | $107,134.04 |
| Water Meter, Microirrigation,  >2 in. and <= 8 in., with Volume Totalizer | 2523 | Microirrigation water meter greater than 2 inch and less than or equal to 8 inch diameter, with volume totalizer.  Includes materials only. | Each | $2,314.08 | 1 | $2,314.08 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 442 - Sprinkler System

**Scenario** #1 - Gravity to Pivot Conversion

**Scenario Description:**

Description: Installation of a low pressure center pivot system. Resource concerns include: Soil Erosion (Concentrated flow erosion e.g. irrigation induced), Insufficient Water (Inefficient use of irrigation water), Water Quality Degradation (Excess nutrients in surface and ground waters, Excessive salts in surface and ground waters, Excess pathogens and chemicals from manure, bio-solids or compost applications). Associated Practices: Irrigation Pipeline (430), Pumping Plant (533), Irrigation Water Management (449)

**Before Situation:**

A 160 acre field is flood irrigated. Application of irrigation water is inefficient and non-uniform. Irrigation water is typically over applied in some parts of the field, and under applied in others. Deep percolation from the excess irrigation delivers excess nutrients salts, and chemicals to the ground water. Runoff from the field contains excess nutrients and degrades the receiving waters. Irrigated induced erosion is excessive.

**After Situation:**

The existing surface irrigation system is converted to a low pressure center pivot. Corners are converted to non-irrigated cropland. The pivot is 1300 feet in length with pressure regulators and low pressure sprinklers. The new irrigation system applies water efficiently and uniformly to maintain adequate soil water for the desired level of plant growth. Deep percolation and field runoff is eliminated and there are no excess nutrients, salts or pathogens delivered to the receiving waters. Irrigation induced runoff is eliminated. This center pivot scenario includes all hardware from the pivot point, including the concrete pad the pivot is placed on.

**Feature Measure:** Length of Center Pivot Lateral

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,300.00

**Scenario Total Cost:** $101,189.57

**Scenario Cost/Unit:** $77.84

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Irrigation, Center pivot system with appurtenances, fixed cost portion | 317 | Fixed cost portion of the center pivot system with appurtenances. This portion includes the following items: pivot point, pipe, towers, pad, controls, sprinklers, installation. | Each | $5,041.57 | 1 | $5,041.57 |
| Irrigation, Center pivot system with appurtenances, variable cost portion | 318 | Variable cost portion of the center pivot system with appurtenances. This portion includes the following items: pivot point, pipe, towers, pad, controls, sprinklers, installation. | Feet | $73.96 | 1300 | $96,148.00 |

**Practice:** 442 - Sprinkler System

**Scenario** #3 - System Renovation, Renozzle with Drops

**Scenario Description:**

Center Pivot and Linear Move sprinkler systems are used in large crop fields with fairly regular field borders and flat topography. The scenario involves changing nozzles on center pivot or lateral move irrigation systems to low-pressure systems to improve efficiency of water use and reduce energy use. This scenario is intended for cropland areas where the objective is water or energy conservation. A typical scenario assumes a 1300 LF span, renozzled with low-pressure nozzles and pressure regulators on drops. Resource concerns include: Soil Erosion (Concentrated flow erosion e.g. irrigation induced), Insufficient Water (Inefficient use of irrigation water), Water Quality Degradation (Excess nutrients in surface and ground waters, Excessive salts in surface and ground waters, Excess pathogens and chemicals from manure, bio-solids or compost applications), Inefficient Energy Use (Equipment and facilities e.g. pumping) Associated Practices: Irrigation Pipeline (430), Pumping Plant (533), Irrigation Water Management (449)

**Before Situation:**

A center pivot is irrigating cropland that is being irrigated using a system in which all nozzles are operating above 35 psi on the mainline pipe. The nozzles are worn and water is applied non-uniformly. Water runs off the field and degrades the receiving waters. Deep percolation in some parts of the field degrades the ground water quality. The runoff from the field causes soil erosion. The high pressure requirement for the system requires excess energy use.

**After Situation:**

A Center Pivot or Linear Move sprinkler system with a span of 1300 linear feet is re-nozzled with low-pressure nozzles (<=35 psi) and pressure regulators on drops. The irrigation water is applied efficiently and uniformly to maintain adequate soil moisture for optimum plant growth. Runoff and deep percolation are eliminated, and the surface and ground water is no longer degraded. The irrigation induced soil erosion caused by runoff is also eliminated. The lower pressure sprinklers reduce the energy used by the pump when the pump is modified to match lower pressure requirements.

**Feature Measure:** Number of Nozzles Installed

**Scenario Unit:** Each

**Scenario Typical Size:** 232.00

**Scenario Total Cost:** $8,639.17

**Scenario Cost/Unit:** $37.24

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Irrigation, Sprinkler Package, Renozzle or Retrofit, with drops and pressure regulators | 1480 | Sprinkler Package - Rennovation including sprinkler nozzle addition, and/or replacement, including new pressure regulators and drops. | Feet | $6.59 | 1300 | $8,567.00 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** 442 - Sprinkler System

**Scenario** #4 - Gravity to Pivot Conversion with VRI

**Scenario Description:**

Upgrading existing irrigation system with a more uniform and efficient (vendor provided and installed modular system) Center Pivot system for the purpose of protecting water quality and utilizing water effectively. Integrating variable application technology onto a center pivot system for precision zone placement of water along the length of the system for water savings. A variable application over the field based either 1) EM mapping and a grid system, 2) previous year(s) harvest yield maps or 3) soil properties, or combination of each. This scenario is a new system to replace an existing gravity system, with the proper components, nozzles, and pressure regulating devices, along with other needed components for installation of a VRI system for more effective utilization of water. Resource concerns include: Soil Erosion (Concentrated flow erosion e.g. irrigation induced), Insufficient Water (Inefficient use of irrigation water), Water Quality Degradation (Excess nutrients in surface and ground waters, Excessive salts in surface and ground waters, Excess pathogens and chemicals from manure, bio-solids or compost applications), Inefficient Energy Use (Equipment and facilities e.g. pumping), and protection of wetland areas enrolled in conservation program and other environmentally sensititve areas. Associated Practices: Irrigation Pipeline (430), Pumping Plant (533), Irrigation Water Management (449), Wetland Restoration (657), Wetland Enhancement (658) Wetland Creation (659)

**Before Situation:**

Flood application of irrigation water is inefficient and non-uniform. Irrigation water is typically over applied in some parts of the field, and under applied in others. Deep percolation from the excess irrigation delivers excess nutrients salts, and chemicals to the ground water and receiving stream. Additional energy input needed to apply suffiecint water to entire field. Irrigated induced erosion is excessive. Water runs off the field and degrades the receiving waters. Deep percolation in some parts of the field degrades the ground water quality. The runoff from the field causes soil erosion.

**After Situation:**

A new Center Pivot or Linear Move sprinkler system with a span of 1300 linear feet and a modular VRI system which increases irrigation efficiency and uniformity utilizing a modern center pivot system resulting in water savings. The irrigation water is applied efficiently and uniformly to maintain adequate soil moisture for optimum plant growth. Runoff and deep percolation are eliminated, and the surface and ground water is no longer degraded. The irrigation induced soil erosion caused by runoff is also eliminated. The lower pressure requirements of the sprinklers reduces the energy used by the pump.

**Feature Measure:** Length of Center Pivot or Lateral M

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,300.00

**Scenario Total Cost:** $168,867.57

**Scenario Cost/Unit:** $129.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Irrigation, Center pivot system with appurtenances, fixed cost portion | 317 | Fixed cost portion of the center pivot system with appurtenances. This portion includes the following items: pivot point, pipe, towers, pad, controls, sprinklers, installation. | Each | $5,041.57 | 1 | $5,041.57 |
| Irrigation, Center pivot system with appurtenances, variable cost portion | 318 | Variable cost portion of the center pivot system with appurtenances. This portion includes the following items: pivot point, pipe, towers, pad, controls, sprinklers, installation. | Feet | $73.96 | 1300 | $96,148.00 |
| Center Pivot VRI, Zone Control | 2726 | Center pivot system with variable rate irrigation using zone control technology. Includes controller, sensors, GPS Unit, pressure regulating valve between pump and pivot, tubing, flow control nozzles, expansion nodes, and installation. | Linear Feet | $52.06 | 1300 | $67,678.00 |

**Practice:** 442 - Sprinkler System

**Scenario** #5 - VRI System Retrofit Zone

**Scenario Description:**

Integrating variable application technology onto a center pivot system for precision zone placement of water along the length of the system for water savings. A variable application over the field based either 1) EM mapping and a grid system, 2) previous year(s) harvest yield maps or 3) soil properties, or combination of each. This scenario is to renovate a previously irrigation system with proper modular components and pressure regulating devices, with GPS for field location and new control panel to update existing panel, along with other needed components to install a VRI system for more effective utilization of water. Resource concerns include: Soil Erosion (Concentrated flow erosion e.g. irrigation induced), Insufficient Water (Inefficient use of irrigation water), Water Quality Degradation (Excess nutrients in surface and ground waters, Excessive salts in surface and ground waters, Excess pathogens and chemicals from manure, bio-solids or compost applications), Inefficient Energy Use (Equipment and facilities e.g. pumping), and protection of wetland areas enrolled in conservation program and other environemental sesititve areas. Associated Practices: Irrigation Pipeline (430), Pumping Plant (533), Irrigation Water Management (449), Wetland Restoration (657), Wetland Enhancement (658) Wetland Creation (659)

**Before Situation:**

A center pivot or lateral move system has low pressure sprinklers. Water runs off the field and degrades the receiving waters. Deep percolation in some parts of the field degrades the ground water quality. The runoff from the field causes soil erosion. The high pressure requirement for the system requires excess energy use.

**After Situation:**

A Center Pivot or Linear Move sprinkler system with a span of 1300 linear feet is has modular VRI components added to the system which increases irrigation efficiency and uniformity utilizing a modern center pivot system resulting in water savings. The irrigation water is applied efficiently and uniformly to maintain adequate soil moisture for optimum plant growth. Runoff and deep percolation are eliminated, and the surface and ground water is no longer degraded. The irrigation induced soil erosion caused by runoff is also eliminated. The lower pressure requirements of the sprinklers reduces the energy used by the pump.

**Feature Measure:** Length of Center Pivot or Laterial w

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,300.00

**Scenario Total Cost:** $71,031.76

**Scenario Cost/Unit:** $54.64

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Aerial lift, telescoping bucket | 1893 | Aerial lift, bucket truck or cherry picker, typical 40' boom. Equipment only. | Hours | $46.55 | 24 | $1,117.20 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 24 | $729.60 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 24 | $539.52 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 24 | $706.08 |
| **Materials** | | | | | | |
| Center Pivot VRI, Zone Control | 2726 | Center pivot system with variable rate irrigation using zone control technology. Includes controller, sensors, GPS Unit, pressure regulating valve between pump and pivot, tubing, flow control nozzles, expansion nodes, and installation. | Linear Feet | $52.06 | 1300 | $67,678.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 442 - Sprinkler System

**Scenario** #67 - Small Solid Set, Above Ground Laterals

**Scenario Description:**

A permanent solid set irrigation system with buried submains and above ground laterals such as polyethylene flexible tubing. The typical system is installed on a 2 acre orchard or nursery, with plant spacing of 15 feet x 22 feet. Laterals are spaced 22 feet apart, however other spacing for this scenario apply. This system utilizes sprayers or minisprinklers at each tree or plant. This system typically includes a filter system, PE tubing laterals, PVC manifolds, and submains, valves, fittings, and emitters. System installation does not include a flowmeter, Pump, Power source, Irrigation Water Conveyance to the irrigated field, or Water source (well or reservoir). Resource concerns include: Soil Erosion (Concentrated flow erosion e.g. irrigation induced), Insufficient Water (Inefficient use of irrigation water), Water Quality Degradation (Excess nutrients in surface and ground waters, Excessive salts in surface and ground waters, Excess pathogens and chemicals from manure, bio-solids or compost applications) Associated Practices: Irrigation Pipeline (430), Pumping Plant (533), Irrigation Water Management (449).

**Before Situation:**

The typical installation will be on an orchard, nursery, or vineyard with an existing inefficient irrigation system.

**After Situation:**

An irrigation system is utilized to provide improved distribution uniformity and irrigation efficiency to an orchard, nursery, or vineyard. Runoff and water applications are reduced, resulting in offsite water quality improvement and on site water use reduction.

**Feature Measure:** Area in Irrigation System

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $6,199.30

**Scenario Cost/Unit:** $3,099.65

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 295 | $421.85 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| **Materials** | | | | | | |
| Pipe, PVC, dia. < 18 in., weight priced | 1323 | Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials only. | Pound | $2.64 | 215 | $567.60 |
| Micro Irrigation, emitters or sprays and tubing | 1489 | Emitters or sprays that are installed above ground for micro or drip irrigation. Includes installation and connections to the supply and flushing laterals. Tubing for the emitters is included in this item. | Feet | $1.15 | 3835 | $4,410.25 |
| Micro Irrigation, screen or disc filter, < 3 inch | 2524 | Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only. | Each | $216.68 | 1 | $216.68 |
| Valve, Double Check Backflow Preventer | 2559 | Designed for installation on potable water lines to protect against both backsiphonage and backpressure of polluted water into the water supply. Includes materials and shipping only. | Each | $348.66 | 1 | $348.66 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |

**Practice:** 442 - Sprinkler System

**Scenario** #72 - Linear Move System

**Scenario Description:**

Installation of a linear or lateral move sprinkler system with sprinklers on drops with or without drag hoses to improve irrigation efficiency and reduce soil erosion. Resource concerns include: Soil Erosion (Concentrated flow erosion e.g. irrigation induced), Insufficient Water (Inefficient use of irrigation water), Water Quality Degradation (Excess nutrients in surface and ground waters, Excessive salts in surface and ground waters, Excess pathogens and chemicals from manure, bio-solids or compost applications), Inefficient Energy Use (Equipment and facilities e.g. pumping) Associated Practices: Irrigation Pipeline (430), Pumping Plant (533), Irrigation Water Management (449) Payment rate is figured per foot of installed hardware length.

**Before Situation:**

A 76 acre field is flood irrigated. Application of irrigation water is inefficient and non-uniform. Irrigation water is typically over applied in some parts of the field, and under applied in others. Deep percolation from the excess irrigation delivers excess nutrients salts, and chemicals to the ground water. Runoff from the field contains excess nutrients and degrades the receiving waters. Irrigated induced erosion is excessive.

**After Situation:**

A typical unit is approximately 76 acres in size with the sprinkler system up to 1280 feet in length with drop tubes that have a minimum of 30" spacing. The new irrigation system has a coefficient of uniformity above 85%. Irrigation water is efficiently and uniformly applied to maintain adequate soil water for the desired level of plant growth. Deep percolation and field runoff is eliminated and there are no excess nutrients, salts or pathogens delivered to the receiving waters. Irrigation induced runoff is eliminated.

**Feature Measure:** Length of Linear Move Lateral

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,280.00

**Scenario Total Cost:** $159,114.14

**Scenario Cost/Unit:** $124.31

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Linear Move System with appurtenances | 322 | Linear/lateral move system including: central tower, lateral towers, pipes, sprinklers, controllers, installation. | Acres | $2,084.83 | 76 | $158,447.08 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 449 - Irrigation Water Management

**Scenario** #1 - IWM, Basic Technique

**Scenario Description:**

A low Intensity irrigation water management system for producers using a checkbook method (crop grown, soil moisture conditions prior to irrigation, dates of irrigation start and stop, depths of irrigation applied, duration of irrigations, and amount of rainfall). For a typical scenario, soil moisture is determined by the feel method, volumes of irrigation water are based on energy or water district bills, records are kept on paper copies, and calculations are made by hand. Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities. Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 449- Irrigation Water Management, 587-Structure for water Control.

**Before Situation:**

The irrigator decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 125 acre corn field with a sprinkler irrigation system.

**After Situation:**

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Feature Measure:** Acres under irrigation

**Scenario Unit:** Acres

**Scenario Typical Size:** 125.00

**Scenario Total Cost:** $742.16

**Scenario Cost/Unit:** $5.94

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |

**Practice:** 449 - Irrigation Water Management

**Scenario** #2 - IWM, Intermediate Technique, 1st year

**Scenario Description:**

This practice includes the installation of electrical soil moisture sensors such as capacitance or resistance sensors that are monitored to determine soil moisture. This scenario includes purchasing soil moisture sensors, installation equipment (probe or auger), and a data logger to log continuous soil moisture data that can be downloaded to a personal computer and associated graphing software. This scenario is intended to be used as a one-time payment for the first year in multiple year IWM contracts. Typical Scenario involves installation of sensors at a single location in a 125 acre field of sprinkler irrigated cropland. Producer periodically monitors soil moisture sensors during the growing season. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities. Associated Practices: 449- Irrigation Water Management, 587-Structure for water Control, 328-Conservation Crop Rotation, 590-Nutrient Management, 442-Irrigation System, Sprinkler, and Irrigation System, Microirrigation 441.

**Before Situation:**

Producer uses feel method to estimate soil moisture for scheduling irrigation in the field.

**After Situation:**

Producer has installed at least three sensors at each monitoring site to a depth of three feet with one sensor representing each foot of depth. Producer periodically downloads continuously recorded soil moisture measurements that are used to schedule irrigation more effectively resulting in improved irrigation water management and reduced energy use.

**Feature Measure:** Number of measuring sites

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,683.57

**Scenario Cost/Unit:** $1,683.57

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 12 | $269.76 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Data Logger | 1453 | Data Logger W/Graphic Output for water management. Materials only. | Each | $693.70 | 1 | $693.70 |
| Soil Moisture Sensor | 1456 | Soil moisture resistance sensor with 10 foot cables. Equipment only. | Each | $64.43 | 3 | $193.29 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |

**Practice:** 449 - Irrigation Water Management

**Scenario** #3 - IWM, Intermediate Technique, Subsequent Years

**Scenario Description:**

This practice includes the installation of electrical soil moisture sensors such as capacitance or resistance sensors that are monitored to determine soil moisture. This scenario includes the installation of soil moisture sensors and a data logger(s) to log continuous soil moisture data that can be downloaded to a personal computer and associated graphing software. This scenario is intended to be used as a subsequent payment for multiple year IWM contracts after the monitoring equipment was purchased or is already available. Typical Scenario involves installation of sensors at a single location in a 125 acre field of sprinkler irrigated cropland. Producer periodically monitors soil moisture sensors during the growing season. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities. Associated Practices: 449- Irrigation Water Management, 587-Structure for water Control, 328-Conservation Crop Rotation, 590-Nutrient Management, 442-Irrigation System, Sprinkler, and Irrigation System, Microirrigation 441.

**Before Situation:**

Producer uses feel method to estimate soil moisture for scheduling irrigation in the field.

**After Situation:**

Producer has installed at least three sensors at each monitoring site to a depth of three feet with one sensor representing each foot of depth. Producer periodically downloads continuously recorded soil moisture measurements that are used to schedule irrigation more effectively resulting in improved irrigation water management and reduced energy use.

**Feature Measure:** Acres under irrigation

**Scenario Unit:** Acres

**Scenario Typical Size:** 125.00

**Scenario Total Cost:** $796.58

**Scenario Cost/Unit:** $6.37

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 12 | $269.76 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |

**Practice:** 449 - Irrigation Water Management

**Scenario** #25 - Small Scale Irrigation

**Scenario Description:**

A low intensity irrigation water management system for small scale producers (typical size less than 5 acres) using a checkbook method (crop grown, soil moisture conditions prior to irrigation, dates of irrigation start and stop, depths of irrigation applied, duration of irrigations, and amount of rainfall). For a typical scenario, soil moisture is determined by soil moisture sensors (such as soil moisture meters or tensiometers), volumes of irrigation water are based on flow measureing device, energy or water bills, records are kept on computer program or paper copies, and calculations for paper copies are made by hand. Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities. Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 587 Structure for Water Control.

**Before Situation:**

The irrigator decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success.

**After Situation:**

Irrigations are scheduled based on measured crop water use and measured soil moisture. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Feature Measure:** Each irrigation system managed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $844.90

**Scenario Cost/Unit:** $844.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 10 | $478.10 |
| **Materials** | | | | | | |
| Soil Moisture Meter | 1455 | Soil Moisture Sensor Reader. Equipment only. | Each | $237.94 | 1 | $237.94 |
| Soil Moisture Sensor | 1456 | Soil moisture resistance sensor with 10 foot cables. Equipment only. | Each | $64.43 | 2 | $128.86 |

**Practice:** 460 - Land Clearing

**Scenario** #49 - Non-Heavy Equipment

**Scenario Description:**
Site preparation of a field with a labor crew, chainsaws, chippers or similar equipment removing trees and shrubs to achieve a conservation objective. Typical scenario is approximately 1 acre of trees and shrubs to be cleared. The resource concern is determined by the conservation objective met with the final practice applied to the field.

**Before Situation:**
Forested field of approximately 1 acre, with moderate density evenly spaced tree canopy.

**After Situation:**
Labor crew uses chainsaws, chippers, or similar equipment to clear trees and prepare the field for a conservation objective, includes on-site disposal as necessary. Associated practices, like plantings, other structures, or irrigation/drainage water management practices, would be contracted separately as needed.

**Feature Measure:** Area Cleared

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $777.77

**Scenario Cost/Unit:** $777.77

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 24 | $166.08 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 24 | $539.52 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** 460 - Land Clearing

**Scenario** #50 - Heavy Equipment

**Scenario Description:**
Site preparation of a field with dozer or equivalent heavy equipment to acheive a conservation objective. Typical scenario is approximately 10 acres of trees and shrubs to be cleared. The resource concern is determined by the conservation objective met with the final practice applied to the field.

**Before Situation:**
Forested field of approximately 10 acres, with moderate density evenly spaced tree canopy.

**After Situation:**
Crew uses 200 HP dozer to clear trees and prepare field for conservation objective, includes on-site debris disposal as necessary. Associated practices, like plantings, other structures, or irrigation/drainage water management practices, would be contracted separately as needed.

**Feature Measure:** Area Cleared

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $10,494.60

**Scenario Cost/Unit:** $1,049.46

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 200 HP | 928 | Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included. | Hours | $192.28 | 40 | $7,691.20 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 40 | $1,405.20 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 464 - Irrigation Land Leveling

**Scenario** #19 - Small Scale Irrigation Land Leveling

**Scenario Description:**

This is scenario will level a typical 10 acres of irrigated crop land surface to enhance uniform flow of surface water to improve irrigation efficiency using dirtpans/carry-all/pan-scraper equipment. The typical volume of earth moved is 100 to 500 cubic yards per acre. Resource Concern: Excess/Insufficient - Inefficient Use of Irrigation Water Associated Conservation Practices: 433 - Irrigation System, Surface and Subsurface; 607 - Surface Drain, Field Ditch; 388 - Irrigation Field Ditch; 449 - Irrigation Water Management; or 587 - Structure for Water Control.

**Before Situation:**

Irregular field surface reduces uniformity of surface application and thus irrigation efficiency by localized ponding and/or excess runoff/run-on.

**After Situation:**

Cropland will be reshaped to provide uniform distribution of irrigation water in order to promote irrigation efficiencies.

**Feature Measure:** Acres of Area

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $10,598.00

**Scenario Cost/Unit:** $1,059.80

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 4000 | $9,600.00 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 464 - Irrigation Land Leveling

**Scenario** #33 - Irrigation Land Leveling

**Scenario Description:**

This is scenario will level a typical 80 acres of irrigated crop land surface to enhance uniform flow of surface water to improve irrigation efficiency using dirtpans/carry-all/pan-scraper equipment. The typical volume of earth moved is 100 to 500 cubic yards per acre. Resource Concern: Excess/Insufficient - Inefficient Use of Irrigation Water Associated Conservation Practices: 433 - Irrigation System, Surface and Subsurface; 607 - Surface Drain, Field Ditch; 388 - Irrigation Field Ditch; 449 - Irrigation Water Management; or 587 - Structure for Water Control.

**Before Situation:**

Irregular field surface reduces uniformity of surface application and thus irrigation efficiency by localized ponding and/or excess runoff/runon.

**After Situation:**

Cropland will be reshaped to provide uniform distribution of irrigation water in order to promote irrigation efficiencies.

**Feature Measure:** Volume of Earth Moved

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 28,000.00

**Scenario Total Cost:** $67,551.58

**Scenario Cost/Unit:** $2.41

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 28000 | $67,200.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** 468 - Lined Waterway or Outlet

**Scenario** #1 - Turf Reinforced Matting, Moderate Stress

**Scenario Description:**

Install approximately 46' long trapezoidal (or similar parabolic shape) waterway, with 20' wide bottom, 1.1' depth, and 4:1 side slopes, lined with Turf Reinforced Matting (TRM). The profile includes a 4' long level approach apron, a 32' long section at 12.5% grade (4' drop), and a 10' long level exit apron depressed 1' below outlet channel grade. Ideally, all TRM is placed on an excavated surface, typically immediately upstream of a headcut. Excess excavation is spread in the immediate area. TRM is installed on the bottom and side slopes of the waterway to prevent scour and aid in waterway establishment. Costs include excavation to channel grade, earthfill in transverse approach berm and side berms, earthwork to blend aprons to existing ground, spreading of excess material, and furnishing and installing TRM. TRM is installed by laborers. Required TRM has a moderate allowable stress of less than 12 pounds per square foot in the fully vegetated condtion. Unit cost for TRM is assumed to include a surcharge for anhorage and overlap, typically 1' at upstream end, 0.5' at downstream end, side terminations, and 0.5' overlaps; such associated additional quantities are generally not part of the measured quantity for payment.

**Before Situation:**

Excessive soil erosion and sedimentation are a result of ephemeral or classic gully erosion. Velocities are generally too high or saturated soil conditions make it difficult to establish a grassed waterway without a lining material.

**After Situation:**

The TRM lined waterway provides a surface capable of withstanding moderate flow velocity and stress to maintain a stable channel configuration. The measured quantity for payment excludes amounts necessary for terminal anchorage and overlap. Associated practices are Grassed Waterway (412), Subsurface Drain (606), Underground Outlet (620), Structure for Water Control (587), and Critical Area Seeding (342).

**Feature Measure:** Square Foot of Waterway

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 1,340.00

**Scenario Total Cost:** $3,266.60

**Scenario Cost/Unit:** $2.44

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 118 | $283.20 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 60 | $235.80 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 60 | $203.40 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Turf reinforcement mat | 1212 | Synthetic turf reinforcement mat with staple anchoring. Includes materials, equipment and labor. | Square Yard | $11.00 | 149 | $1,639.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 468 - Lined Waterway or Outlet

**Scenario** #2 - Turf Reinforced Matting, High Stress

**Scenario Description:**

Install approximately 54' long trapezoidal (or similar parabolic shape) waterway, with 30' wide bottom, 1.3' depth, and 4:1 side slopes, lined with Turf Reinforced Matting (TRM). The profile includes a 4' long level approach apron, a 40' long section at 12.5% grade (5' drop), and a 10' long level exit apron depressed 1' below outlet channel grade. Ideally, all TRM is placed on an excavated surface, typically immediately upstream of a headcut. Excess excavation is spread in the immediate area. TRM is installed on the bottom and side slopes of the waterway to prevent scour and aid in waterway establishment. Costs include excavation to channel grade, earthfill in transverse approach berm and side berms, earthwork to blend aprons to existing ground, spreading of excess material, and furnishing and installing TRM. TRM is installed by laborers. Required TRM has a relatively high allowable stress of at least 12 pounds per square foot in the fully vegetated condtion. Unit cost for TRM is assumed to include a surcharge for anhorage and overlap, typically 1' at upstream end, 0.5' at downstream end, side terminations, and 0.5' overlaps; such associated additional quantities are generally not part of the measured quantity for payment.

**Before Situation:**

Excessive soil erosion and sedimentation are a result of ephemeral or classic gully erosion. Velocities are generally too high or saturated soil conditions make it difficult to establish a grassed waterway without a lining material.

**After Situation:**

The TRM lined waterway provides a surface capable of withstanding high flow velocity and stress to maintain a stable channel configuration. The measured quantity for payment excludes amounts necessary for terminal anchorage and overlap. Associated practices are Grassed Waterway (412), Subsurface Drain (606), Underground Outlet (620), Structure for Water Control (587), and Critical Area Seeding (342).

**Feature Measure:** Square Foot of Waterway

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 2,215.00

**Scenario Total Cost:** $4,884.86

**Scenario Cost/Unit:** $2.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 234 | $561.60 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 90 | $353.70 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 146 | $494.94 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 16 | $764.96 |
| **Materials** | | | | | | |
| Mat, Turf Reinforcement, High Stress | 2584 | High stress resistant synthetic turf reinforcement mat, High Stress (14 psf vegetated). Includes shipping. | Square Yard | $8.89 | 246 | $2,186.94 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 468 - Lined Waterway or Outlet

**Scenario** #3 - Rock Lined, 12 in

**Scenario Description:**

Install 300 ' long by 15' wide by 1.5' deep with 2:1 side slopes trapezoidal or parabolic shaped waterway lined with 12" thick riprap (D100 = 9", Velocity ~ 8 ft/sec). 1/2 the channel is excavated, before excavation for riprap. Excess excavation is spoiled in the immediate area. Riprap is installed over 100% of the width of the waterway to prevent scour. Cost include excavation, spoiling of excess material, geotextile underlayment and installing 9" Rock Riprap. Lined waterway width is measured from top of bank to top of bank. (9'+3.35'+3.35') x 300' = 4710 Square Feet

**Before Situation:**

Excessive sedimentation and soil erosion as a result of ephemeral or classic gully erosion. Velocities are generally too high or saturated soil conditions make it difficult to establish a grassed waterway.

**After Situation:**

Rock lined waterway is 300 ' long by 15' wide by 1.5' deep with 2:1 sideslopes. Waterway 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).

**Feature Measure:** Square Foot of Waterway

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 4,710.00

**Scenario Total Cost:** $28,732.23

**Scenario Cost/Unit:** $6.10

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 295 | $708.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 3 | $67.44 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 3 | $143.43 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 205 | $27,552.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 468 - Lined Waterway or Outlet

**Scenario** #4 - Rock Lined, 24 in

**Scenario Description:**

Install 300 ' long by 15' wide by 1.5' deep with 2:1 side slopes trapezoidal or parabolic shaped waterway lined with 24" thick riprap (D100 = 18", Velocity ~ 11 ft/sec). 1/2 the channel is excavated, before excavation for riprap. Excess excavation is spoiled in the immediate area. Riprap is installed over 100% of the width of the waterway to prevent scour. Cost include excavation, spoiling of excess material, geotextile underlayment and installing 18" Rock Riprap. Lined waterway width is measured from top of bank to top of bank. (9'+3.35'+3.35') x 300' = 4710 Square Feet

**Before Situation:**

Excessive sedimentation and soil erosion as a result of ephemeral or classic gully erosion. Velocities are generally too high or saturated soil conditions make it difficult to establish a grassed waterway.

**After Situation:**

Rock lined waterway is 300 ' long by 15' wide by 1.5' deep with 2:1 sideslopes. Waterway 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).

**Feature Measure:** Square Foot of Waterway

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 4,710.00

**Scenario Total Cost:** $64,300.23

**Scenario Cost/Unit:** $13.65

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 555 | $1,332.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 3 | $67.44 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 3 | $143.43 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 465 | $62,496.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 468 - Lined Waterway or Outlet

**Scenario** #6 - Articulated Concrete Block

**Scenario Description:**

Install 300 ' long by 15' wide (at top) by 1.5' deep with 2:1 sides slopes trapezoidal or parabolic shaped waterway lined with artiulated concrete block (ACB). 1/2 the channel is excavated, before excavation for ACB and subgrade material. Excess excavation is spoiled in the immediate area. Articulated concrete block is installed over 100% of the width of the waterway to prevent scour. Cost include excavation, spoiling of excess material, 3" of clean sand or gravel subgrade, and 6" height articulated concrete block. Lined waterway width is measured from top of bank to top of bank. (9'+3.35'+3.35') x 300' = 4710 Square Feet

**Before Situation:**

Excessive sedimentation and soil erosion as a result of ephemeral or classic gully erosion. Velocities are generally too high or saturated soil conditions make it difficult to establish a grassed waterway. Usually installed in locations where rock or other lining materials are not readily available.

**After Situation:**

Articulated Concrete Block lined waterway is 300 ' long by 15' wide by 1.5' deep with 2:1 sideslopes. Waterway is excavated using a hydraulic excavator. Articulated concrete block is placed on 3" of clean sand or gravel subgrade and installed with a hydraulic excavator, loader and laborers. Associated practices are Subsurface Drain (606), Underground Outlet (620), Structure for Water Control (587), and Critical Area Seeding (342).

**Feature Measure:** Square Foot of Waterway

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 4,710.00

**Scenario Total Cost:** $60,390.57

**Scenario Cost/Unit:** $12.82

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 200 | $480.00 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 22.5 | $2,097.90 |
| Track Loader, 95HP | 935 | Equipment and power unit costs. Labor not included. | Hours | $98.22 | 22.5 | $2,209.95 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 25.5 | $775.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 51 | $1,146.48 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 51 | $1,500.42 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 45 | $837.00 |
| Articulated precast concrete block | 1906 | Articulated precast concrete blocks with a typical thickness of 4.5 to 6 inches. Includes materials and shipping. | Square Feet | $10.79 | 4710 | $50,820.90 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 472 - Access Control

**Scenario** #1 - Animal exclusion from sensitive areas (FI)

**Scenario Description:**

Exclude animals from an area in order to address identified resource concerns. This is for facilitating exclusion of animals to protect or enhance natural resource values and/or to allow for fuel loads to accumulate to address other resource issues. Control will be by permanent or temporary electric fencing. Any need for permanent fencing will be planned and installed using the Fence practice (382). Clearing of brush and trees is not necessary. Resource concerns include wildlife habitat degradation, undesirable plant productivity and health, and/or excessive sediment in surface waters.

**Before Situation:**

Sensitive areas are threatened by the adverse actions of domestic and/or wild animals. The importance of the sensitive areas can include (but are not limited to): wildlife habitat, plant species composition, newly established trees and/or plants, stream bank stability, and/or water quality.

**After Situation:**

Adequate fuel loads are permitted to accumulate so that other conservation practices may be implemented and/or sensitive areas are protected from adverse actions of domestic and/or wild animals by excluding them from the area.

**Feature Measure:** Acres of Treatment

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $1,278.94

**Scenario Cost/Unit:** $31.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 38 | $1,189.02 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |

**Practice:** 472 - Access Control

**Scenario** #18 - Monitoring, maintenance, additional labor

**Scenario Description:**
Labor and increased time needed to control and re-route animals and traffic from sensitive areas, monitor and maintain barriers. Resource concerns include Excessive sediment in surface waters, Habitat degradation for fish and wildlife, and Undesirable plant productivity and health.

**Before Situation:**
The application of access control has resulted in increased labor and time to re-route traffic and animals from a riparian area that splits a field in half. This has also lead to more time and labor in monitoring the animals, inspecting and repairing the barrier.

**After Situation:**
Water quality is maintained, habitat is improved, and plant health is maintained by controlling access to the riparian area.

**Feature Measure:** Area of riparian area

**Scenario Unit:** Acres

**Scenario Typical Size:** 5.00

**Scenario Total Cost:** $144.48

**Scenario Cost/Unit:** $28.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 3 | $77.04 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 3 | $67.44 |

**Practice:** 484 - Mulching

**Scenario** #1 - Natural Material - Straw

**Scenario Description:**

Application of straw mulch or other other state approved natural material to reduce erosion and facilitate the establishment of vegetative cover. Mulch provides full coverage and is typically used with critical area planting. 2 tons per acre of straw applied and anchored with light tillage equipment, treader, knifed in, etc.

**Before Situation:**

Typical scenario is applying mulch on 1 acres of a disturbed site around a newly constructed structural practice. The potential for soil erosion is high and mulch is needed to stabilize the soil and facilitate the establishment of vegetative cover.

**After Situation:**

Straw mulch has been applied to areas needing mulch. Erosion and sedimentation is reduced, water and soil quality is protected, and vegetative cover is established.

**Feature Measure:** Area Covered by Mulch

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $445.48

**Scenario Cost/Unit:** $445.48

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 1 | $25.68 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 2 | $56.30 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 2 | $58.84 |
| **Materials** | | | | | | |
| Straw | 1237 | Small grain straw (non organic and certified organic). Includes materials only. | Ton | $107.37 | 2 | $214.74 |

**Practice:** 484 - Mulching

**Scenario** #2 - Erosion Control Blanket

**Scenario Description:**
Installation of erosion control blanket on critical areas with steep slopes, grassed waterways or diversions. Blanket is typically made of coconut coir, wood fiber, or straw, and is typically covered on both sides with polypropylene netting. Used to help control erosion and establish vegetative cover.

**Before Situation:**
There are areas of concentrated flow and a grassed waterway is being installed and seeded to permanent cover. Soil erosion is a concern and there is little to no vegetation.

**After Situation:**
The erosion control blanket is placed on concentrated flow areas and secured with ground staples. Soil erosion is minimized and vegetative cover is established.

**Feature Measure:** Total Area Mulched

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 5,000.00

**Scenario Total Cost:** $1,304.88

**Scenario Cost/Unit:** $0.26

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| **Materials** | | | | | | |
| Erosion Control Blanket, biodegradable | 1213 | Biodegradable erosion control blanket, typically a composite of natural fibers with reinforcing polymer netting. Materials and shipping only. | Square Yard | $1.70 | 556 | $945.20 |

**Practice:** 484 - Mulching

**Scenario** #3 - Tree and Shrub - Squares

**Scenario Description:**
Barrier fabric or other suitable natural or synthetic mulch is installed with a new tree and shrub planting. Typically used to retain moisture during the installation of conservation practices. Rate is per tree/shrub and assumes 1 square yard of barrier fabric and 5 staples/tree.

**Before Situation:**
Site conditions vary and erosion and wildlife habitat have been identified as concerns. Fabric squares (as mulch) are added to address soil moisture and temperature issues. Sites are often remote and trees may not be planted in rows, requiring each tree to be mulched individually.

**After Situation:**
Barrier fabric squares are installed with 5 sod staples each, around individual trees and shrubs to retain moisture and regulate soil temperature.

**Feature Measure:** Number of Trees Mulched

**Scenario Unit:** Each

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $130.00

**Scenario Cost/Unit:** $1.30

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | $1.30 | 100 | $130.00 |

**Practice:** 484 - Mulching

**Scenario** #4 - Tree and Shrub - Rolls

**Scenario Description:**

Barrier fabric or other suitable natural or synthetic mulch is installed with a new tree and shrub planting. Typically used to retain soil moisture, control soil temperature, and minimize erosion by providing cover during the installation of conservation practices. Two 300 foot tree rows will use barrier fabric to conserve moisture. Rate is per linear foot (300' roll x 2= 600') and 3 staples/pins per tree.

**Before Situation:**

Site conditions vary, and erosion and wildlife habitat have been identified as concerns. Barrier fabric (as mulch) is added to address soil moisture loss. Sites are typically on field edges, each tree row to be mulched individually.

**After Situation:**

Barrier fabric rolls are installed with 3 metal pins/staples per tree. Moisture is retained, temperature controlled, and erosion is minimized.

**Feature Measure:** Number of Trees Installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 600.00

**Scenario Total Cost:** $440.50

**Scenario Cost/Unit:** $0.73

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 2 | $56.30 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 7 | $157.36 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 2 | $58.84 |
| **Materials** | | | | | | |
| Mulch, polyethylene plastic, 1.0 mil | 1303 | 1.0 mil polyethylene plastic mulch, with anchoring. Includes materials and shipping only. | Square Yard | $0.42 | 400 | $168.00 |

**Practice:** 484 - Mulching

**Scenario** #5 - Hydro-mulching

**Scenario Description:**

Installation of mulch through hydraulic methods on critical areas with steep slopes, grassed waterways or diversions. The mulch is comprised of wood cellulose fiber pulp and may include seed, fertilizer, and other approved materials. Mulch is typically applied at a rate of 1500 pounds per acre as a slurry by using hydroseeding methods. Used to help control erosion and establish vegetative cover.

**Before Situation:**

Areas being seeded to permanent cover. Soil erosion is a concern and there is little to no vegetation.

**After Situation:**

The hydro-mulch is applied to appropriate areas as needed for vegetation establishment. Soil erosion is minimized and vegetative cover is established.

**Feature Measure:** Area Covered by Mulch

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,140.54

**Scenario Cost/Unit:** $1,140.54

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Seeding Operation, hydroseeder | 1291 | Hydroseeding with typical 1500 to 3600 gallon seeder. Includes all costs for equipment, power unit, and labor. | Acres | $1,140.54 | 1 | $1,140.54 |

**Practice:** 490 - Tree/Shrub Site Preparation

**Scenario** #33 - Windbreak - Site Preparation

**Scenario Description:**

This practice involves the use of various chemical/tillage methods to allow for the planting of a windbreak. Site preparation includes chemically killing vegegation prior to mechanical site preparation that includes appropriate methods to allow for planting of the site which may include one or all of the following, ripping, disking, and harrowing. This practice may be applied on all lands needing treatment to facilitate establishment of trees and/or shrubs to facilitate establishment of a windbreak. Typical sites include open land such as old fields, pastures, rangelands and agricultural fields. Resource concerns: Soil erosion--Wind erosion, .

**Before Situation:**

Undesirable vegetation, including woody and herbaceous plants, is present on the site. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs. Soil is compacted as a result of prior land management activities.

**After Situation:**

Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size is 1.5 acres.

**Feature Measure:** area of treatment

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $384.68

**Scenario Cost/Unit:** $192.34

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1.5 | $19.82 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1.5 | $9.44 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| **Materials** | | | | | | |
| Herbicide, 2,4-D | 330 | Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $13.82 | 1.5 | $20.73 |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1.5 | $25.02 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1.5 | $3.36 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 490 - Tree/Shrub Site Preparation

**Scenario** #64 - Tree-Shrub Site Prep - small acreage

**Scenario Description:**

This practice involves the use of various chemical and tillage methods to allow for the planting of agroforestry practices and hedgerows. Site preparation includes chemically killing vegetation prior to mechanical site preparation that includes appropriate methods to allow for planting of the site which may include one or all of the following: ripping, disking, and harrowing. This practice may be applied on all lands needing treatment to facilitate establishment of trees and shrubs to facilitate establishment of agroforestry practices (alley cropping, forest farming, riparian forest buffer, silvopasture, and windbreak) and hedgerows. Resource concern: Soil erosion - wind erosion.

**Before Situation:**

Undesirable vegetation, including woody and herbaceous plants, is present on the site. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees or shrubs. Soil is compacted as a result of prior land management activities.

**After Situation:**

Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and shrubs. Site conditions are favorable for successful establishment of trees and shrubs. The typical size is less than one acre.

**Feature Measure:** Area of treatment

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $357.77

**Scenario Cost/Unit:** $3.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 0.5 | $6.61 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 0.5 | $3.15 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 1 | $22.48 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| **Materials** | | | | | | |
| Herbicide, 2,4-D | 330 | Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $13.82 | 0.5 | $6.91 |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 0.5 | $8.34 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 0.5 | $1.12 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 500 - Obstruction Removal

**Scenario** #1 - Removal and Disposal of Fence, Feedlot

**Scenario Description:**

Remove and disposal of all existing fences around a livestock feeding/waste facility by demolition, excavation or other means required for removal. Dispose of all fence materials from the site so that it does not impede subsequent work or cause onsite or offsite damage. Dispose of all materials by removal to an approved landfill, wood chipping and land distribution, or recycling center, burial at an approved location or burning. If burning is used, implement appropriate smoke management to protect public health and safety. Fence removal will address the resource concerns of the prevention or hindrance to the installation of conservation practices or present a hazard to their use and enjoyment.

**Before Situation:**

On headquarters or any land where existing feedlot fence interferes with planned land use development, public safety, or infrastructure. The site may be abandoned mine lands, construction sites, recreation areas, farms, ranches, and areas affected by natural disasters. This is not intended for the removal of obstructions from aquatic environments.

**After Situation:**

The typical feedlot fence will be 300 in linear feet. The removal of the fence will be performed with the use of equipment and hand labor. Dispose of all debris from the fence removal so that it does not impede subsequent work or cause onsite or offsite damage. Revegetate or otherwise protect from erosion disturbed areas as soon as possible. Refer to NRCS Conservation Practice Standard 342, Critical Area Planting for seedbed preparation, seeding, fertilizing, and mulching requirements. The practice is to improve site conditions in order to apply conservation practices or facilitate better use of the landscape such as Upland Wildlife Habitat Management (645).

**Feature Measure:** Length of Fence

**Scenario Unit:** Feet

**Scenario Typical Size:** 300.00

**Scenario Total Cost:** $1,177.55

**Scenario Cost/Unit:** $3.93

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 5 | $300.60 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 5 | $128.40 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 6 | $134.88 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 6 | $176.52 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 500 - Obstruction Removal

**Scenario** #2 - Removal and Disposal of Fence, landscape

**Scenario Description:**

Remove and disposal of all existing fences by demolition, excavation or other means required for removal. Dispose of all fence materials from the site so that it does not impede subsequent work or cause onsite or offsite damage. Dispose of all materials by removal to an approved landfill, wood chipping and land distribution, or recycling center, burial at an approved location or burning. If burning is used, implement appropriate smoke management to protect public health and safety. Remove and dispose of the unwanted fence obstruction in order to apply conservation practices such as Upland Wildlife Habitat Management (645) or facilitate the planned land use. Fence removal will address the resource concerns of the prevention or hindrance to the installation of conservation practices or present a hazard to their use and enjoyment and reduce hazards to wildlife.

**Before Situation:**

On any land where existing fence interferes with planned land use development, public safety, wildlife movement and habitat, or infrastructure. The site may be abandoned mine lands, construction sites, recreation areas, farms, ranches, and areas affected by natural disasters. This is not intended for the removal of obstructions from aquatic environments.

**After Situation:**

The typical fence will be 2640 in linear feet. The removal of the fence will be performed with the use of equipment and hand labor. Dispose of all debris from the fence removal so that it does not impede subsequent work or cause onsite or offsite damage. Revegetate or otherwise protect from erosion disturbed areas as soon as possible. Refer to NRCS Conservation Practice Standard 342, Critical Area Planting for seedbed preparation, seeding, fertilizing, and mulching requirements. The practice is to improve site conditions in order to apply conservation practices or facilitate better use of the landscape such as Upland Wildlife Habitat Management (645).

**Feature Measure:** Length of Fence

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,640.00

**Scenario Total Cost:** $3,243.05

**Scenario Cost/Unit:** $1.23

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 20 | $1,202.40 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 20 | $513.60 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 21 | $472.08 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 21 | $617.82 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 500 - Obstruction Removal

**Scenario** #3 - Removal and Disposal of Power Lines and Poles

**Scenario Description:**

Remove and disposal of power lines and poles thru demolition, excavation or other means required for removal. Dispose of all power lines and poles so that it does not impede subsequent work or cause onsite or offsite damage. Dispose of all power lines and poles by removal to an approved location, or reuse location. Remove and dispose all power lines and poles in order to apply conservation practices or facilitate the planned land use. Rocks and or boulders will address the resource concerns of the prevention or hindrance to the installation of conservation practices or present a hazard to their use and enjoyment.

**Before Situation:**

On any land where existing obstructions interfere with planned land use development, public safety or infrastructure. The site may be abandoned mine lands, construction sites, recreation areas, farms, ranches, and areas affected by natural disasters. This is not intended for the removal of obstructions from aquatic environments.

**After Situation:**

The typical length is 2640 linear feet of an impaired area. The removal of power lines and poles will be performed by using means required for removal with the use of heavy equipment and hand labor. Dispose of all lines and poles from the obstruction removal so that it does not impede subsequent work or cause onsite or offsite damage. Revegetate or otherwise protect from erosion disturbed areas as soon as possible. Refer to NRCS Conservation Practice Standard 342, Critical Area Planting for seedbed preparation, seeding, fertilizing, and mulching requirements. The practice is to improve site conditions in order to apply conservation practices or facilitate better use of the landscape.

**Feature Measure:** Length of Power Lines

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,640.00

**Scenario Total Cost:** $9,558.65

**Scenario Cost/Unit:** $3.62

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 20 | $1,527.60 |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 20 | $1,202.40 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 20 | $513.60 |
| Truck, dump, 18 CY | 1400 | Dump truck for moving bulk material. Typically capacity is 25 ton or 18 cubic yards. Includes equipment only. | Hours | $108.60 | 20 | $2,172.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 21 | $472.08 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 42 | $1,235.64 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 42 | $1,475.46 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 3 | $784.08 |

**Practice:** 500 - Obstruction Removal

**Scenario** #4 - Removal and Disposal of Steel and or Concrete Structures

**Scenario Description:**

Remove and disposal of large steel and or concrete structures by demolition, excavation or other means required for removal. Dispose of all steel and or concrete structures so that it does not impede subsequent work or cause onsite or offsite damage. Dispose of all steel and or concrete structures by removal to an approved location, or reuse location. Remove and dispose all steel and or concrete structures in order to apply conservation practices or facilitate the planned land use. Steel and or concrete structure removal will address the resource concerns of the prevention or hindrance to the installation of conservation practices or present a hazard to their use and enjoyment.

**Before Situation:**

On any land where existing obstructions interfere with planned land use development, public safety or infrastructure. The site may be abandoned mine lands, construction sites, recreation areas, farms, ranches, and areas affected by natural disasters. This is not intended for the removal of obstructions from aquatic environments.

**After Situation:**

The typical area will be a 2000 square feet of impaired land. The removal of steel and or concrete structures will be performed by demolition, excavation or other means required for removal with the use of heavy equipment and hand labor. Dispose of all steel and or concrete structures from the obstruction removal so that it does not impede subsequent work or cause onsite or offsite damage. Revegetate or otherwise protect from erosion disturbed areas as soon as possible. Refer to NRCS Conservation Practice Standard 342, Critical Area Planting for seedbed preparation, seeding, fertilizing, and mulching requirements. The practice is to improve site conditions in order to apply conservation practices or facilitate better use of the landscape.

**Feature Measure:** Land Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 2,000.00

**Scenario Total Cost:** $27,249.09

**Scenario Cost/Unit:** $13.62

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 200 HP | 928 | Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included. | Hours | $192.28 | 50 | $9,614.00 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 50 | $4,662.00 |
| Truck, dump, 18 CY | 1400 | Dump truck for moving bulk material. Typically capacity is 25 ton or 18 cubic yards. Includes equipment only. | Hours | $108.60 | 50 | $5,430.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 51 | $1,146.48 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 153 | $5,374.89 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 500 - Obstruction Removal

**Scenario** #5 - Removal and Disposal of Wood Structures

**Scenario Description:**

Remove and disposal of wood structures (including large isolated trees) by demolition, excavation or other similar means required for removal. Dispose of all wood structures so that it does not impede subsequent work or cause onsite or offsite damage. Dispose of all wood structures by removal to an approved location, landfill, or reuse location. Remove and dispose all wood structures in order to apply conservation practices or facilitate the planned land use. Wood structure removal will address the resource concerns of the prevention or hindrance to the installation of conservation practices or present a hazard to their use and enjoyment.

**Before Situation:**

On any land where existing obstructions interfere with planned land use development, public safety or infrastructure. The site may be abandoned mine lands, construction sites, recreation areas, farms, ranches, and areas affected by natural disasters. This is not intended for the removal of obstructions from aquatic environments.

**After Situation:**

The typical area will be a 2000 square feet of impaired land. The removal of wood structures will be performed by demolition, excavation or other similar means required for removal with the use of heavy equipment and hand labor. Dispose of all wood structures from the obstruction removal so that it does not impede subsequent work or cause onsite or offsite damage. Revegetate or otherwise protect from erosion disturbed areas as soon as possible. Refer to NRCS Conservation Practice Standard 342, Critical Area Planting for seedbed preparation, seeding, fertilizing, and mulching requirements. The practice is to improve site conditions in order to apply conservation practices or facilitate better use of the landscape.

**Feature Measure:** Land Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 2,000.00

**Scenario Total Cost:** $14,199.34

**Scenario Cost/Unit:** $7.10

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 200 HP | 928 | Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included. | Hours | $192.28 | 25 | $4,807.00 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 25 | $2,331.00 |
| Truck, dump, 18 CY | 1400 | Dump truck for moving bulk material. Typically capacity is 25 ton or 18 cubic yards. Includes equipment only. | Hours | $108.60 | 25 | $2,715.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 26 | $584.48 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 78 | $2,740.14 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 500 - Obstruction Removal

**Scenario** #6 - Removal and disposal of individual landscape structures

**Scenario Description:**

Remove and disposal of individual landscape structures (windmills, large trees, etc.) by demolition, excavation or other means required for removal. Dispose of all landscape structures so that it does not impede wildlife movement and/or subsequent work or cause onsite or offsite damage. Dispose of all associated materials by removal to an approved location, or reuse location. Remove and dispose all materials in order to apply conservation practices or facilitate the planned land use. Landscape structure removal will address the resource concerns of wildlife collision or avoidance at the landscape level.

**Before Situation:**

On any land where existing obstructions interfere with planned land use development, public safety or infrastructure. The site may be recreation areas, farms, ranches, and areas. This is not intended for the removal of obstructions from aquatic environments.

**After Situation:**

The typical area will be an area of 15 feet by 15 feet (225 square feet) of impaired land. The removal of landscape structures will be performed by demolition, excavation or other means required for removal with the use of heavy equipment and hand labor. Dispose of all materials from the obstruction removal so that it does not impede wildlife movement or cause onsite or offsite damage. Revegetate or otherwise protect from erosion disturbed areas as soon as possible. Refer to NRCS Conservation Practice Standard 342, Critical Area Planting for seedbed preparation, seeding, fertilizing, and mulching requirements. The practice is to improve site conditions in order to apply conservation practices or facilitate better use of the landscape.

**Feature Measure:** Land Area

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 225.00

**Scenario Total Cost:** $1,429.44

**Scenario Cost/Unit:** $6.35

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 2 | $260.04 |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 2 | $120.24 |
| Truck, dump, 8 CY | 1401 | Dump truck for moving bulk material. Typically capacity is 12 ton or 8 cubic yards. Includes equipment only. | Hours | $55.89 | 1 | $55.89 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 2 | $58.84 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 3 | $105.39 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 3 | $784.08 |

**Practice:** 500 - Obstruction Removal

**Scenario** #7 - Removal and Disposal of Brush and Trees <= 6 inch Diameter

**Scenario Description:**

Remove and dispose of brush and trees predominantly <= 6 inches in diameter by demolition, excavation or other means required for removal. Dispose of all brush and trees so that it does not impede subsequent work or cause onsite or offsite damage. Dispose of all brush and trees by removal to an approved landfill, wood chipping and or land distribution, or recycling center, burial at an approved location or burning. If burning is used, implement appropriate smoke management to protect public health and safety. Remove and dispose of brush and trees in order to apply conservation practices or facilitate the planned land use. Brush and tree removal will address the resource concerns of the prevention or hindrance to the installation of conservation practices or present a hazard to their use and enjoyment.

**Before Situation:**

On any land where existing obstructions interfere with planned land use development, public safety or infrastructure. The site may be abandoned mine lands, construction sites, recreation areas, farms, ranches, and areas affected by natural disasters. This is not intended for the removal of obstructions from aquatic environments.

**After Situation:**

On any land where existing obstructions interfere with planned land use development, public safety or infrastructure. The site may be abandoned mine lands, construction sites, recreation areas, farms, ranches, and areas affected by natural disasters. This is not intended for the removal of obstructions from aquatic environments.

**Feature Measure:** Land Area

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $2,241.48

**Scenario Cost/Unit:** $1,120.74

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 8 | $839.28 |
| Brush Chipper, 6 in. capacity | 938 | Brush Chipper, 6 inch capacity, typically 35 HP. Includes chipper and power unit. Labor not included. | Hours | $33.85 | 8 | $270.80 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 9 | $202.32 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 9 | $264.78 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 500 - Obstruction Removal

**Scenario** #8 - Removal and Disposal of Brush and Trees > 6 inch Diameter

**Scenario Description:**

Remove and dispose of brush and trees predominantly > 6 inches in diameter by demolition, excavation or other means required for removal. Dispose of all brush and trees so that it does not impede subsequent work or cause onsite or offsite damage. Dispose of all brush and trees by removal to an approved landfill, wood chipping and or land distribution, or recycling center, burial at an approved location or burning. If burning is used, implement appropriate smoke management to protect public health and safety. Remove and dispose of brush and trees in order to apply conservation practices or facilitate the planned land use. Brush and tree removal will address the resource concerns of the prevention or hindrance to the installation of conservation practices or present a hazard to their use and enjoyment.

**Before Situation:**

On any land where existing obstructions interfere with planned land use development, public safety or infrastructure. The site may be abandoned mine lands, construction sites, recreation areas, farms, ranches, and areas affected by natural disasters. This is not intended for the removal of obstructions from aquatic environments.

**After Situation:**

The typical area will be a 2.0 acre impaired area. The removal of brush and trees > 6 inch diameter will be performed with the use of equipment and hand labor. Dispose of all brush and trees from the obstruction removal so that it does not impede subsequent work or cause onsite or offsite damage. Revegetate or otherwise protect from erosion disturbed areas as soon as possible. Refer to NRCS Conservation Practice Standard 342, Critical Area Planting for seedbed preparation, seeding, fertilizing, and mulching requirements. The practice is to improve site conditions in order to apply conservation practices or facilitate better use of the landscape.

**Feature Measure:** Land Area

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $4,389.36

**Scenario Cost/Unit:** $2,194.68

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 200 HP | 928 | Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included. | Hours | $192.28 | 10 | $1,922.80 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Brush Chipper, 15 in. capacity | 1868 | Brush Chipper, 15 inch capacity, typically 165 HP. Includes chipper and power unit. Does not include labor. | Hours | $76.90 | 10 | $769.00 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 11 | $323.62 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 11 | $386.43 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 511 - Forage Harvest Management

**Scenario** #1 - Improved Forage Quality

**Scenario Description:**
Improved cultural practices and recordkeeping result in better forage quality and better livestock performance.

**Before Situation:**
Forage cutting heights are as close to the ground as equipment will allow resulting in very low stubble height. Plant regrowth is very slow. Forage quality tests are not regularly done. Records of forage quality components, cutting heights, moisture content, and harvest schedule are not regularly kept.

**After Situation:**
Forage cutting heights are raised to leave at least 3-4" stubble height for cool season grasses and 6" for warm season grasses. Increased residual forage results in much faster plant regrowth. Forage quality tests are submitted to an accredited lab for analysis. Records of forage quality components, cutting heights, moisture content, and harvest schedule are regularly kept to track increased forage quality and improved livestock performance.

**Feature Measure:** Improved Relative Feed Value

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $187.73

**Scenario Cost/Unit:** $4.69

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| **Materials** | | | | | | |
| Test, Plant Tissue Test | 301 | Tissue analysis for crops. Includes materials and shipping only. | Each | $24.50 | 2 | $49.00 |

**Practice:** 512 - Pasture and Hay Planting

**Scenario** #5 - Introduced Perennial Grasses-Legume

**Scenario Description:**

Establish or reseed adapted perennial introduced grasses and legumes to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial introduced grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding.

**Before Situation:**

Poor or nonexistent stand of grass species. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

**After Situation:**

Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

**Feature Measure:** Acres of Forage and Biomass Planti

**Scenario Unit:** Acres

**Scenario Typical Size:** 60.00

**Scenario Total Cost:** $4,845.00

**Scenario Cost/Unit:** $80.75

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 60 | $792.60 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 60 | $1,325.40 |
| **Materials** | | | | | | |
| Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2747 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $45.45 | 60 | $2,727.00 |

**Practice:** 512 - Pasture and Hay Planting

**Scenario** #7 - Introduced Perennial & Native Grass Mix

**Scenario Description:**

Establish or reseed adapted introduced grasses and at least one native species to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of grasses for pasture, hayland, and wildlife openings. Native grass species, which have a significantly greater cost than introduced species, comprise one third of the grass mixture. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding.

**Before Situation:**

Existing stand of perennial grasses, a monoculture, or no grasses present. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

**After Situation:**

Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

**Feature Measure:** Acres of Forage and Biomass Planti

**Scenario Unit:** Acres

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $6,156.40

**Scenario Cost/Unit:** $76.96

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 80 | $1,056.80 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 80 | $1,767.20 |
| **Materials** | | | | | | |
| Native and Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2502 | A mix of native and introduced perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $83.31 | 40 | $3,332.40 |

**Practice:** 512 - Pasture and Hay Planting

**Scenario** #78 - Small farm, Pasture and Hay planting for 1 ac.

**Scenario Description:**
Establish or reseed adapted perennial introduced grasses to improve or maintain livestock nutrition and health and promote soil cover to reduce erosion. This scenario assumes hand labor for aerial broadcast of seed and tillage of soil.

**Before Situation:**
Poorly managed/degraded pasture land or other land uses being converted to pasture within a small farm area.

**After Situation:**
Suitable species are established to improve forage quality and quantity, and reduce soil erosion on pasture within a snalll farm area.

**Feature Measure:** acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $612.67

**Scenario Cost/Unit:** $612.67

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Seeding Operation, Broadcast, Ground | 959 | Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs. | Acres | $12.75 | 1 | $12.75 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 20 | $449.60 |
| **Materials** | | | | | | |
| Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density | 2748 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Includes material and shipping. | Acres | $64.94 | 1 | $64.94 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** 516 - Livestock Pipeline

**Scenario** #1 - Shallow or Above Ground Pipeline, any diameter

**Scenario Description:**

Description: 1,320 feet of 1 1/4" PE pipe installed above ground or at a 12" depth to supply water for domestic animals. Installation includes all appurtenances and labor. Appurtenances include: couplings, fittings, thrust blocks, gate valves, air release valves, drain valve, and pressure relief valve, and are included in the cost of pipe material. Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614),Water Harvesting Catchment (636), Spring Development (574), and Prescribed Grazing (528).

**Before Situation:**

Inadequate water supply for domestic animals located on grazed range, pasture, or grazed forest in the northern plains region. This practice will be installed either above ground or within 18" of the surface due to site conditions (i.e., difficult to install pipe below frost depth) or areas where allowed by waiver or state specific practice standard allows for installation of portable pipelines.

**After Situation:**

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.

**Feature Measure:** Length of Pipe Installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,320.00

**Scenario Total Cost:** $4,030.36

**Scenario Cost/Unit:** $3.05

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Trenching, Pipeline Plowing | 1096 | Includes equipment and labor for plowing small diameter lines in common earth (< 3 inch) | Feet | $1.09 | 1320 | $1,438.80 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| **Materials** | | | | | | |
| Pipe, PE, 1 1/4 in., DR 9 | 998 | Materials: - 1 1/4 inch - PE - 160 psi - ASTM D3035 DR 9 | Feet | $1.45 | 1452 | $2,105.40 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 516 - Livestock Pipeline

**Scenario** #3 - Standard Installation, 2 inch dia. or less (ND-SD)

**Scenario Description:**

Description: The 2,640 foot 1 1/2" PVC pipeline installed at a depth of 72" will meet the needs of domestic animals. This type of installation is only appropriate in the colder climate of the northern plains region (ND & SD). This item includes installation, all materials, appurtenances, and labor required to construct and install the pipeline. Appurtenances include: couplings, fittings, anchors, thrust blocks, gate valves, air release valves, drain valve, and pressure relief valve, and are included in the cost of pipe material. Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636), Spring Development (574), and Prescribed Grazing (528).

**Before Situation:**

Inadequate water supply for domestic animals located on grazed range, pasture, or grazed forest in the colder climate of the northern plains region (ND & SD).

**After Situation:**

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife. Pipeline will supply adequate water for domestic animals on grazed range, pasture, or grazed forest in the northern plains region (ND & SD). The 2,640 feet of 1 1/2" diameter PVC pipe will be installed below ground at a depth of greater than 60" to meet the water quantity requirements of domestic animals.

**Feature Measure:** Length of Pipe Installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,640.00

**Scenario Total Cost:** $11,267.32

**Scenario Cost/Unit:** $4.27

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Trenching, Earth, 12 in. x 60 in. | 1459 | Trenching, earth, 12 inch wide x 60 inch depth, includes equipment and labor for trenching, laying 3 to 6 inch CPP drain line with envelope, and backfilling. | Feet | $1.92 | 2640 | $5,068.80 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 44 | $989.12 |
| **Materials** | | | | | | |
| Freeze Proof Hydrant, <= 3 ft. | 240 | Freeze Proof Hydrant, 3 foot or less bury. Materials only. | Each | $63.70 | 2 | $127.40 |
| Pipe, PVC, 1 1/2 in., SCH 40 | 975 | Materials: - 1 1/2 inch - PVC - SCH 40 - ASTM D1785 | Feet | $1.66 | 2904 | $4,820.64 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 516 - Livestock Pipeline

**Scenario** #4 - Standard Installation, greater than 2 inch dia.

**Scenario Description:**

Description: The 5,000 feet of 3" PVC pipeline installed at a depth of 72" will meet the needs of domestic animals. This type of installation is appropriate in the the northern plains region. This item includes installation, all materials, appurtenances, and labor required to construct and install the pipeline. Appurtenances include: couplings, fittings, thrust blocks, gate valves, air release valves, drain valve, and pressure relief valve, and are included in the cost of pipe material. Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636), Spring Development (574), and Prescribed Grazing (528).

**Before Situation:**

Water supplies need to be conveyed through pipelines for use by livestock or wildlife. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

**After Situation:**

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife. Pipeline will supply adequate water for domestic animals on grazed range, pasture, or grazed forest in the northern plains region (ND & SD). The 5,000 feet of 3" diameter PVC pipe will be installed below ground at a depth of greater than 60" to meet the water quantity requirements of domestic animals.

**Feature Measure:** Length of Pipe Installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 5,000.00

**Scenario Total Cost:** $29,517.20

**Scenario Cost/Unit:** $5.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Trencher, 8 in. | 936 | Equipment and power unit costs. Labor not included. | Hours | $51.59 | 32 | $1,650.88 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 64 | $1,438.72 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 32 | $941.44 |
| **Materials** | | | | | | |
| Freeze Proof Hydrant, <= 3 ft. | 240 | Freeze Proof Hydrant, 3 foot or less bury. Materials only. | Each | $63.70 | 4 | $254.80 |
| Pipe, PVC, 3 in., SCH 40 | 977 | Materials: - 3 inch - PVC - SCH 40 - ASTM D1785 | Feet | $4.54 | 5500 | $24,970.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 516 - Livestock Pipeline

**Scenario** #6 - Backhoe, greater than 2 inch dia.

**Scenario Description:**

Description: The 2,640 feet 3" PVC pipeline installed at a depth of 60" in rocky conditions to meet the needs of domestic animals. Trencher installation is not possible due to site conditions. This item includes installation, all materials, appurtenances, and labor required to construct and install the pipeline. Appurtenances include: couplings, fittings, expansion joints, anchors, thrust blocks, gate valves, air release valves, drain valve, and pressure relief valve, and are included in the cost of pipe material. Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636), Spring Development (574), and Prescribed Grazing (528).

**Before Situation:**

Water supplies need to be conveyed through pipelines for use by livestock or wildlife. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

**After Situation:**

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife. Pipeline will supply adequate water for domestic animals on grazed range, pasture, or grazed forest in the northern plains. The 2,640 feet of 3" diameter PVC pipe will be installed in rocky conditions at a depth of 60" or more to meet the water quantity requirements of domestic animals.

**Feature Measure:** Length of Pipe Installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,640.00

**Scenario Total Cost:** $22,912.84

**Scenario Cost/Unit:** $8.68

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 80 | $4,424.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 84 | $1,888.32 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 80 | $2,353.60 |
| **Materials** | | | | | | |
| Freeze Proof Hydrant, <= 3 ft. | 240 | Freeze Proof Hydrant, 3 foot or less bury. Materials only. | Each | $63.70 | 2 | $127.40 |
| Pipe, PVC, 3 in., SCH 40 | 977 | Materials: - 3 inch - PVC - SCH 40 - ASTM D1785 | Feet | $4.54 | 2904 | $13,184.16 |
| Earthfill Material, purchased, common | 2060 | Purchased earthfill materials includes both silt or clay. Material only. | Cubic Yards | $13.48 | 50 | $674.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 516 - Livestock Pipeline

**Scenario** #7 - Boring, any diameter

**Scenario Description:**

Description: 200 feet of 2" PVC pipeline installed by boring through road bed or under streams to meet the needs of domestic animals. Typical trencher or plowing installation is not possible due to site disturbance or environmental concerns. This item includes installation, all materials, appurtenances, and labor required to construct and install the pipeline. Appurtenances include: couplings, fittings, expansion joints, anchors, thrust blocks, gate valves, air release valves, drain valve, and pressure relief valve, and are included in the cost of pipe material. Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636), Spring Development (574), and Prescribed Grazing (528).

**Before Situation:**

Water supplies need to be conveyed through pipelines for use by livestock or wildlife. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

**After Situation:**

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife. Pipeline will supply adequate water for domestic animals on grazed range, pasture, or grazed forest in the northern plains. The 200 feet of 2" diameter PVC pipe will be installedunder roads or streams at a depth of 60" or more to avoid unnecessary disturbance and to meet the water quantity requirements of domestic animals.

**Feature Measure:** Length of Pipe Installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 200.00

**Scenario Total Cost:** $15,885.06

**Scenario Cost/Unit:** $79.43

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Horizontal Boring, Less Than Equal 3 in. diameter | 1131 | Includes equipment, labor and setup. | Feet | $75.61 | 200 | $15,122.00 |
| **Materials** | | | | | | |
| Freeze Proof Hydrant, <= 3 ft. | 240 | Freeze Proof Hydrant, 3 foot or less bury. Materials only. | Each | $63.70 | 1 | $63.70 |
| Pipe, PVC, 2 in., SCH 40 | 976 | Materials: - 2 inch - PVC - SCH 40 - ASTM D1785 | Feet | $2.19 | 200 | $438.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 516 - Livestock Pipeline

**Scenario** #8 - Rural Water Connection Equipment

**Scenario Description:**

The rural water connection includes the 4' manhole, meter, 500' of pipe, valves, and necessary installation for connecting from a rural water pipeline to a livestock distribution pipeline. This item includes installation, all materials, appurtenances, and labor required to construct and install the meter pit. This item does not include the hook-up fees to the rural water system. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636), Spring Development (574), and Prescribed Grazing (528).

**Before Situation:**

Inadequate water supply for domestic animals located on grazed range, pasture, or grazed forest in the northern plains region.

**After Situation:**

A rural water connection which provides access to a reliable, high quality water supply for meeting the needs of domestic animals on grazed range, pasture, or grazed forest in the northern plains region. The 4' manhole, meter, pipe and appurtenances will enable the pipeline to meet the quantity requirements of domestic animals.

**Feature Measure:** Rural Water Connection

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,298.44

**Scenario Cost/Unit:** $4,298.44

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 4 | $221.20 |
| Trencher, 8 in. | 936 | Equipment and power unit costs. Labor not included. | Hours | $51.59 | 6 | $309.54 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 12 | $269.76 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 10 | $294.20 |
| **Materials** | | | | | | |
| Freeze Proof Hydrant, <= 3 ft. | 240 | Freeze Proof Hydrant, 3 foot or less bury. Materials only. | Each | $63.70 | 1 | $63.70 |
| Pipe, PVC, 2 in., SCH 40 | 976 | Materials: - 2 inch - PVC - SCH 40 - ASTM D1785 | Feet | $2.19 | 600 | $1,314.00 |
| Manhole, 4 ft x 4 ft | 1053 | Precast Manhole with base and top delivered. 4 feet diameter x 4 feet. Includes materials only. | Each | $1,303.32 | 1 | $1,303.32 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 520 - Pond Sealing or Lining, Compacted Soil Treatment

**Scenario** #61 - Soil Dispersant - Covered

**Scenario Description:**
Construction of a compacted soil liner, treated with a soil dispersant, to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes incorporation of the dispersant with the soil liner under proper moisture conditions, compaction to the designed liner thickness, and placement of soil cover over the treated liner. Practice implementation may require filter compatibility with the subgrade (graded filter or geotextile). Associated practice PS378, PS313.

**Before Situation:**
In-place soils at site exhibit seepage rates in excess of acceptable limits. Soils are suitable for treatment with dispersants.

**After Situation:**
Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.

**Feature Measure:** Volume of Liner Material including

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 2,420.00

**Scenario Total Cost:** $17,172.82

**Scenario Cost/Unit:** $7.10

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 2420 | $9,510.60 |
| Tractor, agricultural, 120 HP | 962 | Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included. | Hours | $65.82 | 20 | $1,316.40 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 20 | $588.40 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 8 | $956.40 |
| **Materials** | | | | | | |
| Soil Dispersant | 1490 | Soil Amendment (tetrasodium pyrophosphate (TSPP), sodium tripolyphosphate (STPP), or soda ash or approved equivalent) | Ton | $456.20 | 6.53 | $2,978.99 |
| **Mobilization** | | | | | | |
| Mobilization, Material, distance > 50 miles | 1043 | Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price. | Dollars | $1.00 | 1178.19 | $1,178.19 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 520 - Pond Sealing or Lining, Compacted Soil Treatment

**Scenario** #62 - Bentonite Treatment - Uncovered

**Scenario Description:**
Construction of a compacted soil liner, treated with bentonite, to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes incorporation of the bentonite with the soil under proper moisture conditions, compaction to the designed liner thickness. Practice implementation may require filter compatibility with the subgrade (graded filter or geotextile). Associated practice PS378, PS313.

**Before Situation:**
In-place soils at site exhibit seepage rates in excess of acceptable limits. Soils are suitable for treatment with dispersants.

**After Situation:**
Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.

**Feature Measure:** Volume of Liner Material

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 1,613.00

**Scenario Total Cost:** $196,299.01

**Scenario Cost/Unit:** $121.70

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 1613 | $6,339.09 |
| Tractor, agricultural, 120 HP | 962 | Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included. | Hours | $65.82 | 6 | $394.92 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 7 | $205.94 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |
| **Materials** | | | | | | |
| Bentonite | 41 | Bentonite, includes materials (50# bag) | Each | $36.09 | 5227 | $188,642.43 |
| **Mobilization** | | | | | | |
| Mobilization, Material, distance > 50 miles | 1043 | Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price. | Dollars | $1.00 | 1 | $1.00 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 520 - Pond Sealing or Lining, Compacted Soil Treatment

**Scenario** #64 - Material haul > 1 mile

**Scenario Description:**
Construction of a compacted soil liner, treated with compacted clay, to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes compaction of the soil liner under proper moisture conditions to the designed liner thickness, and protection of the finished liner. Material haul > 1 mile. Associated practices include PS378, PS313, & other waste water impoundments.

**Before Situation:**
In-place soils at site exhibit seepage rates in excess of acceptable limits. An adequate quantity of soil suitable for constructing a clay liner without amendments is available at an economical haul distance.

**After Situation:**
Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.

**Feature Measure:** Volume of Liner Material (including

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 2,420.00

**Scenario Total Cost:** $30,660.75

**Scenario Cost/Unit:** $12.67

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 2420 | $9,510.60 |
| Track Loader, 95HP | 935 | Equipment and power unit costs. Labor not included. | Hours | $98.22 | 20 | $1,964.40 |
| Excavation, clay, large equipment, 1500 ft | 1217 | Bulk excavation of clay with scrapers with average haul distance of 1500 feet. Includes equipment and labor. | Cubic Yards | $5.73 | 1613 | $9,242.49 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 807 | $2,905.20 |
| Hauling, bulk, highway truck | 1615 | Hauling of bulk earthfill, rockfill, waste or debris. One-way travel distance using fully loaded highway dump trucks (typically 16 CY or 20 TN capacity). Includes equipment and labor for truck only. Does not include cost for loading truck. | Cubic Yard Mile | $0.36 | 8065 | $2,903.40 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 20 | $702.60 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 14 | $1,673.70 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 3 | $1,497.00 |

**Practice:** 520 - Pond Sealing or Lining, Compacted Soil Treatment

**Scenario** #66 - Bentonite Treatment - Covered

**Scenario Description:**
Construction of a compacted soil liner, treated with bentonite, to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes incorporation of the bentonite with the soil under proper moisture conditions, compaction to the designed liner thickness, and placement of soil cover over the treated liner. Practice implementation may require filter compatibility with the subgrade (graded filter or geotextile). Associated practice PS378, PS313.

**Before Situation:**
In-place soils at site exhibit seepage rates in excess of acceptable limits. Soils are suitable for treatment with bentonite.

**After Situation:**
Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.

**Feature Measure:** Volume of Liner Material (includes

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 3,227.00

**Scenario Total Cost:** $202,642.03

**Scenario Cost/Unit:** $62.80

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 3227 | $12,682.11 |
| Tractor, agricultural, 120 HP | 962 | Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included. | Hours | $65.82 | 6 | $394.92 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 7 | $205.94 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |
| **Materials** | | | | | | |
| Bentonite | 41 | Bentonite, includes materials (50# bag) | Each | $36.09 | 5227 | $188,642.43 |
| **Mobilization** | | | | | | |
| Mobilization, Material, distance > 50 miles | 1043 | Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price. | Dollars | $1.00 | 1 | $1.00 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 520 - Pond Sealing or Lining, Compacted Soil Treatment

**Scenario** #83 - Use On-Site Material

**Scenario Description:**

Construction of a compacted soil liner, using materials available on-site, to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes compaction of the subgrade and soil line under proper moisture conditions to the designed liner thickness using materials available at the construction site. Associated practices include PS378, PS313, and other waste water impoundments.

**Before Situation:**

In-place soils at site exhibit seepage rates in excess of acceptable limits without proper moisture and density control. An adequate quantity of soil suitable for constructing a clay liner without amendments is available on-site.

**After Situation:**

Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.

**Feature Measure:** Volume of Liner Material (including

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 1,613.00

**Scenario Total Cost:** $11,973.73

**Scenario Cost/Unit:** $7.42

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 1613 | $6,339.09 |
| Excavation, clay, large equipment, 150 ft | 1219 | Bulk excavation of clay with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $6.04 | 807 | $4,874.28 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 520 - Pond Sealing or Lining, Compacted Soil Treatment

**Scenario** #84 - Use On-Site Material with Soil Cover

**Scenario Description:**

Construction of a compacted soil liner, treated with compacted clay, to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes compaction of the soil liner under proper moisture conditions to the designed liner thickness, and soil cover to protect the finished liner using materials available at the construction site. Associated practices include PS378, PS313, and other waste water impoundments.

**Before Situation:**

In-place soils at site exhibit seepage rates in excess of acceptable limits. An adequate quantity of soil suitable for constructing a clay liner without amendments is available on-site.

**After Situation:**

Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.

**Feature Measure:** Volume of Liner Material (including

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 2,420.00

**Scenario Total Cost:** $14,709.46

**Scenario Cost/Unit:** $6.08

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 1613 | $6,339.09 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 807 | $2,735.73 |
| Excavation, clay, large equipment, 150 ft | 1219 | Bulk excavation of clay with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $6.04 | 807 | $4,874.28 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 521 - Pond Sealing or Lining, Geomembrane or Geosynthetic Clay Liner

**Scenario** #2 - Flexible Membrane - Uncovered with liner drainage or venting

**Scenario Description:**

Installation of a flexible geosynthetic membrane liner, uncovered, to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes a geotextile or soil cushion to protect the liner from subgrade damage, and liner drainage or venting. Associated practices include PS378 Pond, PS313 Waste Storage Facility.

**Before Situation:**

In-place soils at site exhibit seepage rates in excess of acceptable limits.

**After Situation:**

Water conservation and enviromental protection provided by limiting seepage losses from ponds or waste storage impoundments.

**Feature Measure:** Surface area of Liner Material (incl

**Scenario Unit:** Square Yard

**Scenario Typical Size:** 2,420.00

**Scenario Total Cost:** $46,786.60

**Scenario Cost/Unit:** $19.33

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 40 | $1,216.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 32 | $3,825.60 |
| **Materials** | | | | | | |
| Synthetic Liner, 40 mil | 1387 | Synthetic 40 mil HDPE, LLDPE, EPDM, etc membrane liner material. Includes materials and shipping only. | Square Yard | $7.29 | 2420 | $17,641.80 |
| Geonet | 1778 | Geosynthetic drainage liner, typically HDPE of 300 mil thickness. Includes materials and shipping only. | Square Yard | $9.96 | 2420 | $24,103.20 |

**Practice:** 521 - Pond Sealing or Lining, Geomembrane or Geosynthetic Clay Liner

**Scenario** #4 - Flexible Membrane - Covered with liner drainage or venting

**Scenario Description:**
Installation of a flexible geosynthetic membrane liner to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes 1 foot of soil cover for liner protection, a geotextile or soil cushion to protect liner from subgrade damage, and liner drainage or venting. Associated practices include PS378 Pond, PS313 Waste Storage Facility.

**Before Situation:**
In-place soils at site exhibit seepage rates in excess of acceptable limits.

**After Situation:**
Water conservation and enviromental protection provided by limiting seepage losses from ponds or waste storage impoundments.

**Feature Measure:** Surface area of Liner Material (incl

**Scenario Unit:** Square Yard

**Scenario Typical Size:** 2,420.00

**Scenario Total Cost:** $50,133.90

**Scenario Cost/Unit:** $20.72

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 807 | $3,171.51 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 40 | $1,216.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 32 | $3,825.60 |
| **Materials** | | | | | | |
| Synthetic Liner, 40 mil | 1387 | Synthetic 40 mil HDPE, LLDPE, EPDM, etc membrane liner material. Includes materials and shipping only. | Square Yard | $7.29 | 2420 | $17,641.80 |
| Geonet | 1778 | Geosynthetic drainage liner, typically HDPE of 300 mil thickness. Includes materials and shipping only. | Square Yard | $9.96 | 2420 | $24,103.20 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 528 - Prescribed Grazing

**Scenario** #7 - Habitat Mgt

**Scenario Description:**
Development and implementation of a grazing schedule that will create, restore, and/or enhance habitat components for identified wildlife species of concern.

**Before Situation:**
Wildlife cover, shelter, food, water and movement are limited due to grazing land condition. Plant health and vigor are negatively impacted by one or more of the following: poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality may be impacted by increased runoff and erosion. In addition, reduced vegetative cover increases the opportunity for encroachment of noxious and invasive weeds.

**After Situation:**
A grazing system is altered and/or enhanced to benefit habitat for targeted wildlife species. Additional benefits include improved rangeland and/or pasture health, adequate rest and recovery periods, protection of sensitive areas, improved water quality and reduced risk of invasive or noxious weed encroachment. In order to achieve this, implementation of a rest/rotation or deferred grazing system will be required. A portion not to exceed 20% of the grazed acres may be deferred during periods of critical wildlife use.

**Feature Measure:** Acres of Treatment

**Scenario Unit:** Acres

**Scenario Typical Size:** 160.00

**Scenario Total Cost:** $2,693.74

**Scenario Cost/Unit:** $16.84

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 26 | $501.28 |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 1 | $50.67 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 26 | $790.40 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 26 | $1,243.06 |

**Practice:** 528 - Prescribed Grazing

**Scenario** #8 - Livestock Deferment (FI)

**Scenario Description:**

Defer livestock grazing for a 12 month period to allow for regrowth and recovery to occur on a 40 acre grazed range unit where a plant or animal resource concerns exists. Complete livestock exclusion is required during the specified time period. Deferment may be necessary on whole units or portions of units as determined by appropriate assessment.

**Before Situation:**

Inadequate plant cover exists for nesting, brooding, and/or winter habitat for upland birds on grazing/wildlife lands. Inadequate plant growth or regrowth after livestock use does not permit the use by wildlife and/or creates a plant condition resource concern.

**After Situation:**

Adequte cover exists after deferment which provides adequate cover for wildlife or plant growth/recovery.

**Feature Measure:** Acres of Treatment

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $1,278.94

**Scenario Cost/Unit:** $31.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 38 | $1,189.02 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |

**Practice:** 528 - Prescribed Grazing

**Scenario** #10 - Cover Crop/Aftermath

**Scenario Description:**

Design and implementation of a grazing system using multiple fields of cover crops or cover crops in combination with crop aftermath. Use of these crop fields will provide additional forage and relieve pressure on rangeland fields, thereby enhancing rangeland health and ecosystem function as well as optimizing efficiency and economic return through monitoring (ex: trend, composition, production, etc), and record keeping. This grazing will typically occur in the fall. If the grazing occurs on cover crop that is being used as part of pollinator system the field can not be grazed until after the honey bees are moved from the area which is usually early September.

**Before Situation:**

Current grazing system exhibits undesirable and inefficient use of forage plants as well as soil and water resources. Stocking rates are likely higher than the current level of production and efficiency of use can support without management changes. There is currently no monitoring plan in place to evaluate change on the landscape.

**After Situation:**

Prescribed grazing system is designed to protect the health and vigor of the plant communities that are in place, as well as utilizing the cover crops to a level that will continue to improve the soil health of the cropland. Livestock are managed in rotation in a way that enhances soil health and function through proper use and distribution, and efficient harvest of forage resources. Grazing system success will be evaluated through monitoring.

**Feature Measure:** Acres of Treatment

**Scenario Unit:** Acres

**Scenario Typical Size:** 320.00

**Scenario Total Cost:** $2,565.88

**Scenario Cost/Unit:** $8.02

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 35 | $674.80 |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 1 | $50.67 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 17.5 | $393.40 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 28 | $1,338.68 |

**Practice:** 528 - Prescribed Grazing

**Scenario** #24 - Grazing Management System, Standard

**Scenario Description:**
Design and implementation of a grazing system that will enhance rangeland health and ecosystem function as well as optimize efficiency and economic return through monitoring (ex:photo points, stubble height after grazing, etc) & record keeping.

**Before Situation:**
Current grazing system exhibits undesirable and inefficient use of forage plants and such use may have a negative impact on rangeland health, as well as soil and water resources. Stocking rates are likely higher than the current level of production and efficiency of use can support without management changes. There is currently no monitoring plan in place to evaluate change on the landscape.

**After Situation:**
Prescribed grazing system is designed to protect the health and vigor of the plant communities that are in place. Livestock are managed in a way that enhances rangeland health and function through protection of sensitive areas, and efficient harvest of forage resources. Grazing system success will be evaluated through short term monitoring.

**Feature Measure:** <Unknown>

**Scenario Unit:** Acres

**Scenario Typical Size:** 500.00

**Scenario Total Cost:** $3,768.60

**Scenario Cost/Unit:** $7.54

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 1 | $50.67 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 30 | $912.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 120 | $2,697.60 |

**Practice:** 528 - Prescribed Grazing

**Scenario** #31 - Habitat Mgt. Long Term Monitoring

**Scenario Description:**
Development and implementation of a grazing schedule that will enhance habitat components for the identified wildlife species of concern.

**Before Situation:**
Wildlife cover, shelter, food, water and movement are limited due to grazingland condition. Plant health and vigor are negatively impacted by one or more of the following: poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality may be impacted by increased runoff and erosion. In addition reduced vegetative cover increases the opportunity for encroachment of noxious and invasive weeds.

**After Situation:**
A grazing system is altered and/or enhanced to benefit habitat for targeted wildlife species. Additional benefits include improved rangeland and/or pasture health, adequate rest and recovery periods, protection of sensitive areas, improved water quality and reduced risk of invasive or noxious weed encroachment. In order to achieve this, implementation of a rest/rotation or deferred grazing system will be required. A portion of the acres (20% for Sage Grouse Initiative) will be deferred during periods of critical wildlife use.

**Feature Measure:** <Unknown>

**Scenario Unit:** Acres

**Scenario Typical Size:** 500.00

**Scenario Total Cost:** $15,028.33

**Scenario Cost/Unit:** $30.06

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 3 | $324.99 |
| **Equipment Installation** | | | | | | |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 150 | $2,892.00 |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 2 | $101.34 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 80 | $2,432.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 200 | $4,496.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 40 | $4,782.00 |

**Practice:** 528 - Prescribed Grazing

**Scenario** #55 - Prescribed Grazing Management for 5 Acres or less

**Scenario Description:**
Plan, implement and monitor a rotational grazing systgem that will enhance and maintain ecosystem function as well as optimize efficiency and economic return on small farm grazing lands.

**Before Situation:**
Area is degraded due to inappropriate timing, duration, frequency and intensity of animal utilization resulting in impaired ecosystem functions. Overuse and degradation of the soil and plant resources are occuriing and animal health is compromised.

**After Situation:**
Planned rotational movement of animals meet ecosystem functions due to proper timing, duration, frequency and intensity of animal utilization. Monitoring is showing that animals are in balance with available forage resources and ecological function and processes for soil, water and plant resources are being improved.

**Feature Measure:** acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 5.00

**Scenario Total Cost:** $970.84

**Scenario Cost/Unit:** $194.17

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 1 | $50.67 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 6 | $182.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 28 | $629.44 |

**Practice:** 533 - Pumping Plant

**Scenario** #3 - Irrigation, Variable Frequency Drive

**Scenario Description:**

Description: This is an installation of electrical and electronic components designed to vary the frequency of the voltage to vary the speed of an electric motor in an irrigation system. This directly affects pressure and flowrate. This would give the operator the flexibility to operate several systems separately or at the same time. Resource concerns: Insufficient water - Inefficient use of irrigation water; Inefficient energy use - Equipment and facilities and Farming/ranching practices and field operations. Associated Practices: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 449 - Irrigation Water Management.

**Before Situation:**

Standard electrical connection from electrical utility to pump motor. No capability to match pump output pressure and/or flowrate to field(s) need(s). Result is over/under pressure(s) and/or flow rate(s), possible hydraulic anomalies, energy loss, and or inefficient water application in the irrigation system.

**After Situation:**

VFD Modifications are implemented at the pump site to allow for varying the speed of electric motor to match the pressure and flow requirements for a center pivot irrigation system.

**Feature Measure:** Number of Pumps

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,750.04

**Scenario Cost/Unit:** $6,750.04

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| **Materials** | | | | | | |
| Variable Speed Drive, 50 HP | 1288 | Variable speed drive for 50 Horsepower electric motor. Does not include motor. Materials only. | Horsepower | $126.54 | 50 | $6,327.00 |

**Practice:** 533 - Pumping Plant

**Scenario** #4 - irrigation, Surface Water

**Scenario Description:**

This scenario includes the installation of an electric motor and pump with surface water (such as an irrigation canal) as the water source. This is done in conjunction with an irrigation conversion practice to ensure energy and water savings are realized. This scenario includes all materials, equipment and labor to install the pump and motor, including intake screens. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 449 - Irrigation Water Management; 313 - Waste Storage Facility; 634 - Waste Transfer; 436 - Irrigation Reservoir; and 447 - Irrigation System, Tailwater Recovery; and 614 - Watering Facility.

**Before Situation:**

Irrigation: 160 acres of cropland that is being irrigated under a less efficient system than a center pivot or linear move system with low pressure nozzles which is being serviced by a pump set up for the existing system. The existing irrigation system employs an inefficient, improperly sized pump that prevents efficient water application resulting in water loss and high energy use.

**After Situation:**

Irrigation: 160 acres of cropland that has undergone an irrigation conversion practice to use a more efficient method of irrigation, including installation of a pumping plant with an irrigation canal as the water source. The properly designed and efficient pumping plant is installed, reducing energy use and improving irrigation efficiency.

**Feature Measure:** Number of Pumps

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $15,434.35

**Scenario Cost/Unit:** $15,434.35

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 2 | $932.54 |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 4 | $221.20 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 4 | $117.68 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Pump, > 5 HP to 30 HP, pump and motor, fixed cost portion | 1011 | Fixed cost portion of a pump between 5 and 30 HP, including the pump and motor. This portion is a base cost for the pump and is not dependent on horsepower. The total cost will include this fixed cost plus a variable cost portion. Includes material and shipping only. | Each | $3,582.81 | 1 | $3,582.81 |
| Pump, > 5 HP to 30 HP, pump and motor, variable cost portion | 1012 | Variable cost portion of a pump between 5 and 30 HP, including the pump and motor. This portion is dependent on the total horsepower for the pump. The total cost will include this variable cost plus a fixed cost portion. Includes material and shipping only. | Horsepower | $136.48 | 30 | $4,094.40 |
| Pump intake screen, Linear, fixed cost portion | 2069 | Fixed cost portion of linear fish intake pump screen including all adapters, o-rings, mounting tabs, and other accessories. This is the base cost for the system. Includes materials and shipping only. | Each | $838.20 | 1 | $838.20 |
| Pump intake screen, Linear, variable cost portion | 2070 | Variable cost portion of linear fish intake pump screen including all adapters, o-rings, mounting tabs, and other accessories. Includes materials and shipping only. | Gallons per Minute | $5.16 | 900 | $4,644.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 533 - Pumping Plant

**Scenario** #5 - Livestock, Manure Transfer

**Scenario Description:**

Description: Pump and accessories to move manure from storage location to manure distribution site/equipment. Part of a animal waste management system. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters. Associated Practices include: 313 - Waste Storage Facility; 634 - Waste Transfer

**Before Situation:**

Livestock facility that is not in compliance with federal and/or state regulations for animal feeding operations for handling livestock manure.

**After Situation:**

A manure transfer pump is installed as part of animal manure handling system. The typical installation includes a 15 hp chopper/screw pump installed at the facility with all necessary appurtenances and controls. Other pump types may be substituted as needed to transfer manure. Waste is properly managed in accordance federal and/or state regulations for animal feeding operations to address water quality concerns.

**Feature Measure:** Number of Pumps

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $23,638.80

**Scenario Cost/Unit:** $23,638.80

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 5 | $2,331.35 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 16 | $2,080.32 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 48 | $1,079.04 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 16 | $562.08 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 24 | $1,147.44 |
| **Materials** | | | | | | |
| Pump, > 5 HP to 30 HP, pump and motor, fixed cost portion | 1011 | Fixed cost portion of a pump between 5 and 30 HP, including the pump and motor. This portion is a base cost for the pump and is not dependent on horsepower. The total cost will include this fixed cost plus a variable cost portion. Includes material and shipping only. | Each | $3,582.81 | 1 | $3,582.81 |
| Pump, > 5 HP to 30 HP, pump and motor, variable cost portion | 1012 | Variable cost portion of a pump between 5 and 30 HP, including the pump and motor. This portion is dependent on the total horsepower for the pump. The total cost will include this variable cost plus a fixed cost portion. Includes material and shipping only. | Horsepower | $136.48 | 15 | $2,047.20 |
| Manhole, 6 ft x 10 ft | 2107 | Precast Manhole with base and top delivered. 6 feet diameter x 10 feet depth. Materials, equipment and labor included. | Each | $10,547.20 | 1 | $10,547.20 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 533 - Pumping Plant

**Scenario** #7 - Livestock, w/ Pressure Tank, Low HP

**Scenario Description:**

Descriptions: A submersible electric-powered pump (typically less than or equal to 1.5 HP) is installed in a well or structure. It is used to provide water for livestock as part of a prescribed grazing system. Submersible pump installed to deliver stockwater from a well or waterbody to a watering facility. Installation includes drop pipe, pump, and all necessary appurtenances and includes a pressure tank. Resource Concerns: Livestock Production Limitation - Inadequate livestock water. Associated Practices include: 374 - Farmstead Energy Improvement; 516 - Livestock Pipeline.

**Before Situation:**

Grazing system has an inadequate water supply for livestock that prevents efficient use of pasture.

**After Situation:**

Properly designed water supply system including pump, pipeline, and watering facilities are in place. Water is delivered at a sufficient rate to meet the requirements of a prescribed grazing system.

**Feature Measure:** No. of Pumps Installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,175.69

**Scenario Cost/Unit:** $5,175.69

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 8 | $442.40 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 8 | $235.36 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Pipe, PE, 1 1/4 in., DR 9 | 998 | Materials: - 1 1/4 inch - PE - 160 psi - ASTM D3035 DR 9 | Feet | $1.45 | 175 | $253.75 |
| Pump, <= 5 HP, pump and motor, fixed cost portion | 1009 | Fixed cost portion of a pump less than or equal to 5 HP pump and motor. This portion is the base cost and is not dependent on horsepower. The total cost of any pump will include this fixed cost plus a variable cost portion. Includes the motor and controls for materials and shipping only. | Each | $1,309.33 | 1 | $1,309.33 |
| Pump, <= 5 HP, pump and motor, variable cost portion | 1010 | Variable cost portion of a pump less than or equal to 5 HP pump and motor. This portion is dependent on the total horsepower for the pump. The total cost of any pump will include this variable cost plus the fixed cost portion. Includes the motor and controls for materials and shipping only. | Horsepower | $418.15 | 1.5 | $627.23 |
| Pressure Tank, 80 gallon | 1039 | Pressure Tank, 80 gallon. Includes materials and shipping only. | Each | $595.27 | 1 | $595.27 |
| Pumping Plant Pit, Concrete, 1200 Gallon | 1922 | Precast concrete septic tank structure, 1200 gal capacity, with access port and ladder. Materials only. | Each | $1,777.35 | 0.5 | $888.68 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 533 - Pumping Plant

**Scenario** #8 - Livestock, With Pressure Tank, High HP

**Scenario Description:**

A submersible electric-powered pump (greater than 1.5 hp) is installed in a well or structure. It is used to provide water for livestock as part of a prescribed grazing system. Submersible pump installed to deliver stockwater from a well or waterbody to a watering facility. Installation includes drop pipe, pump, and all necessary appurtenances and includes a pressure tank. Resource Concerns: Livestock Production Limitation - Inadequate livestock water. Associated Practices include: 374 - Farmstead Energy Improvement; 516 - Livestock Pipeline

**Before Situation:**

Grazing system has an inadequate water supply for livestock that prevents efficient use of pasture.

**After Situation:**

Properly designed water supply system including pump, pipeline, and watering facilities are in place. Water is delivered at a sufficient rate to meet the requirements of a prescribed grazing system.

**Feature Measure:** Pump Power Requirement

**Scenario Unit:** Horsepower

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $4,976.68

**Scenario Cost/Unit:** $2,488.34

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 8 | $442.40 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 8 | $235.36 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Pipe, PE, 1 1/4 in., DR 9 | 998 | Materials: - 1 1/4 inch - PE - 160 psi - ASTM D3035 DR 9 | Feet | $1.45 | 200 | $290.00 |
| Pump, <= 5 HP, pump and motor, fixed cost portion | 1009 | Fixed cost portion of a pump less than or equal to 5 HP pump and motor. This portion is the base cost and is not dependent on horsepower. The total cost of any pump will include this fixed cost plus a variable cost portion. Includes the motor and controls for materials and shipping only. | Each | $1,309.33 | 1 | $1,309.33 |
| Pump, <= 5 HP, pump and motor, variable cost portion | 1010 | Variable cost portion of a pump less than or equal to 5 HP pump and motor. This portion is dependent on the total horsepower for the pump. The total cost of any pump will include this variable cost plus the fixed cost portion. Includes the motor and controls for materials and shipping only. | Horsepower | $418.15 | 2 | $836.30 |
| Pressure Tank, 80 gallon | 1039 | Pressure Tank, 80 gallon. Includes materials and shipping only. | Each | $595.27 | 1 | $595.27 |
| Pumping Plant Pit, Concrete, 1200 Gallon | 1922 | Precast concrete septic tank structure, 1200 gal capacity, with access port and ladder. Materials only. | Each | $1,777.35 | 0.25 | $444.34 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 533 - Pumping Plant

**Scenario** #9 - Livestock, without Pressure Tank (HP)

**Scenario Description:**

Description: A 1 Hp submersible electric-powered pump is installed in a well or structure. It is used for watering livestock as part of a prescribed grazing system. Submersible pump installed to deliver stockwater from a well or waterbody to a watering facility. Installation includes drop pipe, pump, and all necessary appurtenances. Installation without pressure tank is typically used during warm seasons. Resource Concerns: Livestock Production Limitation - Inadequate livestock water; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 516 - Livestock Pipeline.

**Before Situation:**

Grazing system that has an inadequate water supply for livestock.

**After Situation:**

Water is transferred at a sufficient rate and pressure to meet the requirements of a prescribed grazing system. Irrigation: A properly designed pump is installed to improve irrigation efficiency and reduce energy usage.

**Feature Measure:** Pump Power Required

**Scenario Unit:** Horsepower

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,316.06

**Scenario Cost/Unit:** $2,316.06

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| **Materials** | | | | | | |
| Pipe, PE, 1 1/4 in., DR 9 | 998 | Materials: - 1 1/4 inch - PE - 160 psi - ASTM D3035 DR 9 | Feet | $1.45 | 150 | $217.50 |
| Pump, <= 5 HP, pump and motor, fixed cost portion | 1009 | Fixed cost portion of a pump less than or equal to 5 HP pump and motor. This portion is the base cost and is not dependent on horsepower. The total cost of any pump will include this fixed cost plus a variable cost portion. Includes the motor and controls for materials and shipping only. | Each | $1,309.33 | 1 | $1,309.33 |
| Pump, <= 5 HP, pump and motor, variable cost portion | 1010 | Variable cost portion of a pump less than or equal to 5 HP pump and motor. This portion is dependent on the total horsepower for the pump. The total cost of any pump will include this variable cost plus the fixed cost portion. Includes the motor and controls for materials and shipping only. | Horsepower | $418.15 | 1 | $418.15 |

**Practice:** 533 - Pumping Plant

**Scenario** #12 - Solar-Powered Pump 1hp

**Scenario Description:**

Description: The typical scenario assumes installation of a submersible solar-powered pump in a well or a live stream. The installation includes the pump, wiring, drop pipe, solar panels, mounts, inverter, and all appurtenances. Grazing - Livestock exclusion from surface water will result in improved surface water quality and reduced erosion. Irrigation - energy consumption will be reduced and the increased pressure and flow rates will improve irrigation efficiency. Resource Concerns: Insufficient stockwater. Associated Practices include: 374 - Farmstead Energy Improvement; 382 - Fence; 516 - Livestock Pipeline; 561 - Heavy Use Area Protection; and, 614 - Watering Facility.

**Before Situation:**

Inadequate supply or location of water for a prescribed grazing system. Eroded stream banks and degraded water quality due to livestock access to stream. Cattle are not well-distributed because of remote water location.

**After Situation:**

The typical scenario assumes installation of a photovoltaic (PV) panel, capable of operating a solar-powered submersible pump in a well or other water source. The installation includes the pump, wiring, pipeline in the well, solar panels, frame mounts, inverter, and all appurtenances. Water will be pumped to a Livestock Pipeline (516). Grazing - Livestock exclusion from surface water will result in improved surface water quality and reduced erosion. Grazing has potential to be well distributed.

**Feature Measure:** Each Pumping Plant

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7,918.37

**Scenario Cost/Unit:** $7,918.37

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 20 | $608.00 |
| **Materials** | | | | | | |
| Pipe, PE, 1 1/4 in., DR 9 | 998 | Materials: - 1 1/4 inch - PE - 160 psi - ASTM D3035 DR 9 | Feet | $1.45 | 200 | $290.00 |
| Solar Pumping System, Fixed Cost Portion | 2495 | Fixed cost portion of a solar powered pumping system. This portion is a base cost for a complete system including the photovoltaic panels, pumping plant, support braces, electric controllers, service drop, etc., and is not dependant on KiloWatt. The total cost will include this fixed cost plus a variable cost portion. Includes the cost of materials only. | Each | $4,859.95 | 1 | $4,859.95 |
| Solar Pumping System, Variable Cost Portion | 2496 | Variable cost portion of a solar powered pumping system. This portion IS dependent upon the total kilowatts of the photovoltaic panels, but also includes the pumping plant, support braces, electric controllers, service drop, etc. The total cost will include this variable cost plus a fixed cost portion. Includes the cost of materials only. | Kilowatt | $2,160.42 | 1 | $2,160.42 |

**Practice:** 533 - Pumping Plant

**Scenario** #14 - Livestock, Variable Frequency Drive

**Scenario Description:**

Description: This is an installation of electrical and electronic components designed to vary the frequency of the voltage to vary the speed of an electric motor in a livestock watering system to provide a constant pressure and flow rate. This would give the operator the flexibility to operate several systems separately or at the same time. Resource concerns: Livestock Production Limitation - Inadequate livestock water and distribution. Associated Practices: 374 - Farmstead Energy Improvement; 516 - Livestock Pipeline; 614 - Watering Facility.

**Before Situation:**

Standard electrical connection from electrical utility to pump motor. No capability to match pump output pressure and/or flowrate to livestock needs. Result is over/under pressure(s) and/or flow rate(s), possible hydraulic anomalies, energy loss, and or inefficient water application in the irrigation system.

**After Situation:**

A VFDis installed at the pump site to vary the speed of a submersible electric motor to match the pressure and flow requirements for a livestock watering system.

**Feature Measure:** Number of Pumps

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,846.87

**Scenario Cost/Unit:** $6,846.87

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 16 | $1,912.80 |
| **Materials** | | | | | | |
| Pump, motor and variable frequency drive, fixed cost portion | 1016 | Fixed cost portion of the Pump: Pump, motor and variable frequency drive. This portion is a base cost for all Pump: Pump, motor and variable frequency drive and is not dependent on horsepower. The total cost of any Pump will include this fixed cost plus a variable cost portion. The completed pump and variable frequency drive will include the motor and controls. This cost will include materials and shipping only. | Each | $3,929.03 | 1 | $3,929.03 |
| Pump, motor and variable frequency drive, variable cost portion | 1017 | Variable cost portion of the Pump: Pump, motor and variable frequency drive. This portion is dependent on the total horsepower for the Pump: Pump, motor and variable frequency drive. The total cost will include this variable cost plus the fixed cost portion. The completed pump and variable frequency drive will include the motor and controls. This cost will include materials and shipping only. | Horsepower | $322.68 | 2 | $645.36 |

**Practice:** 550 - Range Planting

**Scenario** #1 - Native, Standard Prep

**Scenario Description:**

Establishment of a mixture of NATIVE adapted perennial species on a grazed land unit to improve forage condition, improve wildlife habitat and/or reduce erosion. Seed mix of Native species is chosen based on range conditions and availability of seed. Planting by preparing a seedbed with LIGHT TO MODERATE TILLAGE and seeding with a no-till drill, range drill, or by broadcasting.

**Before Situation:**

Rangeland or cropland with or without an existing stand of perennial or annual grasses, OR a monoculture, OR no grasses are present, where natural reseeding or vegetation enhancement by grazing management alone is unlikely. Resource concerns may include: undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

**After Situation:**

Establishment of NATIVE adapted perennial vegetation such as grasses, forbs, and legumes improve forage quality and quantity and reduce soil erosion on grazed range, pasture, forest or other suitable location.

**Feature Measure:** Acres of Range Planting

**Scenario Unit:** Acres

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $12,976.80

**Scenario Cost/Unit:** $162.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 80 | $1,056.80 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 80 | $1,767.20 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Low Density | 2750 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $126.91 | 80 | $10,152.80 |

**Practice:** 550 - Range Planting

**Scenario** #2 - Native, Standard Prep (FI)

**Scenario Description:**

Establishment of a mixture of NATIVE adapted perennial species on a grazed land unit to improve forage condition, improve wildlife habitat and/or reduce erosion. Seed mix of Native species is chosen based on range conditions and availability of seed. Planting by preparing a seedbed with LIGHT TO MODERATE TILLAGE and seeding with a no-till drill, range drill, or by broadcasting.

**Before Situation:**

Rangeland or cropland with or without an existing stand of perennial or annual grasses, OR a monoculture, OR no grasses are present, where natural reseeding or vegetation enhancement by grazing management alone is unlikely. Resource concerns may include: undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

**After Situation:**

Establishment of NATIVE adapted perennial vegetation such as grasses, forbs, and legumes improve forage quality and quantity and reduce soil erosion on grazed range, pasture, forest or other suitable location.

**Feature Measure:** Acres of Range Planting

**Scenario Unit:** Acres

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $15,480.00

**Scenario Cost/Unit:** $193.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 80 | $1,056.80 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 80 | $1,767.20 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 80 | $2,503.20 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Low Density | 2750 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $126.91 | 80 | $10,152.80 |

**Practice:** 550 - Range Planting

**Scenario** #5 - Native, Wildlife, or Pollinator (FI)

**Scenario Description:**

Establishment of a mixture of PREDOMINANTLY NATIVE adapted perennial species on a grazed land unit to improve habitat for pollinators,beneficial insects, and wildlife species. Seed mix of PREDOMINANTLY NATIVE SPECIES IS CHOSEN TO SPECIFICALLY BENEFIT WILDLIFE (ex: big game spp, Sage grouse, Lesser Prairie Chicken, others) or POLLINATORS (eg. inclusion of 5-10 forb species) based on range conditions. FOR POLLINATOR HABITAT: Consideration is given to selecting plants that bloom sequentially throughout the growing season, where feasible. For honeybee foraging habitat, species are selected which will be in bloom when hives are in the area. Planting by preparing a seedbed with MODERATE TO HEAVY TILLAGE (ex: ripping & heavy disk) and seeding with a no-till drill, range drill, or by broadcasting.

**Before Situation:**

Rangeland or cropland with or without an existing stand of perennial or annual grasses, OR a monoculture, OR no grasses are present, where natural reseeding or vegetation enhancement by grazing management alone is unlikely. Existing conditions often require complete removal, suppression, or eradication of existing vegetation to ensure success of planting. Resource concerns may include: inadequate habitat for wildlife (ex: big game spp, Sage grouse, Lesser Prairie Chicken, others) undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

**After Situation:**

Establishment of PREDOMINANTLY NATIVE adapted perennial vegetation, such as grasses, forbs, legumes, with an emphasis on species beneficial to wildlife or Pollinators on grazed range, pasture, forest, or other suitable location. For Pollinator habitat: Plants that bloom sequentially throughout the growing season are established, where feasible.

**Feature Measure:** Acres of Range Planting

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $13,159.50

**Scenario Cost/Unit:** $263.19

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 50 | $660.50 |
| Tillage, Primary | 946 | Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs. | Acres | $19.97 | 50 | $998.50 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 50 | $1,104.50 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 50 | $1,564.50 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Legumes and/or Forbs, Low Density | 2753 | A mix of native perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Species typically easy to purchase. Includes material and shipping. | Acres | $176.63 | 50 | $8,831.50 |

**Practice:** 554 - Drainage Water Management

**Scenario** #1 - Drainage Water Management (DWM)

**Scenario Description:**

This scenario is the process of managing water discharges from surface and/or subsurface agricultural drainage systems by reducing nutrient loading into surface waters. Typical systems consist of a 80 acre field with existing drainage tile lines and installed water control structures. The operator goes to the field in order to adjust water control structures (riser boards). While on site the date and adjustment information is recorded/logged. The number of yearly adjustments is based on 6 trips to a field 5 miles from headquarters. The field time to make and record each adjustment is 0.5 hours per structure (including travel time). The typical field will contain 3 structures to control field water levels. Resource Concern: Water Quality - Excess Nutrients in surface and ground waters. Associated Practices: 606-Subsurface Drain; 607-Surface Drain, Field Ditch; 608-Surface Drain, Main or Lateral; 587-Structure for Water Control; 590-Nutrient Management .

**Before Situation:**

Existing drainage systems are in place and water flows uncontrolled.

**After Situation:**

Existing drainage systems are managed to reduce flow of field drainage waters from the site and reduce nitrate loading.

**Feature Measure:** Number of Control Structures

**Scenario Unit:** Each

**Scenario Typical Size:** 3.00

**Scenario Total Cost:** $309.35

**Scenario Cost/Unit:** $103.12

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 0.33 | $35.75 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 9 | $273.60 |

**Practice:** 554 - Drainage Water Management

**Scenario** #22 - Automated Drainage Water Management

**Scenario Description:**

This scenario is the process of managing the drainage water discharge volume and water table elevation by regulating the flow from surface and/or subsurface agricultural drainage systems utilizing automation. Typical systems consist of a field with a fairly flat slope (less than 2% and preferably less than 1%) with existing drainage tile lines and installed water control structures which are operated with automated slide gates, and telemetry data systems coupled with cloud data management. Typical affected area for an automated drainage water management structure is 10 to 20 acres. The operator, from handheld device, adjusts water control structures (gate elevation) and logs data. Educational meeting is conducted between consultant and operator(s) annually for essential knowledge transfer Resource Concern: Water Quality - Excess Nutrients in surface and ground waters. Associated Practices: 606-Subsurface Drain; 607-Surface Drain, Field Ditch; 608-Surface Drain, Main or Lateral; 587-Structure for Water Control; 590-Nutrient Management.

**Before Situation:**

Existing inefficient drainage systems are in place and water flows uncontrolled, resulting in sediment and nutrient laden outflow entering ditches or streams.

**After Situation:**

Existing drainage systems are managed utilizing telemetry and real-time data to retain moisture in the soil for plant uptake and to allow for enhanced nutrient utilization.

**Feature Measure:** Acres of Managed Drainage

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $384.14

**Scenario Cost/Unit:** $7.68

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 7.5 | $228.00 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |

**Practice:** 558 - Roof Runoff Structure

**Scenario** #1 - Roof Gutter

**Scenario Description:**

A roof runoff structure, consisting of gutter(s), downspout(s), and appropriate outlet facilities on a 200 feet long building by 10 feet tall side walls. Used to keep roof clean water runoff uncontaminated and provide a stable outlet to ground surface. Facilitates waste management and protects environment by minimizing clean water additions to waste systems and addresses water quality concerns. Associated practices include Waste Storage Facility (313), Composting Facility (317), Heavy Use Area Protection (561), Watering Facility (614), Underground Outlet (620), Diversion (362), Roofs and Covers (367), and any relevant irrigation practices.

**Before Situation:**

Applicable where: (1) a roof runoff management facility is included in an overall plan for an overall plan for a waste management system; (2) roof runoff needs to be diverted away from structures or contaminated areas; (3) there is a need to collect, control, and transport runoff from roofs to a stable outlet.

**After Situation:**

A gutter, downspout, and outlet system servicing the portion of the building roof that would otherwise drain into a waste management system or create erosion. Roof line of 200 feet serviced with gutter, downspouts, and appurtenances.

**Feature Measure:** Linear Length of Roof to be Guttere

**Scenario Unit:** Feet

**Scenario Typical Size:** 200.00

**Scenario Total Cost:** $1,065.86

**Scenario Cost/Unit:** $5.33

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 12 | $269.76 |
| **Materials** | | | | | | |
| Gutter, Aluminum, Small | 1689 | Aluminum gutter, 4 to 6 in. width with hangers. Materials only. | Feet | $3.40 | 200 | $680.00 |
| Downspout, Aluminum | 1700 | Aluminum downspout 3 to 5 inch width with hangers. Materials only. | Feet | $3.87 | 30 | $116.10 |

**Practice:** 558 - Roof Runoff Structure

**Scenario** #37 - High Tunnel Roof Runoff Trench Drain and Storage

**Scenario Description:**
NOT TO BE USED WHERE CONTAMINATED SOIL EXIST. An urban agricultural producer wishes to address a resource concern such as a need for water or erosion around high tunnel from roof runoff and collect and store roof runoff for reuse as supplemental irrigation/water supply water. Associated Practice: High Tunnel

**Before Situation:**
Producer has resource concern such as erosion caused by roof runoff from an installed high tunnel

**After Situation:**
A 2' deep by 3' wide by 100' long trench filled with clean stone w/ 4-8 inch perforated PE pipe located on both sides of the hightunnel collect the roof runoff and divert to an underground storage tank. Trench drain typically installed at ground level under the edge of a high tunnel. Outlet from 'Trench Drain' conveys water to a buried storage tank. Typically installed to capture water for reuse or to stop erosion caused by concentrated roof runoff.

**Feature Measure:** Length of hightunnel

**Scenario Unit:** Linear Feet

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $3,656.86

**Scenario Cost/Unit:** $36.57

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | $1.30 | 227 | $295.10 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 10 | $59.80 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 72 | $259.20 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $15.24 | 46 | $701.04 |
| Prefabricated concrete septic tank, 1500 gal | 1738 | Precast concrete septic tank, 1,500 gal. Materials only. | Each | $1,514.35 | 1 | $1,514.35 |
| Pipe, HDPE, 6 in., PCPT, Single Wall | 2548 | Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 6 inch diameter - ASTM F405. Includes material cost only. | Feet | $1.57 | 20 | $31.40 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 558 - Roof Runoff Structure

**Scenario** #48 - Roof Gutter, 6 inches wide with runoff Storage Tank

**Scenario Description:**

A roof runoff structure, consisting of gutter(s), downspout(s), and a storage tank. Used to keep roof clean water runoff uncontaminated, provide storage for on-farm use of roof water and a stable outlet for any excess to ground surface in a way that avoids erosion. Facilitates waste management and protects environment by minimizing clean water additions to waste systems and addresses water quality concerns. Associated practices include Waste Storage Facility (313), Composting Facility (317), Heavy Use Area Protection (561), Watering Facility (614), Underground Outlet (620), Diversion (362), and any relevant irrigation practices.

**Before Situation:**

Applicable where: (1) a roof runoff management facility is included in an overall plan for an overall plan for a waste management system; (2) roof runoff needs to be diverted away from structures or contaminated areas; (3) there is a need to collect, control, and transport runoff from roofs to a stable outlet.

**After Situation:**

A gutter and downspouts servicing the portion of the building roof that would otherwise drain into a waste management system or create erosion. Roof line of 200 ln.ft. serviced with gutter, downspouts, and appurtances. A 1,500 gallon tank is installed for storage and use of roof runoff.

**Feature Measure:** Linear Length of Roof to be Guttere

**Scenario Unit:** Feet

**Scenario Typical Size:** 200.00

**Scenario Total Cost:** $3,956.61

**Scenario Cost/Unit:** $19.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 2 | $11.96 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 20 | $449.60 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 2 | $38.16 |
| Pipe, PVC, 4 in., SCH 40 | 978 | Materials: - 4 inch - PVC - SCH 40 - ASTM D1785 | Feet | $6.45 | 110 | $709.50 |
| Tank, Poly Enclosed Storage, >1,000 | 1075 | Water storage tanks. Includes materials and shipping only. | Gallons | $1.06 | 1500 | $1,590.00 |
| Gutter, Aluminum, Small | 1689 | Aluminum gutter, 4 to 6 in. width with hangers. Materials only. | Feet | $3.40 | 200 | $680.00 |
| Downspout, Aluminum | 1700 | Aluminum downspout 3 to 5 inch width with hangers. Materials only. | Feet | $3.87 | 60 | $232.20 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Aggregate, Shipping, Cubic Yard-mile | 2360 | Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul). | Cubic Yard Mile | $0.39 | 100 | $39.00 |

**Practice:** 561 - Heavy Use Area Protection

**Scenario** #1 - Reinforced Concrete with sand or gravel foundation - cubic yard - NP Region

**Scenario Description:**

The stabilization of areas around facilities that are frequently and intensively used by people, animals or vehicles by surfacing with reinforced concrete on a sand or gravel foundation to provide a stable, non-eroding surface. Installation includes all materials, equipment, and labor to install this practice, The stabilized area will address the resource concerns soil erosion and water quality degradation.

**Before Situation:**

This practice applies to agricultural, urban, recreational and other frequently and/or intensively used areas requiring treatment to address soil erosion and water quality degradation.

**After Situation:**

The stabilized area is surfaced with approximately 600 square feet of approximately 11 cubic yards of welded wire mesh reinforced concrete with 11 cubic yards of sand or gravel foundation material for surfacing areas around facilities that are frequently and intensively used by people, animals or vehicles and will address soil erosion and water quality degradation. All needed roads must use Access Road (560). Any needed treatment of stream crossings must use Stream Crossing (578). Any needed vegetation of disturbed areas must use Critical Area Planting (342). Provisions to collect, store, utilize, and or treat contaminated runoff must use Sediment Basin (350), Waste Storage Facility (313), or Waste Treatment (629) as appropriate. To reduce the potential for air quality problems from particulate matter associated with heavy use areas, consider the use of Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers
(603).

**Feature Measure:** Volume of Concrete

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 11.00

**Scenario Total Cost:** $5,744.85

**Scenario Cost/Unit:** $522.26

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 11 | $5,128.97 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 25 | $60.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 11 | $204.60 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 561 - Heavy Use Area Protection

**Scenario** #2 - Rock/Gravel on Geotextile - cubic yard - NP Region

**Scenario Description:**

The stabilization of areas around facilities that are frequently and intensively used by people, animals or vehicles by surfacing with rock and or gravel on a geotextile fabric foundation to provide a stable, non-eroding surface. Installation includes all materials, equipment, and labor to install this practice, The stabilized area will address the resource concerns of soil erosion and water quality degradation.

**Before Situation:**

This practice applies to agricultural, urban, recreational and other frequently and/or intensively used areas requiring treatment to address soil erosion and water quality degradation.

**After Situation:**

The stabilized area is surfaced with approximately 30 cubic yards of rock and or gravel on approximately 160 square yards of geotextile fabric foundation material for surfacing areas around facilities that are frequently and intensively used by people, animals or vehicles and will address soil erosion and water quality degradation. All needed roads must use Access Road (560). Any needed treatment of stream crossings must use Stream Crossing (578). Any needed vegetation of disturbed areas must use Critical Area Planting (342). Provisions to collect, store, utilize, and or treat contaminated runoff must use Sediment Basin (350), Waste Storage Facility (313), or Waste Treatment (629) as appropriate. To reduce the potential for air quality problems from particulate matter associated with heavy use areas, consider the use of Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers (603).

**Feature Measure:** Volume of Rock and/or Gravel

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 30.00

**Scenario Total Cost:** $1,119.68

**Scenario Cost/Unit:** $37.32

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | $1.30 | 160 | $208.00 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 43 | $103.20 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $15.24 | 30 | $457.20 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 561 - Heavy Use Area Protection

**Scenario** #3 - Rock/Gravel

**Scenario Description:**

The stabilization of areas around facilities that are frequently and intensively used by people, animals or vehicles by surfacing with rock and or gravel to provide a stable, non-eroding surface. Installation includes all materials, equipment, and labor to install this practice. The stabilized area will address the resource concerns of soil erosion and water quality degradation.

**Before Situation:**

This practice applies to agricultural, urban, recreational and other frequently and/or intensively used areas requiring treatment to address soil erosion and water quality degradation.

**After Situation:**

The stabilized area is surfaced with approximately 270 cubic yards of rock and or gravel for surfacing areas around facilities that are frequently and intensively used by people, animals or vehicles and will address soil erosion and water quality degradation. All needed roads must use Access Road (560). Any needed treatment of stream crossings must use Stream Crossing (578). Any needed vegetation of disturbed areas must use Critical Area Planting (342). Provisions to collect, store, utilize, and or treat contaminated runoff must use Sediment Basin (350), Waste Storage Facility (313), or Waste Treatment (629) as appropriate. To reduce the potential for air quality problems from particulate matter associated with heavy use areas, consider the use of Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers (603).

**Feature Measure:** Volume of Rock and/or Gravel

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 270.00

**Scenario Total Cost:** $4,443.60

**Scenario Cost/Unit:** $16.46

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 3 | $67.44 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $15.24 | 270 | $4,114.80 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 574 - Spring Development

**Scenario** #1 - Spring, up to 50 ft Collection

**Scenario Description:**

Develop a water source from a natural spring or seep (i.e., spring development) to provide water for livestock and/or wildlife needs. This typical scenario includes excavating and exposing the water source at the spring/seep (typically on a hillside), constructing a water collection structure by installing a 30 ft long, 4 inch diameter HDPE perforated pipe enclosed in a sand/gravel envelope overlaid by 3 ft wide filter fabric (30 ft long) and behind a two layer vinyl cutoff wall (4 ft height x 30 ft long) to retain water. Water is directed (via 50 ft long, 4 inch PVC) to a spring box (48 inch diameter x 6 ft long CMP) that is located below the cutoff wall. The spring box is equipped with a watertight lid and two outlets. One outlet serves as overflow pipe to account for occasions where inflow exceeds outflow. The collection system is commonly composed of a single or a network of perforated 4 inch diameter drainage pipe placed in an excavated collection trench that runs across the slope. The second outflow pipe from the spring box is directed to buried large storage (not included) or to a watering facility (not included) for use. Resource Concern: Livestock production limitation - Inadequate livestock water. Associated Practices: 516-Livestock Pipeline; 614-Watering Facility; 382-Fence; Critical Area Planting (342).

**Before Situation:**

Livestock operation with inadequate fresh water for livestock and an on-site undeveloped spring/seep.

**After Situation:**

Spring development system provides adequate water for the intended use. The system typically runs all year long in most zones.

**Feature Measure:** Number of Developments

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,497.24

**Scenario Cost/Unit:** $3,497.24

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | $1.30 | 10 | $13.00 |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 8 | $442.40 |
| Trencher, 8 in. | 936 | Equipment and power unit costs. Labor not included. | Hours | $51.59 | 8 | $412.72 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 16 | $470.72 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 10 | $186.00 |
| Poly film, 6 mil. | 245 | 6 mil, polyethylene, black | Square Feet | $0.10 | 240 | $24.00 |
| Pipe, PVC, 1 1/2 in., SCH 40 | 975 | Materials: - 1 1/2 inch - PVC - SCH 40 - ASTM D1785 | Feet | $1.66 | 100 | $166.00 |
| Pipe, PVC, 4 in., SCH 40 | 978 | Materials: - 4 inch - PVC - SCH 40 - ASTM D1785 | Feet | $6.45 | 50 | $322.50 |
| Pipe, HDPE, 4 in., PCPT, Single Wall | 1270 | Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 4 inch diameter - ASTM F405. Material cost only. | Feet | $0.63 | 30 | $18.90 |
| Pipe, CMP, 48 in., 14 Gauge | 1280 | 48 inch Corrugated Metal Pipe, Galvanized, Uncoated, 14 gauge. Material cost only. | Feet | $46.43 | 6 | $278.58 |
| Spring Collection Box Cover, steel, 4 ft. diameter | 1281 | 4 foot diameter x 1/4 inch thick Steel lid with handle for spring collection box. Materials and fabrication. | Each | $280.02 | 1 | $280.02 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 574 - Spring Development

**Scenario** #2 - Spring, > 50 ft Collection

**Scenario Description:**

Develop a water source from a natural spring or seep (i.e., spring development) to provide water for livestock and/or wildlife needs. This typical scenario includes excavating and exposing the water source at the spring/seep (typically on a hillside), constructing a water collection structure by installing a 90 ft long, 4 inch diameter HDPE perforated pipe enclosed in a sand/gravel envelope overlaid by 3 ft wide filter fabric (90 ft long) and behind a two layer vinyl cutoff wall (4 ft height x 90 ft long) to retain water. Water is directed (via 100 ft long, 4 inch PVC) to a spring box (48 inch diameter x 8 ft long CMP) that is located below the cutoff wall and away from the spring collection area. The spring box is equipped with a watertight lid and two outlets. One outlet serves as overflow pipe to account for occasions where inflow exceeds outflow. The collection system is commonly composed of a single or a network of perforated 4 inch diameter drainage pipe placed in an excavated collection trench that runs across the slope. The second outflow pipe from the spring box is directed to buried large storage (not included), or to a watering facility (not included) for use. Resource Concern: Livestock production limitation - Inadequate livestock water. Associated Practices: 516-Livestock Pipeline; 614-Watering Facility; 382-Fence; Critical Area Planting (342).

**Before Situation:**

Livestock operation with inadequate fresh water for livestock and an on-site undeveloped spring/seep.

**After Situation:**

Spring development system provides adequate water for the intended use. The system typically runs all year long in most zones.

**Feature Measure:** Number of Developments

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,433.84

**Scenario Cost/Unit:** $5,433.84

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | $1.30 | 30 | $39.00 |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 16 | $884.80 |
| Trencher, 8 in. | 936 | Equipment and power unit costs. Labor not included. | Hours | $51.59 | 8 | $412.72 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 32 | $719.36 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 24 | $706.08 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 30 | $558.00 |
| Poly film, 6 mil. | 245 | 6 mil, polyethylene, black | Square Feet | $0.10 | 720 | $72.00 |
| Pipe, PVC, 1 1/2 in., SCH 40 | 975 | Materials: - 1 1/2 inch - PVC - SCH 40 - ASTM D1785 | Feet | $1.66 | 100 | $166.00 |
| Pipe, PVC, 4 in., SCH 40 | 978 | Materials: - 4 inch - PVC - SCH 40 - ASTM D1785 | Feet | $6.45 | 100 | $645.00 |
| Pipe, HDPE, 4 in., PCPT, Single Wall | 1270 | Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 4 inch diameter - ASTM F405. Material cost only. | Feet | $0.63 | 90 | $56.70 |
| Pipe, CMP, 48 in., 14 Gauge | 1280 | 48 inch Corrugated Metal Pipe, Galvanized, Uncoated, 14 gauge. Material cost only. | Feet | $46.43 | 8 | $371.44 |
| Spring Collection Box Cover, steel, 4 ft. diameter | 1281 | 4 foot diameter x 1/4 inch thick Steel lid with handle for spring collection box. Materials and fabrication. | Each | $280.02 | 1 | $280.02 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 574 - Spring Development

**Scenario** #16 - Spring Development

**Scenario Description:**

Develop a water source from a natural spring or seep (i.e., spring development) to provide water for livestock and/or wildlife needs. This typical scenario includes excavating and exposing the water source at the spring/seep (typically on a hillside), constructing a water collection structure by installing a 50 ft long, 4 inch diameter HDPE perforated pipe enclosed in a sand/gravel envelope overlaid by 2 ft wide filter fabric (50 ft long) and behind a concrete cutoff wall (6 inch x 4 ft height x 25 ft long) to retain water. Water is directed (via 20 ft long, 4 inch PVC) to a spring box (48 inch diameter x 6 ft long CMP) that is located at the cutoff wall or below the wall, equipped with a watertight lid and two outlets. One outlet serves as overflow pipe to account for occasions where inflow exceeds outflow. The collection system is commonly composed of a single or a network of perforated 4 inch diameter drainage pipe placed in an excavated collection trench that runs across the slope. The outflow pipe from the spring box can be directed to buried large storage (not included), and to a watering facility (not included) for use Resource Concern: Livestock production limitation - Inadequate livestock water. Associated Practices: 516-Livestock Pipeline; 614-Watering Facility; 382-Fence; Critical Area Planting (342).

**Before Situation:**

Livestock operation with inadequate fresh water for livestock and an on-site undeveloped spring/seep.

**After Situation:**

Spring development system provides adequate water for the intended use. The system typically runs all year long in most zones.

**Feature Measure:** Number of Developments

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,629.90

**Scenario Cost/Unit:** $4,629.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 2 | $1,223.54 |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | $1.30 | 11 | $14.30 |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 16 | $884.80 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 32 | $719.36 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 16 | $470.72 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 2 | $37.20 |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 2 | $38.16 |
| Pipe, PVC, 4 in., SCH 40 | 978 | Materials: - 4 inch - PVC - SCH 40 - ASTM D1785 | Feet | $6.45 | 20 | $129.00 |
| Pipe, HDPE, 4 in., PCPT, Single Wall | 1270 | Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 4 inch diameter - ASTM F405. Material cost only. | Feet | $0.63 | 50 | $31.50 |
| Pipe, CMP, 48 in., 14 Gauge | 1280 | 48 inch Corrugated Metal Pipe, Galvanized, Uncoated, 14 gauge. Material cost only. | Feet | $46.43 | 6 | $278.58 |
| Spring Collection Box Cover, steel, 4 ft. diameter | 1281 | 4 foot diameter x 1/4 inch thick Steel lid with handle for spring collection box. Materials and fabrication. | Each | $280.02 | 1 | $280.02 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 575 - Trails and Walkways

**Scenario** #1 - Earthfill Walkway, 4 Ft high or less

**Scenario Description:**

Layout and construct a lane or travel way of earthfill four feet high or less. Walkway will facilitate animal movement, to provide or improve access to forage, water, working/handling facilities, and/or shelter, Improve grazing efficiency and distribution, and/or protect ecologically sensitive, erosive and/or potentially erosive sites and address soil erosion and water quality resource concerns. Costs include Earthfill, shaping, grading, and all equipment, labor and incidental materials necessary to install the practices.

**Before Situation:**

On farmstead area and pastureland and rangeland areas where control of animal movement is needed to address soil erosion, forage availability, and water quality resource concerns.

**After Situation:**

The typical trail or walkway will be a 12 foot wide 200 foot long, with an average fill height of 3 feet. All excavation, earthfill, grading and shaping necessary to provide a smooth permanent travel surface for livestock. No surface materials are included with this practice. If the lane is vegetated and requires planting, the vegetation shall be planted according to Critical Area Planting, Code 342. Where vegetation is not practical, Heavy Use Area Protection, Code 561,shall be used to provide adequate surface protection. Structure for Water Control, Code 587, will be used when the trail or lane crosses water areas. Consider the use of water bars or culverts to control and direct water flow. Fencing, Code 382, will be used when needed to control animal movement.

**Feature Measure:** Length of Walkway created

**Scenario Unit:** Feet

**Scenario Typical Size:** 200.00

**Scenario Total Cost:** $2,173.66

**Scenario Cost/Unit:** $10.87

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 9 | $944.19 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 11 | $334.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 11 | $247.28 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 11 | $386.43 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 575 - Trails and Walkways

**Scenario** #2 - Earthfill Walkway, Higher than 4 Ft.

**Scenario Description:**

Layout and construct a lane or travel way of earthfill greater than four feet high. Walkway will facilitate animal movement, to provide or improve access to forage, water, working/handling facilities, and/or shelter, Improve grazing efficiency and distribution, and/or protect ecologically sensitive, erosive and/or potentially erosive sites and address soil erosion and water quality resource concerns. Costs include Earthfill, shaping, grading, and all equipment, labor and incidental materials necessary to install the practices.

**Before Situation:**

On farmstead area and pastureland and rangeland areas where control of animal movement is needed to address soil erosion, forage availability, and water quality resource concerns.

**After Situation:**

The typical trail or walkway will be a 12 foot wide 300 foot long, with an average fill height of 6 feet. All excavation, earthfill, grading and shaping necessary to provide a smooth permanent travel surface for livestock. No surface materials are included with this practice. If the lane is vegetated and requires planting, the vegetation shall be planted according to Critical Area Planting, Code 342. Where vegetation is not practical, Heavy Use Area Protection, Code 561,shall be used to provide adequate surface protection. Structure for Water Control, Code 587, will be used when the trail or lane crosses water areas. Consider the use of water bars or culverts to control and direct water flow. Fencing, Code 382, will be used when needed to control animal movement.

**Feature Measure:** Length of walkway

**Scenario Unit:** Feet

**Scenario Typical Size:** 300.00

**Scenario Total Cost:** $7,189.58

**Scenario Cost/Unit:** $23.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 35 | $3,671.85 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 37 | $1,124.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 37 | $831.76 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 37 | $1,299.81 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 575 - Trails and Walkways

**Scenario** #52 - Wood Chips, Walkway small scale

**Scenario Description:**

Layout and construct a wood chip surface treatment on a earthen foundation walkway to facilitate the movement of animals, people, or small off-road vehicles to provide or improve access to forage, water, working/handling facilities, and/or shelter, Improve grazing efficiency and distribution, and/or protect ecologically sensitive, erosive and/or potentially erosive sites, pedestrian or off-road vehicle access to agricultural, construction, or maintenance operations, provide walkways for recreational activities or access to recreation sites and address the resource concerns of soil erosion and water quality degradation. Costs include excavation, shaping, grading, wood chip surfacing, vegetation of disturbed areas, all equipment, labor and incidental materials necessary to install the practice.

**Before Situation:**

This practice applies on all lands where management of animal or human movement is needed to address soil erosion and water quality resource concerns. This practice applies to a trails or walkways constructed for use by small off-road vehicles, such as All-Terrain Vehicles or snowmobiles, which are not designed for use on public roads. It does not apply to roads constructed for movement of equipment or vehicles. Use NRCS Conservation Practice Standard Access Road (Code 560).

**After Situation:**

The typical walkway will be a 6 foot widex100 foot longx4" thick , 600 square foot of wood chip surface treatment on earthen foundation. All excavation, grading and shaping necessary to provide a smooth permanent travel surface for livestock or people is included. Included is wood chips of 600 square foot for surfacing.

**Feature Measure:** sqft of walkway

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 600.00

**Scenario Total Cost:** $1,119.90

**Scenario Cost/Unit:** $1.87

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 7 | $179.76 |
| Aggregate, Wood Chips | 1098 | Includes materials, equipment and labor to transport and place. | Cubic Yards | $51.72 | 8 | $413.76 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 15 | $337.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| **Materials** | | | | | | |
| Geotextile, non-woven, light weight | 1209 | Non-woven less than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only. | Square Yard | $2.11 | 67 | $141.37 |

**Practice:** 576 - Livestock Shelter Structure

**Scenario** #1 - Portable Wind Shelter

**Scenario Description:**

Portable Livestock Fabricated Wind Shelter is installed to provide protection for livestock. The shelter can be moved around the grazing unit in order to prevent heavy use resource concerns at any one location.

**Before Situation:**

Herds are held and fed in fragile riparian areas in order to reduce stress on domestic animals from harsh winter conditions and provide protection from wind. The concentration of animals in these areas degrades streambanks, causes excessive sedimentation, damages woody vegetation, overgrazes herbacious vegetation, in addition to degrading water quality through manure deposition and erosion. Resource concerns are water quality, animal health, plant productivity, health, and vigor, and inadequate shelter.

**After Situation:**

Portable fabricated wind shelters are utilized to provide shelter for livestock in upland grazing areas from the riparian zones. The portable shelters are moved in rotation with feeding areas thereby limiting soil disturbance and reducing the impacts of heavy use at any one location. As a result of implementing this practice, the herd can be moved out of the impacted area and water quality and vegetation health resource concerns will be addressed. A typical portable wind shelter involves a series of steel framed panels faced with corrugated metal. Each unit is approximately 8 feet tall and 24 feet long, 80% solid faced. Four panels (96 - feet) would be utilized to provide shelter to a herd size of 190 animals.

**Feature Measure:** Length of Wind Shelter

**Scenario Unit:** Feet

**Scenario Typical Size:** 96.00

**Scenario Total Cost:** $1,537.05

**Scenario Cost/Unit:** $16.01

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 4 | $112.60 |
| Portable Welder | 1407 | Portable field welder. Equipment only. Labor not included. | Hours | $21.01 | 1 | $21.01 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 4 | $117.68 |
| **Materials** | | | | | | |
| Drill Stem, steel, used | 1393 | Used drill stem typically 2-3/8 or 2-7/8 inch diameter. Materials only. | Feet | $2.62 | 352 | $922.24 |

**Practice:** 576 - Livestock Shelter Structure

**Scenario** #2 - Permanent Metal Wind Shelter

**Scenario Description:**
Permanent livestock fabricated metal wind shelter is installed to provide protection for livestock.

**Before Situation:**
Herds are held and fed in fragile riparian areas in order to reduce stress on domestic animals from harsh winter conditions and provide protection from wind. The concentration of animals in these areas degrade streambanks, cause excessive sedimentation, damage woody vegetation, overgraze herbaceous vegetation, in addition to degrading water quality through manure deposition and erosion. Resource concerns are water quality, animal health, plant productivity, health, and vigor, and inadequate shelter.

**After Situation:**
Permanent fabricated metal wind shelters are installed in order to provide shelter for livestock in upland grazing areas away from the riparian zones. As a result, animals can be held in an area away from the riparian zone thereby eliminating the impacts to water quality and riparian health. A typical scenario is a Fabricated Wind Shelter installed in association with an animal feeding operation (AFO). The AFO has been moved out of the riparian zone where shelter was previously provided by the surrounding riparian woody vegetation. The AFO has been moved to a location where shelter is not naturally provided and needs to be fabricated. The typical fabrication involves a permanent, metal framed, metal faced, 6 - foot high, 200 - foot long, fabricated wind shelter, 100% solid face, secured to the ground with 12 - foot metal posts. The metal posts are spaced 6 - feet apart, buried in the ground 4 feet deep and encased in concrete.

**Feature Measure:** Length of Wind Shelter

**Scenario Unit:** Feet

**Scenario Typical Size:** 200.00

**Scenario Total Cost:** $25,420.52

**Scenario Cost/Unit:** $127.10

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 40 | $399.60 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 88 | $2,259.84 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 16 | $450.40 |
| Portable Welder | 1407 | Portable field welder. Equipment only. Labor not included. | Hours | $21.01 | 24 | $504.24 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 24 | $729.60 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 48 | $1,079.04 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Corrugated Steel, 22 gauge | 224 | Corrugated or ribbed, galvanized, 22 gauge, includes fasteners, materials only. | Square Feet | $2.64 | 1200 | $3,168.00 |
| Pipe, Steel, 4 in., SCH 40 | 1004 | Materials: - 4 inch - Steel SCH 40 | Feet | $27.01 | 396 | $10,695.96 |
| Pipe, Steel, 2 in., SCH 40 | 1105 | Materials: - 2 inch - Steel SCH 40 | Feet | $9.15 | 600 | $5,490.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 578 - Stream Crossing

**Scenario** #3 - Low water crossing, rock armor

**Scenario Description:**

Stabilize the bottom and slope of a stream channel using rock riprap. This scenario includes site preparation, dewatering, acquiring and installing gravel or geotextile with rock riprap on channel bottom and approaches. Final travel surface shall be rock. If a different travel surface is needed, refer to another appropriate standard for the surfacing. Typical stream has 75 foot bottom width and approaches. Width is 12 feet for a total area as 900 square feet. Use (396) Aquatic Organism Passage instead, when the primary intent is biological concerns, not hydrologic.

**Before Situation:**

Water flow could not cross access road or trail without erosion; or access road or trail could not cross channel.

**After Situation:**

Stream flow is not impeded and a stable base exists for equipment, people and/or animals to cross. Associated practices could be (342) Critical Area Planting, (560) Access Road, (575) Animal Trails and Walkways, (566) Recreational Trails and Walkways, (500) Obstruction Removal, or (584) Channel Stabilization.

**Feature Measure:** Crossing dimensions

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 900.00

**Scenario Total Cost:** $6,765.40

**Scenario Cost/Unit:** $7.52

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, dump, 12 CY | 1215 | Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only. | Hours | $109.42 | 4 | $437.68 |
| Excavation, common earth, side cast, large equipment | 1227 | Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $1.50 | 40 | $60.00 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 4 | $140.52 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 41.7 | $5,604.48 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 578 - Stream Crossing

**Scenario** #4 - Low water crossing, concrete slab

**Scenario Description:**

Stabilize the bottom and slope of a stream channel using concrete in place. This scenario includes site preparation, dewatering, acquiring and installing cast in place concrete on channel bottom and approaches. Final travel surface shall be concrete. If a different travel surface is needed, refer to another appropriate standard for the surfacing. Typical stream has 50 foot bottom width and 8 foot approach on each side. Width is 12 feet for a total area of 792 square feet. Use (396) Aquatic Organism Passage instead, when the primary intent is biological concerns, not hydrologic.

**Before Situation:**

Water flow could not cross access road or trail without erosion; or access road or trail could not cross channel.

**After Situation:**

Stream flow is not impeded and a stable base exists for equipment, people and/or animals to cross. Associated practices could be (342) Critical Area Planting, (560) Access Road, (575) Animal Trails and Walkways, (566) Recreational Trails and Walkways, (500) Obstruction Removal, or (584) Channel Stabilization.

**Feature Measure:** Crossing dimensions

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 792.00

**Scenario Total Cost:** $10,051.61

**Scenario Cost/Unit:** $12.69

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 19.3 | $8,999.01 |
| Truck, dump, 12 CY | 1215 | Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only. | Hours | $109.42 | 2 | $218.84 |
| Excavation, common earth, side cast, large equipment | 1227 | Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $1.50 | 70 | $105.00 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 2 | $70.26 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 7.3 | $135.78 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 578 - Stream Crossing

**Scenario** #5 - Low water crossing, concrete block

**Scenario Description:**

Stabilize the bottom and slope of a stream channel using articulated concrete block mats. This scenario includes site preparation, dewatering, acquiring and installing articulated concrete block mats on channel bottom and approaches. Final travel surface shall be concrete blocks. If a different travel surface is needed, refer to another appropriate standard for the surfacing. Typical stream has 50 foot bottom width and 8 foot approach on each side. Width is 12 feet for a total area of 792 square feet. Use (396) Aquatic Organism Passage instead, when the primary intent is biological concerns, not hydrologic.

**Before Situation:**

Water flow could not cross access road or trail without erosion; or access road or trail could not cross channel.

**After Situation:**

Stream flow is not impeded and a stable base exists for equipment, people and/or animals to cross. Associated practices could be (342) Critical Area Planting, (560) Access Road, (575) Animal Trails and Walkways, (566) Recreational Trails and Walkways, (500) Obstruction Removal, or (584) Channel Stabilization.

**Feature Measure:** Crossing dimensions

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 792.00

**Scenario Total Cost:** $11,000.92

**Scenario Cost/Unit:** $13.89

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 2 | $260.04 |
| Truck, dump, 12 CY | 1215 | Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only. | Hours | $109.42 | 2 | $218.84 |
| Excavation, common earth, side cast, large equipment | 1227 | Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $1.50 | 70 | $105.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 2 | $70.26 |
| **Materials** | | | | | | |
| Geotextile, non-woven, light weight | 1209 | Non-woven less than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only. | Square Yard | $2.11 | 88 | $185.68 |
| Articulated precast concrete block | 1906 | Articulated precast concrete blocks with a typical thickness of 4.5 to 6 inches. Includes materials and shipping. | Square Feet | $10.79 | 882 | $9,516.78 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 578 - Stream Crossing

**Scenario** #6 - Low water crossing, geocell

**Scenario Description:**

Stabilize the bottom and slope of a stream channel using geocell mats filled with rock, typically suited for a "low energy" channel. This scenario includes site preparation, dewatering, acquiring and installing geocell mats on channel bottom and approaches. Final travel surface shall be a rock aggregate covering above the geocell. If a different travel surface is needed, refer to another appropriate standard for the surfacing. Typical stream has 50 foot bottom width and 8 foot approach on each side. Width is 12 feet for a total area of 792 square feet. Use (396) Aquatic Organism Passage instead, when the primary intent is biological concerns, not hydrologic.

**Before Situation:**

Water flow could not cross access road or trail without erosion; or access road or trail could not cross channel.

**After Situation:**

Stream flow is not impeded and a stable base exists for equipment, people and/or animals to cross. Associated practices could be (342) Critical Area Planting, (560) Access Road, (575) Animal Trails and Walkways, (566) Recreational Trails and Walkways, (500) Obstruction Removal, or (584) Channel Stabilization.

**Feature Measure:** Crossing dimensions

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 792.00

**Scenario Total Cost:** $4,266.02

**Scenario Cost/Unit:** $5.39

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, dump, 12 CY | 1215 | Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only. | Hours | $109.42 | 2 | $218.84 |
| Excavation, common earth, side cast, large equipment | 1227 | Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $1.50 | 70 | $105.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 2 | $70.26 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 25 | $477.00 |
| Geotextile, non-woven, light weight | 1209 | Non-woven less than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only. | Square Yard | $2.11 | 88 | $185.68 |
| Geocell, 6 inch | 1842 | 6-inch thick cellular confinement system, three-dimensional, expandable panels made from high-density polyethylene (HDPE), polyester or another polymer material. Includes materials, labor and equipment for the geocell only, does not include backfill. | Square Yard | $29.46 | 98 | $2,887.08 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 580 - Streambank and Shoreline Protection

**Scenario** #1 - Shaping

**Scenario Description:**

Protection of streambanks consisting of conventional plantings of vegetation to stabilize and protect against scour and erosion. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. Payment cost include shaping bank; a 6-foot high bank at 3(H):1(V) slope for 1000 linear feet (0.46 acres) is used for estimation purposes. In order to ensure plant community establishment and integrity, a vegetative management plan shall be prepared in accordance with Conservation Practice Standard (CPS) 342, Critical Area Planting." Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility; 484 - Mulching; 570 - Stormwater Runoff Control.

**Before Situation:**

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has marginally degraded streambanks that are unstable and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

**After Situation:**

The streambank is stable against further erosion and encourages natural sediment transport and deposition. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

**Feature Measure:** Linear Feet of Streambank/Shorelin

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $9,171.72

**Scenario Cost/Unit:** $9.17

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 2500 | $6,000.00 |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 16 | $1,222.08 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 16 | $470.72 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 20 | $956.20 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 580 - Streambank and Shoreline Protection

**Scenario** #2 - Bioengineered

**Scenario Description:**

Protection of streambanks consisting of a bioengineered technique comprised of non-structural measures such as earth revetments and benches with vegetative measures to stabilize and protect the streambank against scour and erosion. Soil bioengineering is a system of living plant materials used as structural components. Adapted types of woody vegetation (shrubs and trees) are initially installed in specified configurations that offer immediate soil protection and reinforcement. In addition, soil bioengineering systems create resistance to sliding or shear displacement in a streambank as they develop roots or fibrous inclusions. Environmental benefits derived from woody vegetation include diverse and productive riparian habitats, shade, organic additions to the stream, cover for fish, and improvements in aesthetic value and water quality. Under certain conditions, soil bioengineering installations work well in conjunction with structures to provide more permanent protection and healthy function, enhance aesthetics, and create a more environmentally acceptable product. Soil bioengineering systems normally use unrooted plant parts in the form of cut branches and rooted plants. For streambanks, living systems include brushmattresses, live stakes, joint plantings, vegetated geogrids, branchpacking, and live fascines. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. Payment cost include shaping bank, livestake, rootwads and revetments: a 6-foot high bank at 3(H):1(V) slope for 1000 linear feet (0.46 acres) is used for estimation purposes. In order to ensure plant community establishment and integrity, a vegetative management plan shall be prepared and paid in accordance with Conservation Practice Standard (CPS) 342, Critical Area Planting. Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility; 484 - Mulching; 570 - Storm Runoff Control.

**Before Situation:**

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has moderately degraded streambanks that are unstable and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

**After Situation:**

The streambank is stable against further erosion and encourages natural sediment transport and deposition. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

**Feature Measure:** Lineal Feet of Bioengineering Insta

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $29,083.93

**Scenario Cost/Unit:** $29.08

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 2500 | $6,000.00 |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 16 | $1,222.08 |
| Hydraulic Excavator, 2 CY | 932 | Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included. | Hours | $138.28 | 25 | $3,457.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 380 | $8,542.40 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 16 | $470.72 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 75 | $2,634.75 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 90 | $4,302.90 |
| **Materials** | | | | | | |
| Tree & Shrub, Woody, Cuttings, Medium | 1308 | Woody cuttings, live stakes or whips typically 1/4 to 1 inch diameter and 24 to 48 inches long. Includes materials and shipping only. | Each | $1.67 | 1000 | $1,670.00 |
| **Mobilization** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 3 | $784.08 |

**Practice:** 580 - Streambank and Shoreline Protection

**Scenario** #3 - Rock Riprap

**Scenario Description:**

Protection of streambanks using riprap to stabilize and protect banks of streams or excavated channels against scour and erosion. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. Payment cost include shaping bank, geotextile, and rock rip rap; a 6-foot high bank at 3(H):1(V) slope for 1000 linear feet (0.46 acres) is used for estimation purposes. The rock toe will be 3' thick and 5' high. The bank above the riprap will be graded to a stable slope and revegetated. In order to ensure plant community establishment and integrity, a vegetative management plan shall be prepared and paid in accordance with Conservation Practice Standard (CPS) 342, Critical Area Planting. Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility; 484 - Mulching; 570 - Storm Runoff Control.

**Before Situation:**

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has severely degraded streambanks that are unstable and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

**After Situation:**

The streambank is stable against further erosion and encourages natural sediment transport and deposition. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

**Feature Measure:** Volume of Riprap Installed

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 1,117.00

**Scenario Total Cost:** $158,480.82

**Scenario Cost/Unit:** $141.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 16 | $1,222.08 |
| Excavation, common earth, side cast, large equipment | 1227 | Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $1.50 | 2500 | $3,750.00 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 16 | $470.72 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 50 | $2,390.50 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 1117 | $150,124.80 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 580 - Streambank and Shoreline Protection

**Scenario** #4 - Gabion

**Scenario Description:**

Protection of streambanks using gabions to stabilize and protect banks of streams or excavated channels against scour and erosion. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. Payment cost include shaping bank, geotextile, and rock gabions; a 12-foot high bank for 48 linear feet is used for estimation purposes. The gabions will be 3' thick and 3' long stacked 12' high. The bank around the gabion will be graded to a stable slope and revegetated. In order to ensure plant community establishment and integrity, a vegetative management plan shall be prepared and paid in accordance with Conservation Practice Standard (CPS) 342, Critical Area Planting. Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility; 484 - Mulching; 570 - Storm Runoff Control.

**Before Situation:**

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has severely degraded streambanks that are unstable and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

**After Situation:**

The streambank is stable against further erosion and encourages natural sediment transport and deposition. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

**Feature Measure:** Length of Shoreline protected

**Scenario Unit:** Feet

**Scenario Typical Size:** 48.00

**Scenario Total Cost:** $27,487.19

**Scenario Cost/Unit:** $572.65

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 100 | $339.00 |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 16 | $1,222.08 |
| Excavation, common earth, side cast, large equipment | 1227 | Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $1.50 | 150 | $225.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 20 | $449.60 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 16 | $470.72 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 50 | $2,390.50 |
| **Materials** | | | | | | |
| Geotextile, non-woven, heavy weight | 1210 | Non-woven greater than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only. | Square Yard | $1.11 | 75 | $83.25 |
| Gabion basket or mat | 1378 | Gabion baskets or mats installed and filled on grade, includes materials, transport, equipment, and labor, does not include geotextile fabric. | Cubic Yards | $170.19 | 128 | $21,784.32 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 582 - Open Channel

**Scenario** #1 - Excavate & Fill

**Scenario Description:**

This scenario is the construction or improvement of a channel in which water flows with a free surface. Typical construction dimensions are 3-4' deep x 30' wide bottom x 2000' length with a side slope of 6:1. The practice is used for the restoration of a natural or artificial channel to improve the process and ecological function in a degraded and eroding stream. Excavation and earth fill is required. Conditions are difficult. Difficult conditions include: a location that requires a significant drive off the main road, soils with large rock or difficult clay to excavate, and/or other aspects that create difficulty in excavation compared to similar work in the area. Construction may include vegetation and/or a lightly armored bank toe. This scenario assists in addressing the resource concerns: streambank erosion, sediment deposition, excessive flooding or ponding. Conservation practices that may be associated are: 356-Dike, 587-Structure For Water Control, 533-Pumping Plant, 580 Streambank and Shoreline Protection, 584 Channel Stabilization, 578 Stream Crossing.

**Before Situation:**

A stream or channel with active streambank erosion or headcuts and inadequate capacity to handle the flow needed for flood prevention, drainage or erosion prevention.

**After Situation:**

An earthen channel was excavated to allow unrestricted flow of water and to stabilize the bottom and side slopes. Flooding and erosion is no longer a resource concern.

**Feature Measure:** Volume of earth excavated in CY's

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 9,920.00

**Scenario Total Cost:** $22,076.10

**Scenario Cost/Unit:** $2.23

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 16 | $1,678.56 |
| Hydraulic Excavator, 2 CY | 932 | Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included. | Hours | $138.28 | 110 | $15,210.80 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 126 | $4,426.38 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 584 - Channel Bed Stabilization

**Scenario** #1 - Bio-engineering

**Scenario Description:**

Stabilize the bottom and slope of a stream channel using bioengineering methods. Bio-engineering methods include live stakes, fascines, plantings, bare root stock, willow waddles, and live stakes. Re-vegetation of exposed surfaces will be completed using 342 - Critical Area Planting. Typical stream has 50 foot bottom width and 6 foot banks. Length of area 100 feet. Planting bank area at a 2x2 grid with live stakes, potted plants, and bare root mix

**Before Situation:**

Bed of an existing or newly constructed alluvial or threshold channel is undergoing damaging aggradation or degradation. Stream cannot be feasibly controlled with clearing and snagging, vegetation, bank protection or upstream water control. Soil Erosion: The stream is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

**After Situation:**

Stream channel is stable and vegetated. Other associated practices could be (326) Clearing and Snagging, (396 ) Aquatic Organism Passage, (395) Stream Habitat Improvement and Management, (580) Streambank and Shoreline Protection, or (587) Structure for Water Control. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

**Feature Measure:** Area of planting

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 2,500.00

**Scenario Total Cost:** $10,531.04

**Scenario Cost/Unit:** $4.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 40 | $1,126.00 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 200 | $170.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 63 | $1,416.24 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 40 | $1,176.80 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 41 | $1,960.21 |
| **Materials** | | | | | | |
| Erosion Control Blanket, biodegradable | 1213 | Biodegradable erosion control blanket, typically a composite of natural fibers with reinforcing polymer netting. Materials and shipping only. | Square Yard | $1.70 | 800 | $1,360.00 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 700 | $1,330.00 |
| Wattles or fascines, 6 to 8 inch diameter | 1904 | Fascines, or wattles: bundles of live tree stems of species that sprout roots, bound together, 6-8 inch diameter. Includes materials and shipping only. | Feet | $9.08 | 200 | $1,816.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 584 - Channel Bed Stabilization

**Scenario** #3 - Wood structures

**Scenario Description:**

Stabilize the bottom and slope of a stream channel using engineered structures consisting primarily of wood. This includes but not limited to toe wood, log weirs, log vanes, root wads, log step pools, etc. Re-vegetation of exposed surfaces will be completed using 342 - Critical Area Planting. Typical stream has 50 foot bottom width and 6 foot banks. Length of area 100 feet. Structures spaced at 50 foot intervals.

**Before Situation:**

Bed of an existing or newly constructed alluvial or threshold channel is undergoing damaging aggradation or degradation. Changes cannot be controlled feasibly with clearing and snagging, vegetation, bank protection or upstream water control. Soil Erosion: The stream is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

**After Situation:**

Stream channel is stable. Re-vegetation of exposed surfaces will be completed using 342 - Critical Area Planting. Other associated practices could be (326) Clearing and Snagging, (396 ) Aquatic Organism Passage, (395) Stream Habitat Improvement and Management, (580) Streambank and Shoreline Protection, or (587) Structure for Water Control. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

**Feature Measure:** Number of structures

**Scenario Unit:** Each

**Scenario Typical Size:** 3.00

**Scenario Total Cost:** $13,226.45

**Scenario Cost/Unit:** $4,408.82

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 40 | $96.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 42 | $944.16 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 75 | $10,080.00 |
| Wattles or fascines, 9 to 12 inch diameter | 1905 | Fascines, or wattles: bundles of live tree stems of species that sprout roots, bound together, 9-12 inch diameter. Includes materials and shipping only. | Feet | $12.87 | 150 | $1,930.50 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 584 - Channel Bed Stabilization

**Scenario** #15 - Log and Boulder Check Dam

**Scenario Description:**

Typical project involves a series of check dams, to raise the bottom elevation of an incised stream channel. Cost estimate is based upon a typical scenario involving a 35 ft wide bankfull channel, incised to a 12 ft maximum depth and restored to a 2.5 ft max depth. These structures are utilized on the downstream end of a proposed restoration reach, to raise the channel up to it's stable, natural elevation. The upstream reach may be restored via 580- Open Channel, or left to aggrade naturally. Structures are intended as a temporary (<20 years) measure, to encourage natural beaver activity to re-establish in the reach. Many times beaver transplants to the area are done in conjunction with channel stabilization work. The cost to construct these structures (quantity of materials), is variable by their height. To develop a "typical" structure for the cost list and intermediate depth was used. A combination of boulders, and excavator driving "piling" logs, are used to counteract buoyancy and overturning/sliding forces. Boulders, and smaller graded riprap, are used to construct both bed and bank keys to prevent flanking and failure due to scour. The unit of payment measurement is bankfull channel width. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

**Before Situation:**

Bed of an existing alluvial channel is undergoing degradation. Changes cannot be controlled feasibly with clearing and snagging, vegetation, bank protection or upstream water control.

**After Situation:**

Stream channel is stable. Re-vegetation of exposed surfaces will be completed using 342 - Critical Area Planting. Other associated practices could be (582) Open Channel.

**Feature Measure:** Bankfull Channel Width

**Scenario Unit:** Linear Feet

**Scenario Typical Size:** 35.00

**Scenario Total Cost:** $42,982.06

**Scenario Cost/Unit:** $1,228.06

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 8 | $839.28 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 40 | $5,200.80 |
| Track Loader, 95HP | 935 | Equipment and power unit costs. Labor not included. | Hours | $98.22 | 8 | $785.76 |
| Truck, dump, 18 CY | 1400 | Dump truck for moving bulk material. Typically capacity is 25 ton or 18 cubic yards. Includes equipment only. | Hours | $108.60 | 10 | $1,086.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 64 | $2,248.32 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 12 | $573.72 |
| **Materials** | | | | | | |
| Rock Riprap, graded, angular, material and shipping | 1200 | Graded Rock Riprap for all gradation ranges. Includes materials and local delivery within 20 miles of quarry. Placement costs are not included. | Ton | $37.10 | 509 | $18,883.90 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 100 | $190.00 |
| Boulder | 1761 | Rock boulders (approximately 5 ft dia. 6.67 Tons). Includes materials and delivery (up to 100 miles) only. Placement costs are not included. | Ton | $91.01 | 81 | $7,371.81 |
| Aggregate, river rock | 1834 | Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Ton | $18.04 | 8.4 | $151.54 |
| Log, un-anchored | 2035 | Price of log picked up at the Mill. Includes material only. | Ton | $211.65 | 25 | $5,291.25 |

**Practice:** 584 - Channel Bed Stabilization

**Scenario** #24 - Rock Structure for Deeply Incised Channel

**Scenario Description:**

Stabilize the bottom and slope of a deeply incised stream channel using rock riprap or engineered products that consist primarily of rock or concrete. This includes but is not limited to gabions, rock vanes, rock weirs, concrete blocks, etc. The typical stream has a 50 foot bottom width and a 15 foot high bank. Length of installation area is 100 feet. Installation is on a degrading channel that needs armor on the entire wetted perimeter to a 6 foot height to stabilize the channel bed. Install willows to roughen channel and reduce flow velocity.

**Before Situation:**

Bed of an existing or newly constructed alluvial or threshold channel is undergoing damaging aggradation or degradation. Changes cannot be controlled feasibly with clearing and snagging, vegetation, bank protection or upstream water control. Soil Erosion: The stream is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

**After Situation:**

Stream channel is stable. Re-vegetation of exposed surfaces will be completed using 342 - Critical Area Planting. Other associated practices could be (326) Clearing and Snagging, (396 ) Aquatic Organism Passage, (395) Stream Habitat Improvement and Management, (580) Streambank and Shoreline Protection, or (587) Structure for Water Control. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

**Feature Measure:** Volume of installed rock

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 575.00

**Scenario Total Cost:** $55,176.25

**Scenario Cost/Unit:** $95.96

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Clearing and Grubbing | 40 | Clearing and Grubbing, includes materials, equipment and labor | Acres | $296.87 | 0.2 | $59.37 |
| Hydraulic Excavator, 2 CY | 932 | Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included. | Hours | $138.28 | 57 | $7,881.96 |
| Track Loader, 95HP | 935 | Equipment and power unit costs. Labor not included. | Hours | $98.22 | 57 | $5,598.54 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 71 | $1,596.08 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 134 | $4,707.42 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 40 | $1,912.40 |
| **Materials** | | | | | | |
| Rock Riprap, graded, angular, material and shipping | 1200 | Graded Rock Riprap for all gradation ranges. Includes materials and local delivery within 20 miles of quarry. Placement costs are not included. | Ton | $37.10 | 856 | $31,757.60 |
| Geotextile, non-woven, heavy weight | 1210 | Non-woven greater than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only. | Square Yard | $1.11 | 856 | $950.16 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 100 | $190.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 587 - Structure for Water Control

**Scenario** #1 - Inlet Flashboard Riser, Metal - Reg 1

**Scenario Description:**

A Flashboard Riser fabricated of metal used in a water management system that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concerns: Inadequate Water - Inefficient use of Irrigation Water and Inadequate habitat for Fish and Wildlife. The water surface elevation is controlled by addition or removal of slats or "stoplogs". This scenario is applicable to variable crest weir structures where the elevation is controlled at the inlet (Half-Rounds). Payment rate is based upon the Flashboard Weir Length in inches multiplied by the outlet length in feet (Inch-Foot). Cost estimate is based on a "Half-Round" flashboard riser shop fabricated using a longitudinal cut 36" Corrugated Metal Pipe, a 50' long - 30" CMP outlet passing through an embankment. Earthwork is included in the associated practice.

**Before Situation:**

The operator presently flood irrigates his field and has no means to accurately maintain a constant water level at various elevations resulting in a lack of flexibility, and inefficient use of water and energy during pumping. The operator also desires to maintain a permanent pool for waterfowl during the winter.

**After Situation:**

The operator has the capability to more efficiently control and maintain a range of water surface elevations thereby reducing the flow rate needed. Less water is wasted and both water and energy are conserved. The operator is able to maintain adequate water during the winter as a benefit to waterfowl. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Irrigation Water Management (449), Irrigation Land Leveling (464), Irrigation Canal or Lateral (320), Irrigation System, Tailwater Recovery (447), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Flashboard Weir Length (in) x barre

**Scenario Unit:** Diameter Inch Foot

**Scenario Typical Size:** 1,800.00

**Scenario Total Cost:** $6,048.66

**Scenario Cost/Unit:** $3.36

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 2 | $932.54 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 28 | $167.44 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 8 | $745.92 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 6 | $182.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 32 | $719.36 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 8 | $281.04 |
| **Materials** | | | | | | |
| Steel, Angle, 2 1/2 in. x 2 1/2 in. x 1/4 in. | 1372 | Materials: Angle, 2 1/2 inch x 2 1/2 inch x 1/4 inch. Meets ASTM A36 | Feet | $5.38 | 24 | $129.12 |
| Lumber, planks, posts and timbers, treated | 1609 | Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor. | Board Feet | $4.15 | 30 | $124.50 |
| Pipe, CMP, 30 in., 12 Gauge | 1824 | 30 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $39.66 | 50 | $1,983.00 |
| Pipe, CMP, 36 in., 12 Gauge | 1825 | 36 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $47.39 | 6 | $284.34 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 587 - Structure for Water Control

**Scenario** #2 - Inline Flashboard Riser, Metal - Reg 1

**Scenario Description:**

A Flashboard Riser fabricated of metal and used in a water management system that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concerns: Inadequate Water - Inefficient use of Irrigation Water and Inadequate habitat for fish and wildlife. The water surface elevation is controlled by addition or removal of slats or "stoplogs". This scenario is applicable to variable crest weir structures where the elevation is controlled at the embankment. Payment rate is based upon the Flashboard Weir Length in inches multiplied by the outlet length in feet (Inch-Foot). Cost estimate is based on a 36" corrugated metal flashboard riser shop fabricated with flashboard channels at the midpoint, and a 50' long - 30" CMP outlet passing through an embankment. Earthwork is included in the associated pracitce.

**Before Situation:**

The operator presently flood irrigates his field and has no means to accurately maintain a constant water level at varying elevations resulting in a lack of flexibility, and inefficient use of water and energy during pumping. The operator also desires to maintain a permanent pool for waterfowl during the winter.

**After Situation:**

The operator has the capability to more efficiently control and maintain a range of water surface elevations thereby reducing the flow rate needed. Less water is wasted and both water and energy is conserved. The operator is now able to maintain adequate water during the winter as a benefit to waterfowl. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Irrigation Water Management (449), Irrigation Land Leveling (464), Irrigation Canal or Lateral (320), Irrigation System, Tailwater Recovery (447), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Flashboard Weir Length (in) x Barre

**Scenario Unit:** Diameter Inch Foot

**Scenario Typical Size:** 1,800.00

**Scenario Total Cost:** $7,042.92

**Scenario Cost/Unit:** $3.91

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 2 | $932.54 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 28 | $167.44 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 10 | $932.40 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 16 | $486.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 10 | $351.30 |
| **Materials** | | | | | | |
| Steel, Angle, 2 1/2 in. x 2 1/2 in. x 1/4 in. | 1372 | Materials: Angle, 2 1/2 inch x 2 1/2 inch x 1/4 inch. Meets ASTM A36 | Feet | $5.38 | 24 | $129.12 |
| Lumber, planks, posts and timbers, treated | 1609 | Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor. | Board Feet | $4.15 | 30 | $124.50 |
| Pipe, CMP, 30 in., 12 Gauge | 1824 | 30 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $39.66 | 70 | $2,776.20 |
| Pipe, CMP, 36 in., 12 Gauge | 1825 | 36 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $47.39 | 6 | $284.34 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 587 - Structure for Water Control

**Scenario** #3 - Commercial Inline Flashboard Riser - NP Reg 1

**Scenario Description:**

An Inline Water Control Structure (WCS) composed of plastic that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concern: Inadequate habitat for Fish and Wildlife. The water surface elevation is controlled by addition or removal of slats or "stoplogs". This scenario is applicable to variable crest weir structures where the elevation is controlled at point along a pipe extending through an embankment, providing ease of access to the structure and provide better protection against beaver activity. There are commercially available models composed of plastic that are commonly used when the width of the weir is 24" or less. Payment rate is based upon the Flashboard Weir Length in inches multiplied by the outlet length in feet (Inch-Foot). Cost estimate is based on a using such a commercial product. The typical scenario is an inline structure with a width of 24" and height of six feet. The pipe is 70' of 18" PVC (inlet and outlet combined). Earthwork is included in the associated practice.

**Before Situation:**

The landowner wishes to provide for a way to control the water surface elevation in a wetland area. The landowner wishes to enhance and enlarge the area to provide habitat for fish and wildlife.

**After Situation:**

A WCS is installed in a flow line allowing shallow water impoundments. A wetland area is enhanced and water levels can be varied to better accommodate wildlife needs. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Wetland Creation (658), Wetland Enhancement (659) Wetland Wildlife Habitat Management (644), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Flashboard Weir Length (in) x Barre

**Scenario Unit:** Diameter Inch Foot

**Scenario Typical Size:** 1,680.00

**Scenario Total Cost:** $8,527.67

**Scenario Cost/Unit:** $5.08

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 15 | $89.70 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 4 | $372.96 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 4 | $140.52 |
| **Materials** | | | | | | |
| Pipe, PVC, 18 in., SCH 40 | 1373 | Materials: - 18 inch - PVC - SCH 40 - ASTM D1785 | Feet | $62.84 | 70 | $4,398.80 |
| Water Control Structure, Stoplog, Inline, fixed costs portion | 2145 | Fixed cost portion of Water Level Control Structure, Inline stoplog type. Typically made of PVC or fiberglass materials. Materials only. | Each | $342.72 | 1 | $342.72 |
| Water Control Structure, Stoplog, Inline, variable cost portion | 2146 | Variable cost portion of a Water Level Control Structure, Inline stoplog type. Typically made of PVC or fiberglass materials. Calculate total variable costs by multiplying by the structure height x pipe diameter. Materials only. | Height x Diameter | $17.29 | 144 | $2,489.76 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 587 - Structure for Water Control

**Scenario** #4 - Culvert <30 inches HDPE - NP Reg 1

**Scenario Description:**

Install a new HDPE culvert under 30 inches in diameter to convey water under roads or other barriers. A typical scenario would be an 24 inch diameter pipe, 40 feet in length. Work includes site preparation, acquiring and installing culvert pipe with gravel bedding and fill (compacted), and riprap protection of side slopes. Use (396) Aquatic Organism Passage when the primary intent is biological concerns, not hydrologic. Use (578) Stream Crossing for culverts = 30 inches or perennial flow. Earthwork is included in the associated practice.

**Before Situation:**

Water flow needs to be conveyed under an access road, ditch or other barrier. Water must be conveyed in a controlled fashion.

**After Situation:**

Water is conveyed in a controlled manner. Associated practices could be Access Road (560), Animal Trails and Walkways (575), Critical Area Planting (342), Drainage Water Management (554), Irrigation Canal or Lateral (320), Irrigation Pipeline (430), Irrigation Reservoir (436), Irrigation System, Surface and Subsurface (443), Irrigation System, Tailwater Recovery (447), Irrigation Water Management (449), Lined Waterway or Outlet (468), Obstruction Removal (500), Pond (378), Stormwater Runoff Control (570), Surface Drain, Field Ditch (607), Surface Drain, Main or Lateral (608), and Trails and Walkways (568).

**Feature Measure:** Pipe Diameter (In) x Pipe Length (Ft

**Scenario Unit:** Diameter Inch Foot

**Scenario Typical Size:** 960.00

**Scenario Total Cost:** $5,644.98

**Scenario Cost/Unit:** $5.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 20 | $119.60 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 7 | $652.68 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 7 | $205.94 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 22 | $2,956.80 |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 5 | $95.40 |
| Pipe, HDPE, CPT, Double Wall, Soil Tight, 24 in. | 1246 | Pipe, Corrugated HDPE Double Wall, 24 inch diameter with soil tight joints - AASHTO M294. Material cost only. | Feet | $28.21 | 40 | $1,128.40 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 587 - Structure for Water Control

**Scenario** #5 - Culvert <30 inches CMP - NP Reg 1

**Scenario Description:**

Install a new Corrugated Metal Pipe (CMP) culvert under 30 inches in diameter to convey water under roads or other barriers. A typical scenario would be an 24 inch diameter pipe, 40 feet in length. Work includes site preparation, acquiring and installing culvert pipe with gravel bedding and fill (compacted), and riprap protection of side slopes. Use (396) Aquatic Organism Passage when the primary intent is biological concerns, not hydrologic. Use (578) Stream Crossing instead for culverts = 30 inches or perennial flow. Earthwork is included in the associated practice.

**Before Situation:**

Water flow needs to be conveyed under an access road, ditch or other barrier. Water must be conveyed in a controlled fashion.

**After Situation:**

Water is conveyed in a controlled manner. Associated practices could be Access Road (560), Animal Trails and Walkways (575), Critical Area Planting (342), Drainage Water Management (554), Irrigation Canal or Lateral (320), Irrigation Pipeline (430), Irrigation Reservoir (436), Irrigation System, Surface and Subsurface (443), Irrigation System, Tailwater Recovery (447), Irrigation Water Management (449), Lined Waterway or Outlet (468), Obstruction Removal (500), Pond (378), Stormwater Runoff Control (570), Surface Drain, Field Ditch (607), Surface Drain, Main or Lateral (608), and Trails and Walkways (568).

**Feature Measure:** Pipe Diameter (In) x Pipe Length (Ft

**Scenario Unit:** Diameter Inch Foot

**Scenario Typical Size:** 960.00

**Scenario Total Cost:** $6,180.01

**Scenario Cost/Unit:** $6.44

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 20 | $119.60 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 9 | $839.16 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 14 | $314.72 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 9 | $316.17 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 22 | $2,956.80 |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 5 | $95.40 |
| Pipe, CMP, 24 in., 12 Gauge | 1417 | 24 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $31.92 | 40 | $1,276.80 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 587 - Structure for Water Control

**Scenario** #6 - Slide Gate - Flood Dike

**Scenario Description:**

This scenario includes installation of 15" CMP with a 15" slide gate (screw activated) through a flood control dike. Pipe is typically 48 feet long. During normal conditions the pipe provides un-restricted drainage from areas protedcted by the dike. During high water events on the downstream side of the dike, the gate can be closed to prevent flood water from backing into the protected area above the dike.

**Before Situation:**

A dike to protect an area from flooding is either in place or planned. Adequate drainage is required during normal operating periods to prevent saturating the area being protected, and flood waters need to be prevented from entering during periods of flooding.

**After Situation:**

Tide or flood inundation is controlled. Associated practices could be Dike (356), Field Ditch (607), Surface Drain, Main or Lateral (608). After installation of the Dike and Water Control Structure, the area protected by the dike will have proper drainage and protection during high water conditions downstream.

**Feature Measure:** Length of Pipe

**Scenario Unit:** Feet

**Scenario Typical Size:** 48.00

**Scenario Total Cost:** $3,183.01

**Scenario Cost/Unit:** $66.31

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 50 | $299.00 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 7 | $652.68 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 14 | $314.72 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 7 | $245.91 |
| **Materials** | | | | | | |
| Pipe, HDPE, CPT, Double Wall, Soil Tight, 18 in. | 1245 | Pipe, Corrugated HDPE Double Wall, 18 inch diameter with soil tight joints - AASHTO M294. Material cost only. | Feet | $16.46 | 48 | $790.08 |
| Slide gate, steel, 2 ft. diameter, low head | 1829 | 2 ft. diameter steel slide gate for low head installations | Each | $619.26 | 1 | $619.26 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 587 - Structure for Water Control

**Scenario** #10 - Rock Check

**Scenario Description:**

This is a structure constructed with rock placed in existing, recently formed and active minor gullies located near the upper end of a watershed. Multiple structures are generally required, with downstream structures placed to force tail water at an upstream structure. The furthest upstream structure is located to control existing head cutting. Resource concerns addressed included gully erosion and water quality.

**Before Situation:**

Small gullies are actively forming in locations with reletively small drainage areas that result in increased downstream sedimentation and decreased water quality.

**After Situation:**

Construction of the structures will result in preventing further head cutting in the channel and improved downstream water quality due to a decrease of sediment in the runoff. Construction will consist of minor site shaping, excavaton to tie rock into the embankment, and placement of rock rip rap. Typical dimensions used are 2:1 upstream slope, 5:1 downstream slope with a 3' top width, approximately 4' wide within the channel. The rock will be placed in a key way 1' deep with 1:1 side slopes located below the level top section. The typical height is 3' above the existing channel elevation.

**Feature Measure:** Number of Structures

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,220.58

**Scenario Cost/Unit:** $1,220.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 3 | $390.06 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 3 | $105.39 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| **Materials** | | | | | | |
| Rock Riprap, graded, angular, material and shipping | 1200 | Graded Rock Riprap for all gradation ranges. Includes materials and local delivery within 20 miles of quarry. Placement costs are not included. | Ton | $37.10 | 10 | $371.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 587 - Structure for Water Control

**Scenario** #12 - Buried Automatic Valve

**Scenario Description:**
A buried inline water control valve constructed of plastic that maintains a desired water surface, controls the direction or rate of flow, or conveys water to address resource concerns. The water surface elevation is automatically controlled. Cost estimate is based on using a commercially available product.

**Before Situation:**
The landowner wishes to provide a way to control the water surface elevation in tile drained land.

**After Situation:**
The water surface elevation in the tile drained land is controlled with an automatic valve to provide a 1' increase in water level elevation upstream of each valve.

**Feature Measure:** No. of Valves

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $896.86

**Scenario Cost/Unit:** $896.86

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 2 | $11.96 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 1 | $93.24 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 1 | $22.48 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 1 | $29.42 |
| **Materials** | | | | | | |
| Water Level Control Valve, Inline | 2189 | Automatic float valve for drainage pipes up to 8 inch dia. To maintain head differential in flowing agricultural drains. | Each | $563.97 | 1 | $563.97 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** 587 - Structure for Water Control

**Scenario** #194 - Commercial Inline Flashboard Riser

**Scenario Description:**

An Inline Water Control Structure (WCS) composed of plastic that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concern: Inadequate habitat for Fish and Wildlife. The water surface elevation is controlled by addition or removal of slats or "stoplogs". This scenario is applicable to variable crest weir structures where the elevation is controlled at point along a pipe extending through an embankment, providing ease of access to the structure and provide better protection against beaver activity. There are commercially available models composed of plastic that are commonly used when the width of the is 24" or less. Payment rate is based upon the Flashboard Weir Length in inches multiplied by the outlet length in feet (Inch-Foot). Cost estimate is based on a using a such a commercial product. The typical scenario is an inline structure with a width of 20", height of six feet, The pipe is 50' of 15" SCH 40 PVC (inlet and outlet combined).

**Before Situation:**

The landowner wishes to provide for a way to control the water surface elevation in a wetland area. The landowner wishes to enhance and enlarge the area to provide habitat for fish and wildlife.

**After Situation:**

A WCS is installed in a flow line allowing shallow water impoundments. A wetland area is enhanced and water levels can be varied to better accommodate wildlife needs. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Wetland Creation (658), Wetland Enhancement (659) Wetland Wildlife Habitat Management (644), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Flashboard Weir Length (in) x Barre

**Scenario Unit:** Diameter Inch Foot

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $5,095.21

**Scenario Cost/Unit:** $5.10

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 190 | $746.70 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 15 | $89.70 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 2 | $186.48 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 3 | $91.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 2 | $70.26 |
| **Materials** | | | | | | |
| Pipe, PVC, 16 in., SCH 80 | 1353 | Materials: - 16 inch - PVC - SCH 80 - ASTM D1785 | Feet | $67.95 | 50 | $3,397.50 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 587 - Structure for Water Control

**Scenario** #347 - Automated DWM Control Structure, 12 to 18 inch diameter pipe

**Scenario Description:**

A subsurface drainage system on a field with a fairly flat slope (less than 2% and preferably less than 1%) that outlets through a control structure which is operated with an automated slide gate and accommodates 12 to 18 inch diameter pipe sizes. This structure configuration facilitates meeting the conservation practice standard 554 - Drainage Water Management by managing the subsurface water table year-round. This allows the operator to keep the water in the soil profile when it is not critical to dry the soil for crop health or field operations. This retention time reduces the volume of water discharged and thereby the quantity of nutrients lost. A single automated structure may have its influence extended by buried float-activated structures to provide a greater area of control. Resource Concerns: Water Quality Degradation (Nutrients). Associated Practices: 606 - Subsurface Drain; 554 - Drainage Water Management

**Before Situation:**

Uncontrolled discharge from a subsurface drainage system enters ditches or streams, often laden with sediment and nutrients.

**After Situation:**

The water surface profile in the subsurface drainage system is managed in a manner which retains moisture in the soil for plant update and to allow for enhanced nutrient utilization. The use of automated control structures allow water levels to be monitored and adjusted remotely to allow for more active management in accordance with the drainage systems Drainage Water Management plan. Typical affected area for a single structure is 10 to 20 acres. A single structure with an automated slide gate may have its influence extended by use of buried float-activated control structures.

**Feature Measure:** Number of Structures

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $10,160.76

**Scenario Cost/Unit:** $10,160.76

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 2 | $110.60 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 3 | $91.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 2 | $58.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Switches and Controls, programmable controller | 1193 | Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $528.75 | 1 | $528.75 |
| Data Logger with Telemetry System | 1454 | Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only. | Each | $1,660.98 | 1 | $1,660.98 |
| Pipe, PVC, 15 in., SDR 35 | 1722 | Materials: 15 inch - PVC - SDR35 - ASTM D3034 | Feet | $37.46 | 40 | $1,498.40 |
| Water Control Structure, Stoplog, Inline, fixed costs portion | 2145 | Fixed cost portion of Water Level Control Structure, Inline stoplog type. Typically made of PVC or fiberglass materials. Materials only. | Each | $342.72 | 1 | $342.72 |
| Water Control Structure, Stoplog, Inline, variable cost portion | 2146 | Variable cost portion of a Water Level Control Structure, Inline stoplog type. Typically made of PVC or fiberglass materials. Calculate total variable costs by multiplying by the structure height x pipe diameter. Materials only. | Height x Diameter | $17.29 | 113 | $1,953.77 |
| Valve, Inline, => 12 inch dia. | 2368 | Inline valve greater than or equal to 12 inch diameter to control direction and volume of flow within a pipeline system. Materials only. | Each | $3,356.69 | 1 | $3,356.69 |
| Light Duty Linear Actuator | 2724 | 12VDC aluminum light duty linear actuator with 12??? stroke and potentiometer. 110 lb dynamic load rating with 20:1 gear ratio, 500 lb static load rating. | Each | $156.87 | 1 | $156.87 |
| **Mobilization** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 587 - Structure for Water Control

**Scenario** #363 - Automation Retrofit to Manual Drainage Water Management Control Structure

**Scenario Description:**

A subsurface drainage system on a field with a fairly flat slope (less than 2% and preferably less than 1%) that outlets through a control structure which has been retrofitted to operate with an automated slide gate. This structure configuration facilitates meeting the conservation practice standard 554 - Drainage Water Management by managing the subsurface water table year-round. This allows the operator to keep the water in the soil profile when it is not critical to dry the soil for crop health or field operations. This retention time reduces the volume of water discharged and thereby the quantity of nutrients lost. A single retrofitted automated retrofit structure may have its influence extended by buried float-activated structures to provide a greater area of control. Resource Concerns: Field Sediment, Nutrient and Pathogen Loss. Associated Practices: 606 - Subsurface Drain; 554 - Drainage Water Management.

**Before Situation:**

Control structure with manually operated slide gate.

**After Situation:**

The water surface profile in the subsurface drainage system is managed in a manner which retains moisture in the soil for plant update and to allow for enhanced nutrient utilization. The use of retrofitted control structures for automated slide gate operation allow water levels to be monitored and adjusted remotely to allow for more active management in accordance with the drainage systems Drainage Water Management plan. Typical affected area for a single structure is 10 to 20 acres. A single structure with a retrofitted automated slide gate may have its influence extended by use of buried float-activated control structures.

**Feature Measure:** Number of Structures

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,864.97

**Scenario Cost/Unit:** $6,864.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.25 | $198.67 |
| Switches and Controls, programmable controller | 1193 | Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $528.75 | 1 | $528.75 |
| Data Logger with Telemetry System | 1454 | Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only. | Each | $1,660.98 | 1 | $1,660.98 |
| Battery Bank, Hydroelectric | 2593 | Device used to provide a way to store surplus energy when more is being produced than consumed. When demand increases beyond what is generated, the batteries can be called on to release energy to keep household loads operating. Includes materials and shipping only. | Each | $714.04 | 1 | $714.04 |
| Light Duty Linear Actuator | 2724 | 12VDC aluminum light duty linear actuator with 12??? stroke and potentiometer. 110 lb dynamic load rating with 20:1 gear ratio, 500 lb static load rating. | Each | $156.87 | 1 | $156.87 |

**Practice:** 587 - Structure for Water Control

**Scenario** #425 - Automated DWM Control Structure, 6 to 10 inch diameter pipe

**Scenario Description:**

A subsurface drainage system on a field with a fairly flat slope (less than 2% and preferably less than 1%) that outlets through a control structure which is operated with an automated slide gate and accommodates 6 to 10 inch diameter pipe sizes. This structure configuration facilitates meeting the conservation practice standard 554 - Drainage Water Management by managing the subsurface water table year-round. This allows the operator to keep the water in the soil profile when it is not critical to dry the soil for crop health or field operations. This retention time reduces the volume of water discharged and thereby the quantity of nutrients lost. A single automated structure may have its influence extended by buried float-activated structures to provide a greater area of control. Resource Concerns: Water Quality Degradation (Nutrients). Associated Practices: 606 - Subsurface Drain; 554 - Drainage Water Management

**Before Situation:**

Uncontrolled discharge from a subsurface drainage system enters ditches or streams, often laden with sediment and nutrients.

**After Situation:**

The water surface profile in the subsurface drainage system is managed in a manner which retains moisture in the soil for plant update and to allow for enhanced nutrient utilization. The use of automated control structures allow water levels to be monitored and adjusted remotely to allow for more active management in accordance with the drainage systems Drainage Water Management plan. Typical affected area for a single structure is 10 to 20 acres. A single structure with an automated slide gate may have its influence extended by use of buried float-activated control structures.

**Feature Measure:** Number of Structures

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $5,534.41

**Scenario Cost/Unit:** $5,534.41

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 2 | $110.60 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 3 | $91.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 2 | $58.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Pipe, PVC, 8 in., SDR 21 | 988 | Materials: - 8 inch - PVC - SDR 21 200 psi - ASTM D2241 | Feet | $17.93 | 40 | $717.20 |
| Switches and Controls, programmable controller | 1193 | Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $528.75 | 1 | $528.75 |
| Data Logger with Telemetry System | 1454 | Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only. | Each | $1,660.98 | 1 | $1,660.98 |
| Water Control Structure, Stoplog, Inline, fixed costs portion | 2145 | Fixed cost portion of Water Level Control Structure, Inline stoplog type. Typically made of PVC or fiberglass materials. Materials only. | Each | $342.72 | 1 | $342.72 |
| Water Control Structure, Stoplog, Inline, variable cost portion | 2146 | Variable cost portion of a Water Level Control Structure, Inline stoplog type. Typically made of PVC or fiberglass materials. Calculate total variable costs by multiplying by the structure height x pipe diameter. Materials only. | Height x Diameter | $17.29 | 60 | $1,037.40 |
| Valve, Inline, < 12 inch dia. | 2367 | Inline valve less than 12 inch diameter to control direction and volume of flow within a pipeline system. Materials only. | Each | $427.91 | 1 | $427.91 |
| Light Duty Linear Actuator | 2724 | 12VDC aluminum light duty linear actuator with 12??? stroke and potentiometer. 110 lb dynamic load rating with 20:1 gear ratio, 500 lb static load rating. | Each | $156.87 | 1 | $156.87 |
| **Mobilization** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 587 - Structure for Water Control

**Scenario** #454 - Inlet Flashboard Riser, Metal

**Scenario Description:**

A Flashboard Riser fabricated of metal and used in a water management system that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concerns: Inadequate Water - Inefficient use of Irrigation Water and Inadequate habitat for Fish and Wildlife. The water surface elevation is controlled by addition or removal of slats or "stoplogs". This scenario is applicable to variable crest weir structures where the elevation is controlled at the inlet (Half-Rounds). They are often fabricated from half pipes (i.e. half-rounds) or sheet steel in a box shape. Payment rate is based upon the Flashboard Weir Length in inches multiplied by the outlet length in feet (Inch-Foot). Cost estimate is based on a "Half-Round" flashboard riser shop fabricated using a longitudinal cut 36" smooth steel pipe, a 50' long - 30" outlet pipe passing through an embankment.

**Before Situation:**

The operator presently flood irrigates his field and has no means to accurately maintain a constant water level at varying elevations resulting in a lack of flexibility, and inefficient use of water and energy during pumping. The operator also desires to maintain a permanent pool for water fowl during the winter.

**After Situation:**

The operator has the capability to more efficiently control and maintain a range of water surface elevations thereby reducing the flow rate needed. Less water is wasted and both water and energy is conserved. The operator is now able to maintain adequate water during the winter as a benefit to waterfowl. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Irrigation Water Management (449), Irrigation Land Leveling (464), Irrigation Canal or Lateral (320), Irrigation System, Tailwater Recovery (447), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Flashboard Weir Length (in) x barre

**Scenario Unit:** Diameter Inch Foot

**Scenario Typical Size:** 1,800.00

**Scenario Total Cost:** $10,510.23

**Scenario Cost/Unit:** $5.84

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 190 | $746.70 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 10 | $59.80 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 2 | $186.48 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 5 | $152.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 6 | $134.88 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 2 | $70.26 |
| **Materials** | | | | | | |
| Pipe, Steel, 30 in., Std Wt, USED | 1361 | Materials: - USED - 30 inch - Steel Std Wt | Feet | $149.78 | 50 | $7,489.00 |
| Pipe, Steel, 36 in., Std Wt, USED | 1362 | Materials: - USED - 36 inch - Steel Std Wt | Feet | $165.07 | 6 | $990.42 |
| Steel, Angle, 2 1/2 in. x 2 1/2 in. x 1/4 in. | 1372 | Materials: Angle, 2 1/2 inch x 2 1/2 inch x 1/4 inch. Meets ASTM A36 | Feet | $5.38 | 24 | $129.12 |
| Steel, Plate, 3/8 in. | 1375 | Flat steel plate, 3/8 inch thickness. Materials only. | Square Feet | $21.31 | 4 | $85.24 |
| Lumber, planks, posts and timbers, treated | 1609 | Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor. | Board Feet | $4.15 | 32 | $132.80 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 587 - Structure for Water Control

**Scenario** #480 - Culvert <30 inches CMP

**Scenario Description:**

Install a new Corrugated Metal Pipe (CMP) culvert under 30 inches in diameter to convey water under roads or other barriers. A typical scenario would be an 24 inch diameter pipe, 40 feet in length. Work includes site preparation, acquiring and installing culvert pipe with gravel bedding and fill (compacted), and riprap protection of side slopes. Use (396) Aquatic Organism Passage when the primary intent is biological concerns, not hydrologic. Use (578) Stream Crossing instead for culverts = 30 inches or perennial flow.

**Before Situation:**

Water flow needs to be conveyed under an access road, ditch or other barrier. Water must be conveyed in a controlled fashion.

**After Situation:**

Water is conveyed in a controlled manner. Associated practices could be Access Road (560), Animal Trails and Walkways (575), Critical Area Planting (342), Drainage Water Management (554), Irrigation Canal or Lateral (320), Irrigation Pipeline (430), Irrigation Reservoir (436), Irrigation System, Surface and Subsurface (443), Irrigation System, Tailwater Recovery (447), Irrigation Water Management (449), Lined Waterway or Outlet (468), Obstruction Removal (500), Pond (378), Stormwater Runoff Control (570), Surface Drain, Field Ditch (607), Surface Drain, Main or Lateral (608), and Trails and Walkways (568).

**Feature Measure:** Pipe Diameter (In) x Pipe Length (Ft

**Scenario Unit:** Diameter Inch Foot

**Scenario Typical Size:** 960.00

**Scenario Total Cost:** $2,669.62

**Scenario Cost/Unit:** $2.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 5 | $12.00 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 45 | $269.10 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| **Materials** | | | | | | |
| Rock Riprap, Placed with geotextile | 44 | Rock Riprap, placed with geotextile. Includes materials, local delivery within 20 miles of quarry, and placement. | Cubic Yards | $134.40 | 2 | $268.80 |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 5 | $95.40 |
| Pipe, CMP, 24 in., 12 Gauge | 1417 | 24 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gauge. Material cost only. | Feet | $31.92 | 40 | $1,276.80 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 587 - Structure for Water Control

**Scenario** #482 - Flow Meter with Mechanical Index

**Scenario Description:**

Permanently installed water flow meter with mechanical, cumulative volume and rate index. Meters can be any flow measurement device that meets CPS 433, (i.e. meters: turbine, propeller, acoustic, magnetic, venturi, orifice, etc.) with or without straightening vanes. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities Associated Practices: 533-Pumping Plant, 449-Irrigation Water Management, 441-Irrigation System, Microirrigation, 443-Irrigation System Surface and Subsurface, 442-Irrigation System, Sprinkler, 328-Conservation Crop Rotation, 634-Waste Transfer, and 590-Nutrient Management.

**Before Situation:**

Producer estimates seasonal and individual irrigation application flow rate and volumes based on energy costs, system operating pressure, or other means.

**After Situation:**

Producer is able to access instantaneous rate and cumulative flow volume data at the meter location. The information gained will enable the irrigator to improve irrigation water management, recognize system performance issues before they become critical, and reduce energy use.

**Feature Measure:** Nominal Diameter of Meter

**Scenario Unit:** Inch

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $1,788.81

**Scenario Cost/Unit:** $178.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Flow Meter, with mechanical Index | 1450 | 10 inch, Turbine Type Flow Meter with Mechanical Index, permanently installed. Includes materials and shipping only. | Each | $1,644.47 | 1 | $1,644.47 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |

**Practice:** 587 - Structure for Water Control

**Scenario** #483 - Flow Meter with Electronic Index

**Scenario Description:**

Permanently installed water flow meter with an electronic index . Meters can be any flow measurement device that meets CPS 433, (i.e., meters: turbine, propeller, acoustic, magnetic, venturi, orifice, etc.) with or without straightening vanes or data logging capability. Meter nominal diameter for insert type turbine meters will be installation pipe size. Typical installation would include installation of a 10 inch turbine flow meter, with electronic index output. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities Associated Practices: 533-Pumping Plant, 449-Irrigation Water Management, 441-Irrigation System, Microirrigation, 443-Irrigation System Surface and Subsurface, 442-Irrigation System, Sprinkler, 328-Conservation Crop Rotation, 634-Waster Transfer, and 590-Nutrient Management.

**Before Situation:**

Producer estimates seasonal and individual irrigation application flow rate and volumes based on energy costs, system operating pressure, or other means.

**After Situation:**

Producer is able to access instantaneous rate and cumulative flow volume data at the meter location. The information gained will enable the irrigator to improve irrigation water management, recognize system performance issues before they become critical, and reduce energy use.

**Feature Measure:** Nominal Diameter of Meter

**Scenario Unit:** Inch

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $3,628.46

**Scenario Cost/Unit:** $362.85

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Flow Meter, with Electronic Index | 1452 | 10 inch Turbine Irrigation flow meter, with Electronic Index, Rate and Volume, permanently installed. Materials only. | Each | $3,484.12 | 1 | $3,484.12 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |

**Practice:** 587 - Structure for Water Control

**Scenario** #484 - Flow Meter with Electronic Index & Telemetry

**Scenario Description:**

Permanently installed water flow meter with an electronic flow rate and volume index and data telemetry transmission system. Meters can be any flow measurement device that meets CPS 433, (i.e. meters: turbine, propeller, acoustic, magnetic, venturi, orifice, etc.) with or without straightening vanes. Meter nominal diameter for insert type turbine meters will be installation pipe size. Typical installation would include installation of a 10 inch magnetic flow meter, with electronic index output and telemetry data transfer system for monitoring irrigation system flow rate. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities Associated Practices: 533-Pumping Plant, 449-Irrigation Water Management, 441-Irrigation System, Microirrigation, 443-Irrigation System Surface and Subsurface, 442-Irrigation System, Sprinkler, 328-Conservation Crop Rotation, 634-Waste Transfer, and 590-Nutrient Management.

**Before Situation:**

Producer estimates seasonal and individual irrigation application flow rate and volumes based on energy costs, system operating pressure, or other means.

**After Situation:**

Producer is able to access instantaneous rate and cumulative flow volume data from a personal computer or cell phone at any time. The information gained will enable the irrigator to improve irrigation water management, recognize system performance issues before they become critical, and reduce energy use.

**Feature Measure:** Nominal Diameter of Meter

**Scenario Unit:** Inch

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $4,924.65

**Scenario Cost/Unit:** $492.47

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Flow Meter, with electronic Index and telemetry | 1451 | 10 inch Magnetic Irrigation Flow Meter, with electronic index and equipped for telemetry, permanently installed. Includes material and shipping only. | Each | $4,780.31 | 1 | $4,780.31 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 2 | $144.34 |

**Practice:** 587 - Structure for Water Control

**Scenario** #516 - Inline Flashboard Riser, Metal

**Scenario Description:**

A Flashboard Riser fabricated of metal and used in a water management system that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concerns: Inadequate Water - Inefficient use of Irrigation Water and Inadequate habitat for Fish and Wildlife. The water surface elevation is controlled by addition or removal of slats or "stoplogs". This scenario is applicable to variable crest weir structures where the elevation is controlled at the embankment. They are often fabricated from vertical pipes with the stoplogs are located in the middle (i.e. Full-Rounds) or sheet steel in a box shape. Payment rate is based upon the Flashboard Weir Length in inches multiplied by the outlet length in feet (Inch-Foot). Cost estimate is based on a "Half-Round" flashboard riser shop fabricated using a longitudinal cut 36" smooth steel pipe, a 50' long - 30" outlet pipe passing through an embankment.

**Before Situation:**

The operator presently flood irrigates his field and has no means to accurately maintain a constant water level at varying elevations resulting in a lack of flexibility, and inefficient use of water and energy during pumping. The operator also desires to maintain a permanent pool for water fowl during the winter.

**After Situation:**

The operator has the capability to more efficiently control and maintain a range of water surface elevations thereby reducing the flow rate needed. Less water is wasted and both water and energy is conserved. The operator is now able to maintain adequate water during the winter as a benefit to waterfowl. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Irrigation Water Management (449), Irrigation Land Leveling (464), Irrigation Canal or Lateral (320), Irrigation System, Tailwater Recovery (447), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Feature Measure:** Flashboard Weir Length (in) x Barre

**Scenario Unit:** Diameter Inch Foot

**Scenario Typical Size:** 1,800.00

**Scenario Total Cost:** $10,959.25

**Scenario Cost/Unit:** $6.09

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 190 | $746.70 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 15 | $89.70 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 4 | $372.96 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 7 | $212.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 4 | $140.52 |
| **Materials** | | | | | | |
| Pipe, Steel, 30 in., Std Wt, USED | 1361 | Materials: - USED - 30 inch - Steel Std Wt | Feet | $149.78 | 50 | $7,489.00 |
| Pipe, Steel, 36 in., Std Wt, USED | 1362 | Materials: - USED - 36 inch - Steel Std Wt | Feet | $165.07 | 6 | $990.42 |
| Steel, Angle, 2 1/2 in. x 2 1/2 in. x 1/4 in. | 1372 | Materials: Angle, 2 1/2 inch x 2 1/2 inch x 1/4 inch. Meets ASTM A36 | Feet | $5.38 | 24 | $129.12 |
| Steel, Plate, 3/8 in. | 1375 | Flat steel plate, 3/8 inch thickness. Materials only. | Square Feet | $21.31 | 10 | $213.10 |
| Lumber, planks, posts and timbers, treated | 1609 | Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor. | Board Feet | $4.15 | 4 | $16.60 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 590 - Nutrient Management

**Scenario** #268 - Basic NM (Non-Organic/Organic)

**Scenario Description:**

This scenario describes the implementation of a basic nutrient management system on > = 40 acres of cropland or hayland where there is no manure application. Scenario is applicable on non-organic and organic land. The planned NM system will meet the current Nutrient Management (590) CPS. Implementation will result in the proper rate, source, method of placement, and timing of nutrient application. Payment for implementation is to defray the costs of soil testing, analysis, and implementation of the nutrient management plan and recordkeeping. Records demonstrating implementation of the 4 R's of NM will be required.

**Before Situation:**

In this geographic area, a fertility program is either nonexistent or does not meet the Nutrient Management (590) CPS. Soil testing is not completed on a regular basis and applications of fertilizers are not based on land grant university recommendations or a nutrient budget. An environmental evaluation or risk assessment is not completed. Nutrients are transported to surface waters through runoff, drainage tile, or soil erosion, or to ground water from leaching in quantities that degrade water quality and limit use of intended purposes. Soil quality may be degraded by excess or inadequate nutrients. Fields have little or no erosion protection during critical periods often times resulting in sheet, rill, and ephemeral erosion.

**After Situation:**

A nutrient management system will be developed to meet the current Nutrient Management (590) CPS, when applicable system will also meet NOP regulations. Development and implementation of a nutrient management plan (NMP) will benefit plant productivity while also reducing potential for off-site degradation. A nutrient management budget will be developed for each field(s) based on soil test analysis and land grant university recommendations or crop removal rates. On planning units typically 40 acres or larger, soil testing is completed according to LGU recommendations. Records will be provided annually of the current soil test, analysis, application rates, forms and rates of nutrients for each field, including crop yields. Nutrient applications will be completed according to the Nutrient Management Plan that minimizes nutrient runoff and leaching or buildup of excess nutrient concentrations.

**Feature Measure:** <Unknown>

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $386.16

**Scenario Cost/Unit:** $9.65

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 1 | $25.68 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 2 | $31.46 |

**Practice:** 590 - Nutrient Management

**Scenario** #271 - Basic NM with Manure and/or Compost (Non-Organic/Organic)

**Scenario Description:**

This scenario describes the implementation of a basic nutrient management system on > = 40 acres of cropland or hayland where manure and/or compost is utilized either alone or in conjunction with commercial fertilizer. Scenario is applicable on non-organic and organic land. The planned NM system will meet the current Nutrient Management (590) CPS. Implementation will result in the proper rate, source, method of placement, and timing of nutrient application. Payment for implementation is to defray the costs of soil testing, manure and/or compost analysis, and implementation of the nutrient management plan and recordkeeping. Records demonstrating implementation of the 4 R's of NM will be required. Scenario is designed to encourage producers to effectively utilize commercial fertilizers, organic fertilizers, manure, and/or compost appropriately improving soil quality and minimizing runoff of nutrients from fields to surface waters. The basis for nutrient applications will be recommendations based on soil, manure, and compost analyses.

**Before Situation:**

In this geographic area, a fertility program is either nonexistent or at a basic level. Application of fertilizers, including manures, composts, and amendments, are completed annually based upon tradition that does not specifically consider the detrimental effects of improper timing or rates of nutrients, or excess nutrient buildup in the soil. Fields are overwintered with little or no erosion protection often times resulting in sheet, rill, and ephemeral erosion by spring. Soil testing is not completed on a regular basis and applications of fertilizers are not based on land grant university recommendations or a nutrient budget. An environmental evaluation or risk assessment is not completed. Nutrients are transported to surface waters through runoff, drainage tile, or soil erosion, or to ground water from leaching in quantities that degrade water quality and limit use of intended purposes. Soil quality may be degraded by excess or inadequate nutrients. Fields have little or no erosion protection during critical periods often times resulting in sheet, rill, and ephemeral erosion.

**After Situation:**

A nutrient management system will be developed to meet the current Nutrient Management (590) CPS, when applicable system will also meet NOP regulations. Development and implementation of a nutrient management plan (NMP) will benefit plant productivity while also reducing potential for off-site degradation. A nutrient management budget will be developed for each field(s) based on soil test analysis and land grant university recommendations or crop removal rates. On planning units typically 40 acres or larger, soil testing is completed according to LGU recommendations. Records will be provided annually of the current soil test, analysis, application rate, forms and rates of nutrients for each field, including crop yields. Nutrient applications will be completed according to the Nutrient Management Plan that minimizes nutrient runoff and leaching or buildup of excess nutrient concentrations.

**Feature Measure:** <Unknown>

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $819.14

**Scenario Cost/Unit:** $20.48

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 1 | $25.68 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 2 | $31.46 |
| Test, Manure Analysis | 306 | Moisture, Total N, P, K. Includes materials and shipping only. | Each | $46.24 | 1 | $46.24 |
| Test, Compost Analysis | 307 | Moisture, Total N, P, K. Includes materials and shipping only. | Each | $57.72 | 1 | $57.72 |

**Practice:** 590 - Nutrient Management

**Scenario** #297 - Small Scale Basic Nutrient Management

**Scenario Description:**

This scenario applies to small farms with diversified cropping systems which will improve the current level of management in applying nutrients. Improved level of management will be such to prevent nonpoint source pollution of surface and ground waters. Typical size is less than 0.5 acres.

**Before Situation:**

Little to no soil or manure testing is being conducted and typically lacks a nutrient budget. Application of fertilizers, including manures and amendments, are conducted based upon traditional fertilizer recommendations from LGU or based on historic use rates. Fields are overwintered with little or no erosion protection often times resulting in sheet, rill, and ephemeral erosion. Nutrients runoff into adjacent streams, tile drains, field surface drains, or other water courses is causing degradation to surface waters or leaching to shallow ground water sources.

**After Situation:**

Implementation Requirements have been developed to manage nutrients according to the criteria found in Nutrient Management (590) Conservation Practice Standard for either organic or non-organic operations as appropriate. A nutrient budget has been developed for each field or management zone. Nutrients are applied according to the 4 R's. (Right rate, Right time, Right place and Right source). Records needed to complete the nutrient budget are provided which may include variety of pre-season, in-season, and post-season soil nutrient and plant tissue tests and analysis; compost or manure tests; application timing, method and rate; nutrient sources; and yield data for each field or management zone. Nutrient runoff into adjacent streams is minimized improving water quality and preventing leaching into shallow ground water sources.

**Feature Measure:** planted area

**Scenario Unit:** 1,000 Square Foot

**Scenario Typical Size:** 15.00

**Scenario Total Cost:** $1,035.41

**Scenario Cost/Unit:** $69.03

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Fertilizer, ground application, dry bulk | 950 | Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $7.54 | 0.34 | $2.56 |
| Lime application | 953 | Lime application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $12.33 | 0.34 | $4.19 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 20 | $449.60 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 2 | $31.46 |
| Test, Plant Tissue Test | 301 | Tissue analysis for crops. Includes materials and shipping only. | Each | $24.50 | 3 | $73.50 |
| Test, Compost Analysis | 307 | Moisture, Total N, P, K. Includes materials and shipping only. | Each | $57.72 | 2 | $115.44 |

**Practice:** 590 - Nutrient Management

**Scenario** #304 - Prescription Nutrient Efficiency and Precision Application

**Scenario Description:**

The planned Precision Nutrient Efficiency and Application system will meet the current Nutrient Management (590) CPS general and additional criteria. The Application system will include soil sampling methodology for variable rate application and systems. Use of additional nutrient/soil tests including PPSN (pre-plant soil nitrate test), PSNT (pre-side dress nitrogen test), LSNT (late spring soil nitrate test), CSNT (corn stalk nitrate test) and chlorophyll meters, and/or spectral analysis may be used to further refine nutrient applications. Nitrification or urease inhibitors (as well as other Enhanced Efficiency Fertilizer technologies recognized by Land Grant Universities) may also be used. Payment for implementation is to defray the costs of Precision Nutrient Application system, grid or zone soil nutrient sampling, additional plant tissue testing and analysis, equipment to implement the practice, implementation of the NMP and recordkeeping. Typical treatment area is 40 acres.

**Before Situation:**

This scenario takes a conventional cropping system where either no nutrient management or only a basic level of nutrient management is being practiced and improves it to address air quality (reduce emissions for N fertilizer) and/or minimize agricultural nonpoint source pollution of surface and groundwater. Application(s) of fertilizers, including manures and amendments, are based upon tradition and does not specifically consider the detrimental affects of improper timing or rates of nutrients, nitrous oxide emissions or excess nutrient build-up in the soil. Runoff transports nutrients and sediment to adjacent streams, water courses, tile drains, field surface drains, or other water courses causing degradation to receiving waters. Leaching transports soluble nutrients to shallow ground water sources. There is typically no environmental evaluation of the potential for off-site nutrient movement.

**After Situation:**

A Prescription Nutrient Efficiency and Precision Application system will be developed to meet the current Nutrient Management (590) CPS general and additional criteria. When applicable the system will also meet NOP (National Organic Program) regulations, including reducing nitrogen emissions. Implementation of the adopted efficiency system improves the 4R Stewardship installation which will reduce nutrient loss reducing the potential of off-site movement of nutrients. Utilizing GIS and GPS technologies, nutrients are applied based on soil test results for each grid or management zone using automated variable rate application equipment. The Nutrient Management Plan will include current soil test and any in-season testing results, nutrient application rates, source, timing, and placement of all nutrients applied, risk assessments and actual crop yields. Records provided annually include, the current soil test reports, planned nutrient application rates for each grid or management zone (prescription maps) and/or as applied maps, source, timing, and placement of all nutrients applied, actual crop yields and/or generated yield maps.

**Feature Measure:** acres treated

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $2,554.52

**Scenario Cost/Unit:** $63.86

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 2 | $216.66 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Fertilizer, precision application | 952 | Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.27 | 40 | $370.80 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 4 | $77.12 |
| Aerial Imagery | 966 | Aerial imagery. RBG (color), infrared or NDVI single image. | Acres | $1.85 | 40 | $74.00 |
| Chlorophyll Reader | 1125 | Applicator and chlorophyll sensor includes labor. No materials | Acres | $13.81 | 40 | $552.40 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 6 | $717.30 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 16 | $251.68 |

**Practice:** 595 - Pest Management Conservation System

**Scenario** #194 - Plant Health PAMS (acs) Low labor only

**Scenario Description:**
PAMS activities with low labor costs will be implemented on a large scale crop production area.

**Before Situation:**
Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure).

**After Situation:**
Planned Prevention (resistant cultivar selection, pest habitat removal, etc. ), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc. ), and Monitoring (field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure).

**Feature Measure:** Acres of management applied

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $588.07

**Scenario Cost/Unit:** $14.70

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |

**Practice:** 595 - Pest Management Conservation System

**Scenario** #196 - Plant health PAMS (Small Farm - each) labor and mitigation.

**Scenario Description:**
PAMS activities with labor costs will be implemented plus mitigation on a small scale crop production area.

**Before Situation:**
Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure). Mitigation up to 30 points.

**After Situation:**
Planned Prevention (resistant cultivar selection, pest habitat removal, etc. ), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc. ), and Monitoring (field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure). Mitigation up to 30 points.

**Feature Measure:** Small farm, typically = 5Ac

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,789.72

**Scenario Cost/Unit:** $1,789.72

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 14 | $425.60 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 9 | $1,075.95 |

**Practice:** 595 - Pest Management Conservation System

**Scenario** #197 - Plant Health PAMS (acs) Low Labor, materials and mitigation.

**Scenario Description:**
PAMS activities with low labor and material costs will be implemented plus mitigation on a large scale crop production area.

**Before Situation:**
Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure). Mitigation up to 30 points.

**After Situation:**
Planned Prevention (Netting to exclude insect or birds, resistant cultivar selection, etc. ), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc. ), and Monitoring (Degree day monitoring, field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure). Mitigation up to 30 points.

**Feature Measure:** Acres of Management Applied

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $2,505.47

**Scenario Cost/Unit:** $62.64

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 14 | $1,673.70 |
| **Materials** | | | | | | |
| Miscellaneous, containers, traps, etc. | 298 | Pheromone Traps, Culture container with lid. Includes materials and shipping only. | Each | $4.58 | 10 | $45.80 |
| Weather Station, Basic | 314 | Basic Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, and temperature to a home weather console. Includes materials only. | Each | $254.60 | 1 | $254.60 |

**Practice:** 595 - Pest Management Conservation System

**Scenario** #202 - Plant health PAMS (Small Farm - each) labor only

**Scenario Description:**
PAMS activities with labor costs will be implemented on a small scale crop production area.

**Before Situation:**
Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure).

**After Situation:**
Planned Prevention (resistant cultivar selection, pest habitat removal, etc. ), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc. ), and Monitoring (field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure).

**Feature Measure:** Small farm, typically <= 5 ac

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $557.67

**Scenario Cost/Unit:** $557.67

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |

**Practice:** 600 - Terrace

**Scenario** #1 - Storage - Level or Flat Channel

**Scenario Description:**

An earthen embankment with channel constructed across the field slope as part of a system to shorten slope lengths, and reduce sheet, rill, and gully erosion in a cropped field. The typical installation is a flat channel (level) terrace storing runoff with a length of 6,000 feet and side slopes of 8:1 or greater in a field with slopes from 2% to 8% constructed in loam soils or similar with regard to workability. A stable outlet is provided in the form of a Grassed Waterway, Underground Outlet or through soil infiltration. Costs include all equipment and forces necessary to excavate, shape, and compact terrace. This practice addresses Concentrated Flow Erosion and Excessive Sediment in surface waters.

**Before Situation:**

Long slope lengths contribute to excessive sedimentation and soil erosion in cropped fields as a result of gully, rill, and sheet erosion. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport.

**After Situation:**

A system of flat channel (level) terraces with approximately 8:1 front and back slopes, 2.5 feet height, and 6,000 feet in length is installed with spacing designed to intercept flow of water and shorten slope length to reduce erosion to acceptable levels. Work is done with dozer, scraper, or road grader. The installed terrace is typically farmed. Associated practices are Critical Area Planting (342), Grassed Waterway (412), and Underground Outlet (620).

**Feature Measure:** Length of Terrace

**Scenario Unit:** Feet

**Scenario Typical Size:** 6,000.00

**Scenario Total Cost:** $12,626.52

**Scenario Cost/Unit:** $2.10

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 70 | $7,343.70 |
| Motor Grader, 200 HP | 1782 | Motor Grader or Maintainer, 200 hp. Typical of equipment with HP in range of 170-225. Equipment cost, does not include labor. | Hours | $174.98 | 8 | $1,399.84 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 78 | $2,740.14 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 600 - Terrace

**Scenario** #2 - Non-Storage - Broadbase

**Scenario Description:**

An earthen embankment with channel constructed across the field slope as part of a system to shorten slope lengths and reduce sheet, rill, and gully erosion in a cropped field. The typical installation is a broadbased terrace having 6:1 upstream and 6:1 downstream slopes measuring 2,600 feet in a field with slopes from 2% to 4% constructed in loam soils or similar with regard to workability. Channel and embankment slopes are farmed. A stable outlet is provided in the form of a Grassed Waterway, Underground Outlet or through soil infiltration. Costs include all equipment and forces necessary to excavate, shape, and compact terrace. This practice addresses Concentrated Flow Erosion and Excessive Sediment in surface waters.

**Before Situation:**

Long slope lengths contribute to excessive sedimentation and soil erosion in cropped fields as a result of gully, rill, and sheet erosion. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport.

**After Situation:**

A system of level or gradient, broadbased terraces measuring 2,600 feet in length, 1.4 height, and 6:1 front and back slopes is installed with spacing designed to intercept flow of water and shorten slope length to reduce erosion to acceptable levels. Work is done with dozer, scraper, or road grader. The slopes of the installed terrace are typically farmed. Associated practices are Critical Area Planting (342), Grassed Waterway (412), and Underground Outlet (620).

**Feature Measure:** Length of Terrace

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,600.00

**Scenario Total Cost:** $4,951.80

**Scenario Cost/Unit:** $1.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 7 | $734.37 |
| Motor Grader, 200 HP | 1782 | Motor Grader or Maintainer, 200 hp. Typical of equipment with HP in range of 170-225. Equipment cost, does not include labor. | Hours | $174.98 | 2 | $349.96 |
| Scraper, Self Propelled, 14 CY | 2306 | Self propelled earthmoving scraper with 14 CY capacity. Does not include labor. | Hours | $299.05 | 6 | $1,794.30 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 15 | $526.95 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 6 | $286.86 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 600 - Terrace

**Scenario** #3 - Storage - Broadbase

**Scenario Description:**

An earthen embankment with channel constructed across the field slope as part of a system to shorten slope lengths and reduce sheet, rill, and gully erosion in a cropped field. The typical installation is a broadbased terrace having 5:1 upstream and 5:1 downstream slopes measuring 4,700 feet in a field with slopes from 2% to 8% constructed in loam soils or similar with regard to workability. Channel and embankment slopes are farmed. A stable outlet is provided in the form of a Grassed Waterway, Underground Outlet or through soil infiltration. Costs include all equipment and forces necessary to excavate, shape, and compact terrace. This practice addresses Concentrated Flow Erosion and Excessive Sediment in surface waters.

**Before Situation:**

Long slope lengths contribute to excessive sedimentation and soil erosion in cropped fields as a result of gully, rill, and sheet erosion. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport.

**After Situation:**

A system of level or gradient, broadbased terraces measuring 4,700 feet in length, 2.5 height, and 5:1 front and back slopes is installed with spacing designed to intercept flow of water and shorten slope length to reduce erosion to acceptable levels. Work is done with dozer, scraper, or road grader. The slopes of the installed terrace are typically farmed. Associated practices are Critical Area Planting (342), Grassed Waterway (412), and Underground Outlet (620).

**Feature Measure:** Length of Terrace

**Scenario Unit:** Feet

**Scenario Typical Size:** 4,700.00

**Scenario Total Cost:** $17,109.74

**Scenario Cost/Unit:** $3.64

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 24 | $2,517.84 |
| Motor Grader, 200 HP | 1782 | Motor Grader or Maintainer, 200 hp. Typical of equipment with HP in range of 170-225. Equipment cost, does not include labor. | Hours | $174.98 | 4 | $699.92 |
| Scraper, Self Propelled, 14 CY | 2306 | Self propelled earthmoving scraper with 14 CY capacity. Does not include labor. | Hours | $299.05 | 34 | $10,167.70 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 62 | $2,178.06 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 6 | $286.86 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 600 - Terrace

**Scenario** #4 - Broad Base, Rebuild

**Scenario Description:**

An earthen embankment with channel constructed across the field slope as part of a system to shorten slope lengths and reduce sheet, rill, and gully erosion in a cropped field. The typical installation is a broadbased terrace having 5:1 upstream and 5:1 downstream slopes measuring 4,700 feet in a field with slopes from 2% to 8% constructed in loam soils or similar with regard to workability. This scenario pertains to the rebuilding of Broad Base Terraces in a field that has previously been terraced and the terrace system has exceeded the design life and requires restoration. Channel and embankment slopes are farmed. A stable outlet is provided in the form of a Grassed Waterway, Underground Outlet or through soil infiltration. Costs include all equipment and forces necessary to excavate, shape, and compact terrace. This practice addresses Concentrated Flow Erosion and Excessive Sediment in surface waters.

**Before Situation:**

Long slope lengths contribute to excessive sedimentation and soil erosion in cropped fields as a result of gully, rill, and sheet erosion. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport.

**After Situation:**

A system of level or gradient, broadbased terraces measuring 4,700 feet in length, 2.5 height, and 5:1 front and back slopes is installed with spacing designed to intercept flow of water and shorten slope length to reduce erosion to acceptable levels. Work is done with dozer, scraper, or road grader. The slopes of the installed terrace are typically farmed. This scenario restores the terrace system in a field that was previously terraced. Associated practices are Critical Area Planting (342), Grassed Waterway (412), and Underground Outlet (620).

**Feature Measure:** Length of Terrace

**Scenario Unit:** Feet

**Scenario Typical Size:** 4,700.00

**Scenario Total Cost:** $8,608.52

**Scenario Cost/Unit:** $1.83

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 10 | $1,049.10 |
| Motor Grader, 200 HP | 1782 | Motor Grader or Maintainer, 200 hp. Typical of equipment with HP in range of 170-225. Equipment cost, does not include labor. | Hours | $174.98 | 4 | $699.92 |
| Scraper, Self Propelled, 14 CY | 2306 | Self propelled earthmoving scraper with 14 CY capacity. Does not include labor. | Hours | $299.05 | 15 | $4,485.75 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 29 | $1,018.77 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 600 - Terrace

**Scenario** #5 - Non-Storage - Grass Back

**Scenario Description:**

An earthen embankment with channel constructed across the field slope as part of a system to shorten slope lengths and reduce sheet, rill, and gully erosion in a cropped field. The typical installation is a system of terraces (2,500 feet in length) that have one relatively flat (6:1) front slope and one steep (2:1) back slope constructed in a field with slopes steeper than 10% installed in loam soils or similar soils with regard to workability. The steep slope is established to permanent vegetation with the flatter slope farmed. The terrace is typically constructed at a gradient and is not designed to temporarily store water. Costs include all equipment and forces necessary to excavate, shape, and compact terrace. Seeding is not included. This practice addresses Concentrated Flow Erosion and Excessive Sediment in surface waters.

**Before Situation:**

Long slope lengths contribute to excessive sedimentation and soil erosion in cropped fields as a result of gully, rill, and sheet erosion. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport.

**After Situation:**

A system of terraces measuring 2,500 feet in length and approximately 2 C.Y. of earthwork per L.F. is installed with spacing designed to intercept flow of water and shorten slope length to reduce erosion to acceptable levels. Work is done with dozer, scraper, or road grader. Associated practices are Critical Area Planting (342), Grassed Waterway (412), and Underground Outlet (620).

**Feature Measure:** Length of Terrace

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,500.00

**Scenario Total Cost:** $8,189.56

**Scenario Cost/Unit:** $3.28

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 42 | $4,406.22 |
| Motor Grader, 200 HP | 1782 | Motor Grader or Maintainer, 200 hp. Typical of equipment with HP in range of 170-225. Equipment cost, does not include labor. | Hours | $174.98 | 6 | $1,049.88 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 48 | $1,686.24 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 6 | $286.86 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 600 - Terrace

**Scenario** #6 - Storage - Grass Back

**Scenario Description:**

An earthen embankment with channel constructed across the field slope as part of a system to shorten slope lengths and reduce sheet, rill, and gully erosion in a cropped field. The typical installation is a system of terraces (2,500 feet in length) that have one relatively flat (6:1) front slope and one steep (2:1) back slope constructed in a field with slopes steeper than 10% installed in loam soils or similar soils with regard to workability. The steep slope is established to permanent vegetation with the flatter slope farmed. Either all, or a portion of the terrace, is constructed to temporarily store water, which is then released with an underground outlet or by other means. Costs include all equipment and forces necessary to excavate, shape, and compact terrace. Seeding is not included. This practice addresses Concentrated Flow Erosion and Excessive Sediment in surface waters.

**Before Situation:**

Long slope lengths contribute to excessive sedimentation and soil erosion in cropped fields as a result of gully, rill, and sheet erosion. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport.

**After Situation:**

A system of terraces measuring 2,500 feet in length and approximately 3 C.Y. of earthwork per L.F. is installed with spacing designed to intercept flow of water and shorten slope length to reduce erosion to acceptable levels. Work is done with dozer, scraper, or road grader. Associated practices are Critical Area Planting (342), Grassed Waterway (412), and Underground Outlet (620).

**Feature Measure:** Length of Terrace

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,500.00

**Scenario Total Cost:** $11,130.40

**Scenario Cost/Unit:** $4.45

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 63 | $6,609.33 |
| Motor Grader, 200 HP | 1782 | Motor Grader or Maintainer, 200 hp. Typical of equipment with HP in range of 170-225. Equipment cost, does not include labor. | Hours | $174.98 | 6 | $1,049.88 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 69 | $2,423.97 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 6 | $286.86 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 600 - Terrace

**Scenario** #7 - Non-Storage - Narrow Base

**Scenario Description:**

An earthen embankment with channel constructed across the field slope as part of a system to shorten slope lengths and reduce sheet, rill, and gully erosion in a cropped field. The typical installation is a system of narrow base terraces with 2:1 slopes and 4,500' length in a field with slopes exceeding 8% constructed in loam soils or similar in regards to workability. The terrace is typically constructed at a gradient and is not designed to temporarily store water. Costs include all equipment and forces necessary to excavate, shape, and compact terrace. Permanent vegetation is established. Seeding is not included. This practice addresses Concentrated Flow Erosion and Excessive Sediment in surface waters.

**Before Situation:**

Long slope lengths contribute to excessive sedimentation and soil erosion in cropped fields as a result of gully, rill, and sheet erosion. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport.

**After Situation:**

A system of narrow base terraces measuring 4,500 feet in length and approximately 1.5 C.Y. of earthwork per L.F. is installed with spacing designed to intercept flow of water and shorten slope length to reduce erosion to acceptable levels. Work is typically done with dozer. Associated practices are Critical Area Planting (342), Grassed Waterway (412), and Underground Outlet (620).

**Feature Measure:** Length of Terrace

**Scenario Unit:** Feet

**Scenario Typical Size:** 4,500.00

**Scenario Total Cost:** $14,554.53

**Scenario Cost/Unit:** $3.23

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 200 HP | 928 | Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included. | Hours | $192.28 | 56 | $10,767.68 |
| Motor Grader, 200 HP | 1782 | Motor Grader or Maintainer, 200 hp. Typical of equipment with HP in range of 170-225. Equipment cost, does not include labor. | Hours | $174.98 | 3 | $524.94 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 59 | $2,072.67 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 600 - Terrace

**Scenario** #8 - Storage - Narrow Base

**Scenario Description:**

An earthen embankment with channel constructed across the field slope as part of a system to shorten slope lengths and reduce sheet, rill, and gully erosion in a cropped field. The typical installation is a system of narrow base terraces with 2:1 slopes and 4,500' length in a field with slopes exceeding 10% constructed in loam soils or similar in regards to workability. Either all, or a portion of the terrace, is constructed to temporarily store water, which is then released with an underground outlet or by other means. Costs include all equipment and forces necessary to excavate, shape, and compact terrace. Permanent vegetation is established. Seeding is not included. This practice addresses Concentrated Flow Erosion and Excessive Sediment in surface waters.

**Before Situation:**

Long slope lengths contribute to excessive sedimentation and soil erosion in cropped fields as a result of gully, rill, and sheet erosion. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport.

**After Situation:**

A system of narrow base terraces measuring 4,500 feet in length and approximately 1.6 C.Y. of earthwork per L.F. is installed with spacing designed to intercept flow of water and shorten slope length to reduce erosion to acceptable levels. Work is typically done with dozer. Associated practices are Critical Area Planting (342), Grassed Waterway (412), and Underground Outlet (620).

**Feature Measure:** Length of Terrace

**Scenario Unit:** Feet

**Scenario Typical Size:** 4,500.00

**Scenario Total Cost:** $15,674.28

**Scenario Cost/Unit:** $3.48

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 200 HP | 928 | Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included. | Hours | $192.28 | 60 | $11,536.80 |
| Motor Grader, 200 HP | 1782 | Motor Grader or Maintainer, 200 hp. Typical of equipment with HP in range of 170-225. Equipment cost, does not include labor. | Hours | $174.98 | 4 | $699.92 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 64 | $2,248.32 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 600 - Terrace

**Scenario** #9 - Narrow Base, Rebuild

**Scenario Description:**

An earthen embankment with channel constructed across the field slope as part of a system to shorten slope lengths and reduce sheet, rill, and gully erosion in a cropped field. This scenario pertains to the rebuilding of Narrow Base Terraces in a field that has previously been terraced and the terrace system has exceeded the design life and requires restoration. The typical installation is a system of narrow base terraces with 2:1 slopes, 4,500' length, and 2.5' height in a field with slopesfrom 6 to 12% constructed in loam soils or similar in regards to workability. A stable outlet is provided in the form of a Grassed Waterway, Underground Outlet or through soil infiltration. Costs include all equipment and forces necessary to excavate, shape, and compact terrace. Permanent vegetation is established. Seeding is not included. This practice addresses Concentrated Flow Erosion and Excessive Sediment in surface waters.

**Before Situation:**

Long slope lengths contribute to excessive sedimentation and soil erosion in cropped fields as a result of gully, rill, and sheet erosion. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport.

**After Situation:**

A system of narrow base terraces with approximately 2:1 front and back slopes measuring 4,500 feet in length and 2.5' height is constructed with spacing designed to intercept flow of water and shorten slope length to reduce erosion to acceptable levels. Work is typically done with dozer. This scenario restores the terrace system in a field that was previously terraced. Associated practices are Critical Area Planting (342), Grassed Waterway (412), and Underground Outlet (620).

**Feature Measure:** Length of Terrace

**Scenario Unit:** Feet

**Scenario Typical Size:** 4,500.00

**Scenario Total Cost:** $6,367.77

**Scenario Cost/Unit:** $1.42

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 200 HP | 928 | Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included. | Hours | $192.28 | 20 | $3,845.60 |
| Motor Grader, 200 HP | 1782 | Motor Grader or Maintainer, 200 hp. Typical of equipment with HP in range of 170-225. Equipment cost, does not include labor. | Hours | $174.98 | 3 | $524.94 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 23 | $807.99 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 600 - Terrace

**Scenario** #13 - Terrace Crop Season Construction

**Scenario Description:**

An earthen embankment with channel constructed across the field slope as part of a system to shorten slope lengths and reduce sheet, rill, and gully erosion in a cropped field. The typical installation is a system of terraces with 2:1 slopes and 4,500' length in a field with slopes exceeding 10% constructed in loam soils or similar in regards to workability. Either all, or a portion of the terrace, is constructed to temporarily store water, which is then released with an underground outlet or by other means. Costs include all equipment and forces necessary to excavate, shape, and compact terrace. Permanent vegetation is established. Seeding is not included. Foregone income is included for the loss of crop income due to construction of the practice during the growing season. This practice addresses Concentrated Flow Erosion and Excessive Sediment in surface waters.

**Before Situation:**

Long slope lengths contribute to excessive sedimentation and soil erosion in cropped fields as a result of gully, rill, and sheet erosion. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport.

**After Situation:**

A system of terraces measuring 4,500 feet in length and approximately 1.6 C.Y. of earthwork per L.F. is installed with spacing designed to intercept flow of water and shorten slope length to reduce erosion to acceptable levels. Work is typically done with dozer. Associated practices are Critical Area Planting (342), Grassed Waterway (412), and Underground Outlet (620).

**Feature Measure:** Length of Terrace

**Scenario Unit:** Linear Feet

**Scenario Typical Size:** 4,500.00

**Scenario Total Cost:** $16,213.59

**Scenario Cost/Unit:** $3.60

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 200 HP | 928 | Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included. | Hours | $192.28 | 60 | $11,536.80 |
| Motor Grader, 200 HP | 1782 | Motor Grader or Maintainer, 200 hp. Typical of equipment with HP in range of 170-225. Equipment cost, does not include labor. | Hours | $174.98 | 4 | $699.92 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 1 | $293.45 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 1 | $245.86 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 64 | $2,248.32 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 604 - Saturated Buffer

**Scenario** #7 - Saturated Buffer

**Scenario Description:**

Water discharging from a subsurface drainage system is dispersed along a buffer strip (often a riparian buffer). The water flows underground through the buffer area where nutrients and sediment can be removed before the water reaches the stream. Resource Concerns: Water Quality Degradation (Nutrients) Associated Practices: 606 - Subsurface Drain; 554 - Drainage Water Management; 587 - Structure for Water Control

**Before Situation:**

Water from a subsurface drainage system flows directly into a stream, carrying sediment and nutrients.

**After Situation:**

Water from a subsurface drainage system is dispersed through at 400 feet of 5" HDPE single wall perforated pipe tile drain along an established vegetated buffer strip at least 30 feet from the receiving stream. Drainage pipe is trenched in at 4 feet depth. The water is detained by passing underground where the nitrogen is removed by bacteria and natural processes.

**Feature Measure:** Length of Dispersal conduit

**Scenario Unit:** Feet

**Scenario Typical Size:** 400.00

**Scenario Total Cost:** $3,578.23

**Scenario Cost/Unit:** $8.95

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 400 | $572.00 |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 1 | $55.30 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 1 | $29.42 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| **Materials** | | | | | | |
| Pipe, HDPE, 5 in., PCPT, Single Wall | 1271 | Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 5 inch diameter - ASTM F405. Material cost only. | Feet | $0.86 | 400 | $344.00 |
| Water Level Control Structure, Inline, 2 Baffle, 10 in. diameter | 2021 | Inline inlet WCS 6 ft. high x 10 in. diameter connections, 2 baffle (3 compartments) | Each | $2,034.99 | 1 | $2,034.99 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 605 - Denitrifying Bioreactor

**Scenario** #11 - Denitrifying Bioreactor

**Scenario Description:**

"Scenario describes a structure containing a carbon source installed to intercept subsurface drain (tile) flow or ground water, and reduce the concentration of nitrate-nitrogen. Woodchips serve as the carbon source necessary to the denitrification process. This bioreactor has geotextile fabric (or polyethylene - PE) between the wood chips and the surrounding soil plus the following components: woodchip filled pit, two water control structures (to allow management of the flow rate and and free water elevation within the bioreactor), and piping to convey water to and from the bioreactor. Woodchips serve as the carbon source necessary to the denitrification process. Associated practices: Subsurface Drain (606), Structure for Water Control (587), Drainage Water Management (554). Resource concern: Water Quality Degradation - Excess nutrients in surface and ground waters. Management and maintenance of the bioreactor (including chip replenishment), as well as monitoring and reporting to demonstrate the performance of the practice are not included in this scenario."

**Before Situation:**

Before the installation, the subsurface drainage system is contributing nitrates to a surface water source (ditch or stream), high nitrates are a resource concern to the receiving water, and it is feasible to install a bioreactor to reduce the nitrate load from drainage outflows.

**After Situation:**

Bioreactor has geotextile fabric (or polyethylene - PE) between the wood chips and the surrounding soil plus the following components: woodchip filled pit, two water control structures (to allow management of the flow rate and free water elevation within the bioreactor), and piping to convey water to and from the bioreactor. The approximate bioreactor excavated pit volume is 333 cubic yards (e.g. 6 feet deep, 15 feet wide and 100 feet long). Woodchips occupy the 6 feet of the pit plus 10% crowned (366 cu. yd.) and will be mounded above ground level to shed precipitation. A geotextile fabric (or PE material) surrounds the chips to prevent migration of soil into the pit. Water control structures should be installed using practice standard (587) Structure for Water Control. Two inline water control structures are in place. Upper WCS connected to the upper 6" diameter single-wall CPT manifold pipe (15' each, note that 6' HDPE dual wall is the only type available and used in the scenario components) by 6" diameter dual wall pipe (20' each). 20' of 6" dual wall pipe connects the downstream manifold to the lower WCS which is connected back to the main with additional 20' of 6" dual wall pipe. Flow rates are dependent upon the availability of drainage water from the 10' drainage mainline. 40' of mainline is replaced with non-perforated 10' above and below the upper WCS. The soil excavated from the pit is spoiled onto the nearby field. Associated practices: Subsurface Drain (606), Structure for Water Control (587), Drainage Water Management (554).

**Feature Measure:** Volume of Pit excavation

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 333.00

**Scenario Total Cost:** $27,600.45

**Scenario Cost/Unit:** $82.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | $1.30 | 807 | $1,049.10 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 333 | $799.20 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 333 | $1,128.87 |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 8 | $480.96 |
| Aggregate, Wood Chips | 1098 | Includes materials, equipment and labor to transport and place. | Cubic Yards | $51.72 | 366 | $18,929.52 |
| Trenching, Earth, 24 in. x 60 in. | 1460 | Trenching, earth, 24 inch wide x 60 inch depth, includes equipment and labor for trenching and backfilling. | Feet | $3.75 | 50 | $187.50 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| **Materials** | | | | | | |
| Pipe, HDPE, 6 in., CPT, Single Wall | 1242 | Pipe, Corrugated Plastic Tubing, Single Wall, 6 inch diameter - ASTM F405. Material cost only. | Feet | $1.64 | 90 | $147.60 |
| Water Level Control Structure, Inline, 2 Baffle, 10 in. diameter | 2021 | Inline inlet WCS 6 ft. high x 10 in. diameter connections, 2 baffle (3 compartments) | Each | $2,034.99 | 1 | $2,034.99 |
| Water Control Structure, Stoplog, Inline, fixed costs portion | 2145 | Fixed cost portion of Water Level Control Structure, Inline stoplog type. Typically made of PVC or fiberglass materials. Materials only. | Each | $342.72 | 1 | $342.72 |
| Water Control Structure, Stoplog, Inline, variable cost portion | 2146 | Variable cost portion of a Water Level Control Structure, Inline stoplog type. Typically made of PVC or fiberglass materials. Calculate total variable costs by multiplying by the structure height x pipe diameter. Materials only. | Height x Diameter | $17.29 | 60 | $1,037.40 |
| Pipe, HDPE, CPT, Double Wall, Water Tight, 10 in. | 2204 | Pipe, Corrugated HDPE Double Wall 10 inch diameter with water tight joints meeting ASTM F477. Material cost only. | Feet | $10.11 | 40 | $404.40 |

**Mobilization**

| | | | | | | |
|---|---|---|---|---|---|---|
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 606 - Subsurface Drain

**Scenario** #1 - Corrugated Plastic Pipe (CPP), Single-Wall, <= 6 inch

**Scenario Description:**

Description: Below ground installation of perforated HDPE (Corrugated Plastic Pipe) pipeline, using a drainage plow. HDPE (CPP) Single-Wall is manufactured in sizes (nominal diameter) from 3-inch to 24-inch; typical practice sizes range from 3-inch to 12-inch; and typical scenario size is 5-inch. Construct 2,000 feet of 5-inch, Single-Wall, perforated HDPE Corrugated Plastic Pipe (CPP), installed below ground to a minimum depth 5 feet. The typical number of mainline connections for 2,000 feet of subsurface drainline is a total of 3 each. Consideration must be given to Section 404 of Clean Water Act and Food Security Act regarding wetlands. Resource Concerns: Excess Water (Seasonal High Water Table); Degraded Plant Condition; Water Quality Degradation (Nutrients). Associated Practices: 608 - Surface Drain, Main or Lateral; 587 - Structure for Water Control, 533 - Pumping Plant; and 554 - Drainage Water Management,412-Grassed Waterway, 410- Grade Stabilization Structure, 313-Waste Storage Facility, 412-Grassed Waterway, 410- Grade Stabilization Structure, 313- Waste Storage Facility.

**Before Situation:**

Before installation soil conditions are excessively wet in the spring due to poor internal soil drainage. Excess soil water is causing crop stress and delay of field operations (seed bed preparation, planting, etc.).

**After Situation:**

The drainage modifications result in reduced plant stress due to excessive wetness caused by a seasonal high water table, or improved drainage water quality due to system retrofit enabling drainage water management.

**Feature Measure:** Length of Pipe

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,000.00

**Scenario Total Cost:** $7,811.05

**Scenario Cost/Unit:** $3.91

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 3 | $165.90 |
| Trenching, tile line plowing, earth, 60 in. | 1457 | Plowing in 3 -15 inch CPP drain line into earth, 60 inch depth, includes equipment and labor for trenching, laying, and backfilling. | Feet | $2.43 | 2000 | $4,860.00 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 3 | $105.39 |
| **Materials** | | | | | | |
| Pipe, HDPE, corrugated single wall, <= 12 in. weight priced Compound | 1380 | High Density Polyethylene (HDPE) compound manufactured into single wall corrugated pipe or tubing. Materials only. | Pound | $2.32 | 1000 | $2,320.00 |
| Drainage Lateral Connection | 1458 | Connect 3-6 inch drainage lateral to main drain, includes excavation to 6 foot depth, install tee on main line, connect lateral, and backfill. Includes material cost for tee. | Each | $32.80 | 3 | $98.40 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 606 - Subsurface Drain

**Scenario** #2 - Enveloped Corrugated Plastic Pipe (CPP), Single-Wall, <= 6 inch

**Scenario Description:**

Description: Below ground installation of perforated HDPE (Corrugated Plastic Pipe) pipeline with Sand-Gravel envelope, using a drainage trencher. HDPE (CPP) Single-Wall is manufactured in sizes (nominal diameter) from 3-inch to 24-inch; typical practice sizes range from 3-inch to 12-inch; and typical scenario size is 5-inch. Construct 2,000 feet of 5-inch, Single-Wall, perforated HDPE Corrugated Plastic Pipe (CPP), installed below ground to a minimum depth of 5 feet, and surrounded with a sand-gravel envelope. The typical volume sand-gravel for 2,000 feet of 12"wide x 12" high envelope is 64 cubic yards. The typical number of mainline connections for 2,000 feet of subsurface drainline is a total of 3 each. Consideration must be given to Section 404 of Clean Water Act and Food Security Act regarding wetlands. Resource Concerns: Excess Water (seasonal High Water Table); Degraded Plant Condition; Water Quality Degradation (Nutrients). Associated Practices: 608 - Surface Drain, Main or Lateral; 587 - Structure for Water Control, 533 - Pumping Plant; and 554 - Drainage Water Management, 412-Grassed Waterway, 410- Grade Stabilization Structure, 313-Waste Storage Facility.

**Before Situation:**

Before installation soil conditions are excessively wet in the spring due to poor internal soil drainage. Excess soil water is causing crop stress and delay of field operations (seed bed preparation, planting, etc.).

**After Situation:**

The drainage modifications result in reduced plant stress due to excessive wetness caused by a seasonal high water table, or improved drainage water quality due to system retrofit enabling drainage water management.

**Feature Measure:** Length of Pipe

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,000.00

**Scenario Total Cost:** $9,109.51

**Scenario Cost/Unit:** $4.55

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Track Loader, 95HP | 935 | Equipment and power unit costs. Labor not included. | Hours | $98.22 | 10 | $982.20 |
| Trenching, Earth, 12 in. x 60 in. | 1459 | Trenching, earth, 12 inch wide x 60 inch depth, includes equipment and labor for trenching, laying 3 to 6 inch CPP drain line with envelope, and backfilling. | Feet | $1.92 | 2000 | $3,840.00 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 11 | $386.43 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 64 | $1,221.12 |
| Pipe, HDPE, corrugated single wall, <= 12 in. weight priced Compound | 1380 | High Density Polyethylene (HDPE) compound manufactured into single wall corrugated pipe or tubing. Materials only. | Pound | $2.32 | 1000 | $2,320.00 |
| Drainage Lateral Connection | 1458 | Connect 3-6 inch drainage lateral to main drain, includes excavation to 6 foot depth, install tee on main line, connect lateral, and backfill. Includes material cost for tee. | Each | $32.80 | 3 | $98.40 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 606 - Subsurface Drain

**Scenario** #3 - Corrugated Plastic Pipe (CPP), Single-Wall, >= 8 inch

**Scenario Description:**

Description: Below ground installation of HDPE (Corrugated Plastic Pipe) pipeline, using a drainage plow. HDPE (CPP) Single-Wall is manufactured in sizes (nominal diameter) from 3-inch to 24-inch; typical practice sizes range from 3-inch to 12-inch; and typical scenario size is 10-inch. Construct 1,000 feet of 10-inch, Single-Wall, HDPE Corrugated Plastic Pipe (CPP), installed below ground to a minimum depth 5 feet. Consideration must be given to Section 404 of Clean Water Act and Food Security Act regarding wetlands. Resource Concerns: Excess Water (Seasonal High Water Table); Degraded Plant Condition; Water Quality Degradation (Nutrients). Associated Practices: 607 - Surface Drain, Field Ditch; 608 - Surface Drain, Main or Lateral; 587 - Structure for Water Control, 533 - Pumping Plant; and 554 - Drainage Water Management, 412-Grassed Waterway, 410- Grade Stabilization Structure, 313- Waste Storage Facility.

**Before Situation:**

Before installation soil conditions are excessively wet in the spring due to poor internal soil drainage. Excess soil water is causing crop stress and delay of field operations (seed bed preparation, planting, etc.).

**After Situation:**

The drainage modifications result in reduced plant stress due to excessive wetness caused by a seasonal high water table, or improved drainage water quality due to system retrofit enabling drainage water management.

**Feature Measure:** Length of Pipe

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $6,606.00

**Scenario Cost/Unit:** $6.61

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Trenching, tile line plowing, earth, 60 in. | 1457 | Plowing in 3 -15 inch CPP drain line into earth, 60 inch depth, includes equipment and labor for trenching, laying, and backfilling. | Feet | $2.43 | 1000 | $2,430.00 |
| **Materials** | | | | | | |
| Pipe, HDPE, corrugated single wall, <= 12 in. weight priced Compound | 1380 | High Density Polyethylene (HDPE) compound manufactured into single wall corrugated pipe or tubing. Materials only. | Pound | $2.32 | 1800 | $4,176.00 |

**Practice:** 610 - Salinity and Sodic Soil Management

**Scenario** #1 - Soil Management (non-Irrigated)

**Scenario Description:**

The producer secures training in Salinity and Sodic Soil Management, analyzes subsurface conditions in areas in and around a saline seep and using information gained from training and field observations carrys out a Salinity and Sodic Soil Management Plan employing as applicable changes in Conservation Cropping Systems, Critical Area Planting, Nutrient Management and use of soil amendments. Scenario includes cost of attending a 6 hr University, NRCS, or commodity group sponsored training session and 40 hours of mgt labor a year to analyze available data and field situation, then review, and modify as necessary the Salinity and Sodic Soil Management Plan and continue to carry it out. Resource Concerns: Soil Quality Degradation - Concentration of salts or other chemicals, and Water Quality Degradation- Excessive salts in surface and ground waters. Associated Practices: 328 -Conservation Cropping System; 342- Critical Area Planting; and 590 - Nutrient Management.

**Before Situation:**

A crop-fallow system on sodic and saline soils has resulted in saline seeps. The recharge area of the seep must be determined before the extents of the treatment can be planned. An analyses of the subsurface conditions in areas in and around a saline is completed on 95 acres of recharge area surrounding a 5 acre saline seep in order to determine groundwater gradients and limits of the recharge area.

**After Situation:**

A determination of extent of recharge area has been made. The area to be treated has been identified. The producer has developed and is carrying out a Salinity and Sodic Soil Management Plan. Deep percolation in the recharge area is eliminated and salts no longer leach into the ground or surface water.

**Feature Measure:** Acres included in Salinity and Sodic

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $2,020.73

**Scenario Cost/Unit:** $20.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 40 | $1,912.40 |

**Practice:** 610 - Salinity and Sodic Soil Management

**Scenario** #2 - Soil Management (non-Irrigated) (FI - 1 Yr)

**Scenario Description:**

The producer secures training in Salinity and Sodic Soil Management, analyzes subsurface conditions in areas in and around a saline seep and using information gained from training and field observations carrys out a Salinity and Sodic Soil Management Plan employing as applicable changes in Conservation Cropping Systems, Critical Area Planting, Nutrient Management and use of soil amendments. Scenario includes cost of attending a 6 hr University, NRCS, or commodity group sponsored training session and 40 hours of mgt labor a year to analyze available data and field situation, then review, and modify as necessary the Salinity and Sodic Soil Management Plan and continue to carry it out. Resource Concerns: Soil Quality Degradation - Concentration of salts or other chemicals, and Water Quality Degradation- Excessive salts in surface and ground waters. Associated Practices: 328 -Conservation Cropping System; 342- Critical Area Planting; and 590 - Nutrient Management.

**Before Situation:**

A crop-fallow system on sodic and saline soils has resulted in obvious saline areas (seeps) in the field. The recharge area of the seep must be determined before the extents of the treatment can be planned. Analysis of the soil conditions in areas in and around the affected saline areas (2, five acres seeps) has not been completed. The remaining 90 acres of the field will be assessed to determine groundwater gradients and extents of the recharge area.

**After Situation:**

A determination of extent of recharge area has been made. The area to be treated has been identified (10 acres). Treatments include: soil testing to determine the salt concentrations, establishing permanent vegetative cover in saline areas (342), modify the crop rotation to increase seasonal water use (328), and reduced tillage practices (either 345 or 329). The producer has developed and is carrying out a Salinity and Sodic Soil Management Plan. The water cycle is balanced to minimize upward movement of salts to the surface, reducing evaporation, resulting in increase productivity across the field Ten acres of dryland wheat will be replaced with grass due to the saline/sodic conditions..

**Feature Measure:** Acres included in Salinity and Sodic

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $3,254.69

**Scenario Cost/Unit:** $32.55

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Foregone Income** | | | | | | |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 10 | $1,711.90 |
| FI, Hay, General Grass | 2122 | General Grass Hay is Primary Land Use | Ton | $50.94 | -10 | ($509.40) |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 40 | $1,912.40 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 2 | $31.46 |

**Practice:** 610 - Salinity and Sodic Soil Management

**Scenario** #3 - Soil Management (Irrigated)

**Scenario Description:**

The producer secures training in Salinity and Sodic Soil Management and develops and carries out a Salinity and Sodic Soil Management Plan. Scenario includes cost of attending a 6 hr University, NRCS, or commodity group sponsored training session and 12 hours of mgt labor a year to analyze available data and field situation, develop (or review and modify as necessary) plan and carry it out. Sampling on a 3-5 year interval is recommended if conditional soils are irrigated or marginal irrigation water is used.. Monitor (sample) one site per 40 acres of each major soil. Monitoring procedures include; GPS reference all sites, duplicate (2 samples) all sites of each major soil, sample after harvest, sampled to a depth of 6 feet and examined to 10 feet noting water table depth. Also sample each genetic soil horizon or portion no greater than 12 inches. Monitoring should be done by or under the supervision of an experienced soil scientist. Resource Concerns: Soil Quality Degradation - Concentration of salts or other chemicals, and Water Quality Degradation- Excessive salts in surface and ground waters. Associated Practices: 328-Conservation Crop Rotation; 449-Irrigation Water Management; and 590-Nutrient Management.

**Before Situation:**

Salintiy and or Sodic conditions have developed in the root zone of a 100 acre irrigated cropland field resulting in decreased soil quality, plant health problems, and yield reductions.

**After Situation:**

Producer conducts soil conductivity and salinity test to determine the root zone depth of water application necessary for flushing accumulated salts and maintaining a proper salt balance. Producer conducts irrigation suitability test of water supply results to determine suitability of applied water for irrigation and additional irrigation volumes needed for leaching. Routine periodic checks of water EC will be conducted by producer to monitor for water salinity which might require changes to Salinity and Sodic Soil Management Plan. The Salinity and Sodic Soil Management Plan is carried out employing soil and water testing and as applicable changes in Irrigation Water Management (449), Conservation Crop Rotation (328), tillage, and use of soil amendments. The producer has developed and is carrying out a Salinity and Sodic Soil Management Plan resulting in improved soil quality and plant health.

**Feature Measure:** Acres included in Salinity and Sodic

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $3,331.64

**Scenario Cost/Unit:** $33.32

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 40 | $1,912.40 |
| **Materials** | | | | | | |
| Test, Standard Water Test, Irrigation Suitability | 310 | Irrigation water suitability lab analysis. Includes pH, alkalinity, carbonates/bicarbonates, EC, dissolved solids, B, Cl, Ca, Mg, Na, SAR, and hardness. | Each | $53.71 | 1 | $53.71 |
| Testing, soil sampling and EC analysis, bore hole | 2055 | Collecting and testing 5 soil samples per 60 inch bore hole. Inclueds EC measurements. Includes equipment and labor. | Hours | $314.30 | 4 | $1,257.20 |

**Practice:** 612 - Tree/Shrub Establishment

**Scenario** #1 - Individual tree - hand planting

**Scenario Description:**

Tree seedlings will be hand planted in the forested area where few or no forest trees are growing, the existing stand of trees needs underplanting, or the previously planted seedling tree stocking level is below desirable conditions. Wildlife habitat is degraded by loss of forest conditions. The resource concerns addressed are degraded plant condition: inadequate structure and compositio, and inadequate wildlife & fish habitat.

**Before Situation:**

The stocking level of the forest does not meet the minimum recommended number of trees per acre. The existing condition of the forest stand does not meet the landowner's objectives. To be a viable forest, additional seedlings need planting. Wildlife habitat is rated poor.

**After Situation:**

The prescribed number of trees are hand planted on 20 acres and the objectives of the landowner are met. The forest will provide wildlife habitat, long term ground cover, and capture atmospheric carbon.

**Feature Measure:** Area Planted

**Scenario Unit:** Each

**Scenario Typical Size:** 6,000.00

**Scenario Total Cost:** $10,159.66

**Scenario Cost/Unit:** $1.69

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 8 | $205.44 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 100 | $1,281.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 120 | $2,697.60 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Tree, Conifer, Seedling, Medium | 1514 | Containerized conifer seedlings, 8 or 10 cubic inches; or bare root conifer seedlings 1+1 (two-year old seedlings that grew one year in the original seedbed and another year in a transplant bed), or bare root seedlings 2+0 (two-year old seedlings grown in their original seedbed). Includes materials and shipping only. | Each | $0.98 | 6000 | $5,880.00 |

**Practice:** 612 - Tree/Shrub Establishment

**Scenario** #2 - Individual tree - hand planting w/browse protection

**Scenario Description:**

Tree seedlings will be hand planted in the forested area where few or no forest trees are growing, the existing stand of trees needs underplanting, or the previously planted seedling tree stocking level is below desirable conditions. Seedlings are protected from wildlife browsing. Wildlife habitat is degraded by loss of forest conditions. The resource concerns addressed include degraded plant condition: inadequate structure and composition and inadequate wildlife & fish habitat.

**Before Situation:**

The stocking level does not meet the minimum recommended number of trees per acre and does not meet the landowner's objectives. To be a viable forest, additional seedlings need planting. Wildlife habitat is rated poor. Wildlife are known to browse tree seedlings in the area causing great damage.

**After Situation:**

The prescribed number of trees are hand planted, and the objectives of the landowner are met. Seedlings are protected from widlife browsing by installing some type of protective device. A forest will provide wildlife habitat, long term ground cover, and capture atmospheric carbon.

**Feature Measure:** Each Planted Seedling

**Scenario Unit:** Each

**Scenario Typical Size:** 6,000.00

**Scenario Total Cost:** $41,718.48

**Scenario Cost/Unit:** $6.95

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 16 | $410.88 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 100 | $1,281.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 230 | $5,170.40 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 20 | $956.20 |
| **Materials** | | | | | | |
| Tree, Conifer, Seedling, Medium | 1514 | Containerized conifer seedlings, 8 or 10 cubic inches; or bare root conifer seedlings 1+1 (two-year old seedlings that grew one year in the original seedbed and another year in a transplant bed), or bare root seedlings 2+0 (two-year old seedlings grown in their original seedbed). Includes materials and shipping only. | Each | $0.98 | 6000 | $5,880.00 |
| Tree shelter, wire mesh | 1557 | 5 feet tall, Woven Wire mesh, 6x6 inch opening or smaller, 10 gauge wire (minimum) cage placed around seedling for animal protection. Materials only. | Each | $2.23 | 6000 | $13,380.00 |
| Stakes, wood, 3/4 in. x 3/4 in. x 60 in. | 1583 | 3/4 in. x 3/4 in. x 60 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.44 | 6000 | $14,640.00 |

**Practice:** 612 - Tree/Shrub Establishment

**Scenario** #3 - Trees, Machine planted with tubes for animal protection

**Scenario Description:**

This practice involves planting tree seedlings after the site has been prepared for seedling growth and establishment. The productivity of the site is good and will handle a medium density planting rate. Typical scenario will consist of 1000 feet of trees with tubes for animal protection. The resource concerns addressed are degraded plant condition: undesirable plant productivity and health, inadequate structure and composition, and degraded wildlife habitat. Terrain is moderately sloping and will be planted with a mechanical tree planter. Smaller size seedlings (1-0) are planted.

**Before Situation:**

The land has little or no tree cover, or is stocked with the wrong tree species. Competing vegetation is a concern before and after planting. Soil condition is degraded due to the loss of the native forest ecosystem (organic matter in topsoil depleted). Native wildlife habitat is lacking. The main resource concern is degraded plant condition: inadequate structure and composition.

**After Situation:**

Land is established with permanent tree cover that will improve degraded plant condition, reduce soil erosion, establish wildlife habitat, sequester carbon and reduce invasive species presence. Establishing forest vegetation also creates corridors for wildlife movement. Planted trees have vexar tubes, or something similar, installed as protection from animal damage.

**Feature Measure:** Number of Trees

**Scenario Unit:** Each

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,153.16

**Scenario Cost/Unit:** $11.53

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 1 | $28.15 |
| Mechanical tree planter | 1600 | Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor. | Hours | $6.09 | 1 | $6.09 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 2 | $58.84 |
| **Materials** | | | | | | |
| Tree, Hardwood, Seedling, Small | 1509 | Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only. | Each | $0.99 | 100 | $99.00 |
| Tree shelter, solid tube type, 4 in. x 60 in. | 1567 | 4 inch x 60 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $5.64 | 100 | $564.00 |
| Cable ties, plastic | 1575 | Plastic cable ties (typ. 8-12 in.) to assist in securing items. Materials only. | Each | $0.07 | 100 | $7.00 |
| Stakes, wood, 3/4 in. x 3/4 in. x 60 in. | 1583 | 3/4 in. x 3/4 in. x 60 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.44 | 100 | $244.00 |
| Wire flags | 1586 | Small vinyl flags attached to wire stakes, typically, 36 in. length, for marking tree rows | Each | $0.12 | 40 | $4.80 |

**Practice:** 612 - Tree/Shrub Establishment

**Scenario** #4 - Trees, Machine planted - no tubes

**Scenario Description:**

This practice involves planting tree seedlings after the site has been prepared for seedling growth and establishment. The productivity of the site is good and will handle a medium density planting rate. Typical scenario will consist of 1000 feet of trees. The resource concerns addressed are degraded plant condition: undesirable plant productivity and health, inadequate structure and composition, and degraded wildlife habitat. Terrain is moderately sloping and will be planted with a mechanical tree planter. Smaller size seedlings (1-0) are planted.

**Before Situation:**

The land has little or no tree cover, or is stocked with the wrong tree species. Competing vegetation is a concern before and after planting. Soil condition is degraded due to the loss of the native forest ecosystem (organic matter in topsoil depleted). Native wildlife habitat is lacking. The main resource concern is degraded plant condition: inadequate structure and composition.

**After Situation:**

Land is established with permanent tree cover that will improve degraded plant condition, reduce soil erosion, establish wildlife habitat, sequester carbon and reduce invasive species presence. Establishing forest vegetation also creates corridors for wildlife movement.

**Feature Measure:** Number of Trees

**Scenario Unit:** Each

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $338.16

**Scenario Cost/Unit:** $3.38

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 1 | $28.15 |
| Mechanical tree planter | 1600 | Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor. | Hours | $6.09 | 1 | $6.09 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 2 | $58.84 |
| **Materials** | | | | | | |
| Tree, Hardwood, Seedling, Small | 1509 | Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only. | Each | $0.99 | 100 | $99.00 |
| Wire flags | 1586 | Small vinyl flags attached to wire stakes, typically, 36 in. length, for marking tree rows | Each | $0.12 | 40 | $4.80 |

**Practice:** 612 - Tree/Shrub Establishment

**Scenario** #9 - Shrub Planting

**Scenario Description:**

Shrubs are planted to provide a more diverse habitat. Plantings are in either uplands or bottomlands. The site lacks ground level habitat structure and diversity for widlife. Resource concern is inadequate habitat for fish and wildife - habitat fragmentation.

**Before Situation:**

No shrubbery vegetation, or very little, is present in the forest understory. Wildlife species that need shrub cover are not present. An adequate stand of overstory trees is present, but it is a single level, versus the desired multi-level structure.

**After Situation:**

A 10 acre area is planted with shrubs. Shrubs are not planted over the entire 10 acres. They are planted in groups or motts. The motts, roughly circular in shape, are 50 feet in diameter, with 50 shrubs planted within each mott. 4 motts are planted per acre, for a total of 200 shrubs per acre. Motts are randomly established to take advantage of site conditions and shrub species being planted.

**Feature Measure:** Per plant

**Scenario Unit:** Each

**Scenario Typical Size:** 2,000.00

**Scenario Total Cost:** $3,079.38

**Scenario Cost/Unit:** $1.54

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 6 | $154.08 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 10 | $128.10 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 14 | $314.72 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Shrub, Seedling, Small | 1506 | Bare root shrub seedling, 6 to 18 inches tall, includes containerized seedlings less than 10 cubic inches. Includes materials and shipping only. | Each | $1.05 | 2000 | $2,100.00 |

**Practice:** 612 - Tree/Shrub Establishment

**Scenario** #109 - Tree-Shrub Establishment - Small Acreage

**Scenario Description:**
Seedling (potted) to be planted for conservation purposes other than reforestation. Planting will be by hand. The resource setting is an area that historically was an upland forest. Resource concerns are degraded plant condition - undesirable productivity and health, and inadequate structure and composition; inadequate habitat for fish and wildlife.

**Before Situation:**
The native forest has been removed and the land is either row cropped, farmstead, or associated agricultural land. If any upland trees exist, they are poor quality or undesirable species. Terrain is gently to moderately sloping with soil erosion-sheet and rill occurring.

**After Situation:**
Typical treatment area can range from less than 1 acre to 5 acres; typical scenario based on 1 ac, 150 TPA. Potted/containerized hardwood seedlings are planted by hand. Post vegetation control should be evaluated and conducted, if necessary.

**Feature Measure:** Planted Seedling

**Scenario Unit:** Each

**Scenario Typical Size:** 150.00

**Scenario Total Cost:** $2,612.52

**Scenario Cost/Unit:** $17.42

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Trailer, flatbed, small | 1505 | Small flatbed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $10.48 | 3 | $31.44 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 5 | $64.05 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 35 | $786.80 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Shrub, Potted, Small | 1524 | Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $6.82 | 75 | $511.50 |
| Tree, Hardwood, Potted, Medium | 1532 | Potted hardwood seedling, 2 gallons or larger. Includes materials and shipping only. | Each | $14.29 | 75 | $1,071.75 |

**Practice:** 614 - Watering Facility

**Scenario** #2 - Steel Tank

**Scenario Description:**

A permanent watering facility for livestock constructed of galvanized steel with 1,200 gallon capacity that stores adequate quantity and quality of water for storage and or direct drinking access. All watering facilities will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. The watering facility will be placed on a gravel or compacted earthen base. This watering facility will address the resource concerns of inadequate supply of water for livestock and or wildlife, habitat degradation, water quality, and undesirable plant productivity and health.

**Before Situation:**

This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and or wildlife, where water is not available in sufficient quantities at specific locations, and habitat, water quality, plant productivity and health needs to be improved.

**After Situation:**

A permanent watering facility with a capacity of 1,200 gallons constructed of galvinized steel is installed with all tank materials, tank plumbing and float valve, to provide adequate water storage capacity to ensure an adequate supply and quality of water for livestock or wildlife for storage and or direct drinking access and provides improved plant productivity and health, water quality, and habit. All watering facilities are constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation and placed on a gravel or compacted earth foundation with required plumbing. All needed pipelines are installed using Livestock Pipeline (516). Any needed vegetation of disturbed areas will use Critical Area Planting (342). All collectors or catchments for collecting precipitation will be addressed by using Water Harvesting Catchment (636). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

**Feature Measure:** Capacity in Gallons

**Scenario Unit:** Gallons

**Scenario Typical Size:** 1,200.00

**Scenario Total Cost:** $2,781.47

**Scenario Cost/Unit:** $2.32

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 2 | $110.60 |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 2 | $120.24 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 4 | $117.68 |
| **Materials** | | | | | | |
| Freeze Proof Hydrant, <= 3 ft. | 240 | Freeze Proof Hydrant, 3 foot or less bury. Materials only. | Each | $63.70 | 1 | $63.70 |
| Wildlife Escape Ramp | 242 | Pool size 15' x 30', for small mammals less than one pound. | Each | $78.40 | 2 | $156.80 |
| Dimension Lumber, Treated | 1044 | Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners | Board Feet | $2.17 | 30 | $65.10 |
| Post, Wood, CCA Treated, 4-5 in. X 7 ft. | 1050 | Wood Post, Line 4-5 inch dia. X 7 feet, CCA Treated. Includes materials and shipping only. | Each | $11.95 | 3 | $35.85 |
| Tank, Galvanized Steel Livestock, > 300 - 1,000 gallon | 1068 | Includes tank materials and float valve | Gallons | $1.23 | 1200 | $1,476.00 |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $15.24 | 1.5 | $22.86 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 614 - Watering Facility

**Scenario** #9 - Water Fountain

**Scenario Description:**

A permanent watering facility consisting of a commercially available water fountain for livestock set on a concrete base to be installed with all tank materials, and plumbing, to provide adequate water supply capacity to ensure an adequate quality of water for livestock and direct drinking access and provide improved plant productivity and health, water quality, and habitat. All watering facilities are constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation and placed on a properly prepared foundation with required plumbing. All needed pipelines are installed using Livestock Pipeline (516). Any needed vegetation of disturbed areas will use Critical Area Planting (342). All collectors or catchments for collecting precipitation will be addressed by using Water Harvesting Catchment (636). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

**Before Situation:**

This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and or wildlife, where water is not available in sufficient quantities at specific locations, and habitat, water quality, plant productivity and health needs to be improved.

**After Situation:**

A permanent watering facility consisting of a commercially available water fountain for livestock set on a concrete base is installed with tank plumbing to to ensure an adequate supply and quality of water for livestock or wildlife for direct drinking access and provides improved plant productivity and health, water quality, and habitat. All watering facilities are constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation and placed on a properly prepared foundation with required plumbing. All needed pipelines are installed using Livestock Pipeline (516). Any needed vegetation of disturbed areas will use Critical Area Planting (342). All collectors or catchments for collecting precipitation will be addressed by using Water Harvesting Catchment (636). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

**Feature Measure:** Number of Tanks Installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,343.41

**Scenario Cost/Unit:** $2,343.41

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 1.6 | $746.03 |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 2 | $120.24 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 2 | $58.84 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 0.8 | $14.88 |
| Freeze Proof Hydrant, <= 3 ft. | 240 | Freeze Proof Hydrant, 3 foot or less bury. Materials only. | Each | $63.70 | 1 | $63.70 |
| Tank, Freeze Proof, 4 hole | 281 | Tank, Freeze Proof with 4 drinking holes. Includes materials and shipping. | Each | $1,033.40 | 1 | $1,033.40 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 614 - Watering Facility

**Scenario** #11 - Insulated Tank with Cover

**Scenario Description:**

A permanent watering facility for livestock constructed using a rubber equipment tire with concrete plug or fiberglass tank with 1,200 gallon capacity placed on a gravel or compacted earth foundation that stores adequate quantity and quality of water for storage and or direct drinking access. This scenario includes an insulated cover for the watering facility. All watering facilities will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. This watering facility will address the resource concerns of inadequate supply of water for livestock, habitat degradation, water quality, and undesirable plant productivity and health.

**Before Situation:**

This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and or wildlife, where water is not available in sufficient quantities at specific locations, and habitat, water quality, plant productivity and health needs to be improved.

**After Situation:**

A permanent insulated watering facility with a capacity of greater than 1,200 gallons constructed using a rubber equipment tire with concrete plug or fiberglass tank is installed on a gravel or compacted earth foundation to provide livestock water year-round with all tank materials, tank plumbing and float valve, to provide adequate water storage capacity to ensure an adequate supply and quality of water for livestock or wildlife for storage and or direct drinking access and provides improved plant productivity and health, water quality, and habitat. All watering facilities are constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation and placed on a properly prepared foundation with required plumbing. All needed pipelines are installed using Livestock Pipeline (516). Any needed vegetation of disturbed areas will use Critical Area Planting (342). All collectors or catchments for collecting precipitation will be addressed by using Water Harvesting Catchment (636). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

**Feature Measure:** Capacity in Gallons

**Scenario Unit:** Gallons

**Scenario Typical Size:** 1,200.00

**Scenario Total Cost:** $4,646.92

**Scenario Cost/Unit:** $3.87

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 4 | $221.20 |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 4 | $240.48 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 10 | $294.20 |
| **Materials** | | | | | | |
| Freeze Proof Hydrant, <= 3 ft. | 240 | Freeze Proof Hydrant, 3 foot or less bury. Materials only. | Each | $63.70 | 1 | $63.70 |
| Dimension Lumber, Treated | 1044 | Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners | Board Feet | $2.17 | 20 | $43.40 |
| Post, Wood, CCA Treated, 4-5 in. X 7 ft. | 1050 | Wood Post, Line 4-5 inch dia. X 7 feet, CCA Treated. Includes materials and shipping only. | Each | $11.95 | 3 | $35.85 |
| Tank, Fiberglass Cover | 1076 | Includes materials and shipping only. | Square Feet | $19.46 | 78.5 | $1,527.61 |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $15.24 | 1.5 | $22.86 |
| Tank, Fiberglass, 10' diameter by 2' height | 2526 | Fiberglass stockwater tank, includes material cost for tank and shipping. Labor and other appurtenance costs not included. | Each | $1,450.10 | 1 | $1,450.10 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 614 - Watering Facility

**Scenario** #12 - Enclosed Storage Tank

**Scenario Description:**

A permanent below ground storage facility to provide water for a watering facility for livestock, wildlife and/or other conservation practices. All water storage facilities will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. This watering facility will address the resource concerns of inadequate supply of water for livestock and or wildlife, habitat degradation, water quality, and undesirable plant productivity and health.

**Before Situation:**

This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and or wildlife; where water is not available in sufficient quantities at specific locations; and habitat, water quality, plant productivity and health needs to be improved.

**After Situation:**

A permanent water storage facility using a below ground concrete tank is installed with all tank materials, tank plumbing and float valve, to provide adequate water storage capacity to ensure an adequate supply and quality of water for livestock, wildlife or other conservation practices for storage and/or direct drinking access and provides improved plant productivity and health, water quality, and habitat. All water storage facilities are constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation and placed on a properly prepared foundation with required plumbing. All needed pipelines are installed using Livestock Pipeline (516). Any needed vegetation of disturbed areas will use Critical Area Planting (342). All collectors or catchments for collecting precipitation will be addressed by using Water Harvesting Catchment (636). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

**Feature Measure:** Capacity in Gallons

**Scenario Unit:** Gallons

**Scenario Typical Size:** 5,000.00

**Scenario Total Cost:** $9,496.78

**Scenario Cost/Unit:** $1.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 4 | $305.52 |
| Hydraulic Excavator, 2 CY | 932 | Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included. | Hours | $138.28 | 4 | $553.12 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 8 | $281.04 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 1.3 | $24.80 |
| Tank, Concrete, 2500 gallon | 1055 | Concrete tank for water storage, with riser and lid. Includes materials and delivery. | Each | $3,840.70 | 2 | $7,681.40 |
| Tank, Float Valve Assembly | 1077 | Float Valve, Stem, Swivel, Float Ball | Each | $99.98 | 1 | $99.98 |

**Practice:** 614 - Watering Facility

**Scenario** #143 - Tire Trough

**Scenario Description:**

A permanent watering facility for livestock and/or wildlife constructed from tires that stores adequate quantity and quality of water for storage and/or direct drinking access. All watering facilities will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. This watering facility will address the resource concerns of inadequate supply of water for livestock and/or wildlife, habitat degradation, water quality, and undesirable plant productivity and health.

**Before Situation:**

There is insufficient water to meet livestock or wildlife watering needs at a site. Animals may have access to streams or ponds, need to travel a long distance to available water or pasture use and rotation may be affected. This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and/or wildlife where water is not available in sufficient quantities at specific locations; and where habitat, water quality, plant productivity and health needs to be improved. Resource concerns include, but may not be limited to, Plant Condition and Quality, Soil Erosion and Stream Habitat/Water Quality.

**After Situation:**

A permanent watering facility using a 10' diameter tire is installed with all tank materials, tank plumbing and float valve, to provide adequate water storage capacity to ensure an adequate supply and quality of water for livestock or wildlife for storage and/or direct drinking access and provides improved plant productivity and health, water quality, and habitat. All watering facilities are constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation and placed on a properly prepared foundation with required plumbing. All needed pipelines are installed using Livestock Pipeline (516). Any needed vegetation of disturbed areas will use Critical Area Planting (342). All collectors or catchments for collecting precipitation will be addressed by using Water Harvesting Catchment (636). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

**Feature Measure:** Capacity in Gallons

**Scenario Unit:** Gallons

**Scenario Typical Size:** 981.00

**Scenario Total Cost:** $2,696.87

**Scenario Cost/Unit:** $2.75

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 0.7 | $169.49 |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 6 | $331.80 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 13 | $292.24 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 7 | $205.94 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Freeze Proof Hydrant, <= 3 ft. | 240 | Freeze Proof Hydrant, 3 foot or less bury. Materials only. | Each | $63.70 | 1 | $63.70 |
| Wildlife Escape Ramp | 242 | Pool size 15' x 30', for small mammals less than one pound. | Each | $78.40 | 1 | $78.40 |
| Tank, Tire, 10' diameter | 287 | Tire, includes material cost for tank and shipping. Labor and other appurtenance costs not included. | Each | $1,206.45 | 1 | $1,206.45 |
| Dimension Lumber, Treated | 1044 | Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners | Board Feet | $2.17 | 24 | $52.08 |
| Post, Wood, CCA Treated, 4-5 in. X 7 ft. | 1050 | Wood Post, Line 4-5 inch dia. X 7 feet, CCA Treated. Includes materials and shipping only. | Each | $11.95 | 2 | $23.90 |
| Tank, Float Valve Assembly | 1077 | Float Valve, Stem, Swivel, Float Ball | Each | $99.98 | 1 | $99.98 |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $15.24 | 1.7 | $25.91 |

**Practice:** 620 - Underground Outlet

**Scenario** #6 - 6 inch or smaller Single Wall PE Pipe(non-perf or perf), Multi-Inlet System

**Scenario Description:**

Install 400 feet of 4" & 6" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet in non-pressure flow conditions. Trench excavation is 48" deep and 12" wide. Costs include 4" and 6" HDPE corrugated single wall plastic tubing, 6" Perforated PVC Riser Inlet, labor to install pipe, trench excavation, trench backfill, and rodent guard. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or simlar practices.

**Before 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 contminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.

**After Situation:**

Field system meets "T" 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)

**Feature Measure:** Length of Conduit

**Scenario Unit:** Feet

**Scenario Typical Size:** 400.00

**Scenario Total Cost:** $1,998.47

**Scenario Cost/Unit:** $5.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 6 | $35.88 |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 400 | $572.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| **Materials** | | | | | | |
| Pipe, HDPE, 6 in., CPT, Single Wall | 1242 | Pipe, Corrugated Plastic Tubing, Single Wall, 6 inch diameter - ASTM F405. Material cost only. | Feet | $1.64 | 200 | $328.00 |
| Inlet, riser, 6 in. | 1261 | Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 6 inch diameter. Materials only. | Each | $93.11 | 2 | $186.22 |
| Pipe, HDPE, 4 in., PCPT, Single Wall | 1270 | Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 4 inch diameter - ASTM F405. Material cost only. | Feet | $0.63 | 200 | $126.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 620 - Underground Outlet

**Scenario** #7 - 8 inch - 10 inch PVC or DW Pipe, Multi-Inlet System

**Scenario Description:**

Install 400 feet of 8" and 10" approved plastic pipe (PVC or Dual Wall HDPE) to convey stormwater from one location to a suitable and stable outlet in non-pressure flow conditions and when multiple practices drain into it. Trench Excavation is 48" deep and 24" wide. Typical costs include 8" and 10" PVC pipe, 10" riser inlet , labor to install pipe, trench excavation, trench backfill, and rodent guard. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or simlar practices.

**Before 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 contminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.

**After Situation:**

Field system meets "T" 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)

**Feature Measure:** Length of Conduit

**Scenario Unit:** Feet

**Scenario Typical Size:** 400.00

**Scenario Total Cost:** $8,021.81

**Scenario Cost/Unit:** $20.05

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 10 | $59.80 |
| Trenching, Earth, loam, 24 in. x 48 in. | 54 | Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $3.04 | 400 | $1,216.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| **Materials** | | | | | | |
| Pipe, PVC, 8 in., SDR 35 | 994 | Materials: - 8 inch - PVC - SDR 35 - ASTM D3034 | Feet | $11.00 | 200 | $2,200.00 |
| Pipe, PVC, 10 in., SDR 35 | 1251 | Pipe, PVC, SDR 35, 10 inch Diameter - ASTM D3034. Material cost only. | Feet | $17.53 | 200 | $3,506.00 |
| Inlet, riser, 8 in. | 1262 | Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 8 inch diameter. Materials only. | Each | $144.82 | 2 | $289.64 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 620 - Underground Outlet

**Scenario** #9 - 12 inch - 18 inch PVC or DW Pipe, Multi-Inlet System

**Scenario Description:**

Install 400 feet of 12" and 18" approved plastic pipe (PVC or Dual Wall HDPE) to convey stormwater from one location to a suitable and stable outlet in non-pressure flow conditions and when multiple practices drain into it. Trench Excavation is 58" deep and 28" wide. Costs include 12" and 18" HDPE pipe, 10" Perforated PVC Riser Inlet, labor to install pipe, trench excavation, trench backfill, and rodent guard. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or simlar practices.

**Before 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 contminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.

**After Situation:**

Field system meets "T" 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)

**Feature Measure:** Length of Conduit

**Scenario Unit:** Feet

**Scenario Typical Size:** 400.00

**Scenario Total Cost:** $11,347.17

**Scenario Cost/Unit:** $28.37

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 14 | $83.72 |
| Trenching, Earth, loam, 24 in. x 48 in. | 54 | Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $3.04 | 400 | $1,216.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| **Materials** | | | | | | |
| Pipe, PVC, 12 in., SDR 35 | 1252 | Pipe, PVC, SDR 35, 12 inch Diameter - ASTM D3034. Material cost only. | Feet | $25.08 | 200 | $5,016.00 |
| Pipe, PVC, 18 in., PS 46 | 1253 | Pipe, PVC, PS 46, 18 inch Diameter - ASTM F679. Material cost only. | Feet | $19.27 | 200 | $3,854.00 |
| Inlet, riser, 10 in. | 1263 | Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 10 inch diameter. Materials only. | Each | $213.54 | 2 | $427.08 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 620 - Underground Outlet

**Scenario** #65 - 8 inch Single Wall PE with Riser

**Scenario Description:**

Install 400 feet of 8" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet in non-pressure flow conditions. Trench excavation is 48" deep and 24" wide. Costs include 8" HDPE corrugated single wall plastic tubing, 10" Perforated PVC Riser Inlet, labor to install pipe, trench excavation, trench backfill, and rodent guard. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or simlar practices without causing erosion or flooding.

**Before 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 contminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.

**After Situation:**

Field system meets "T" 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)

**Feature Measure:** Length of Conduit

**Scenario Unit:** Linear Feet

**Scenario Typical Size:** 400.00

**Scenario Total Cost:** $2,852.72

**Scenario Cost/Unit:** $7.13

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 400 | $572.00 |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 8 | $480.96 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 8 | $235.36 |
| **Materials** | | | | | | |
| Inlet, riser, 10 in. | 1263 | Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 10 inch diameter. Materials only. | Each | $213.54 | 1 | $213.54 |
| Pipe, CMP, 10 in., 16 Gauge | 1268 | 10 inch Corrugated Metal Pipe, Galvanized, Uncoated, 16 gauge. Material cost only. | Feet | $15.35 | 10 | $153.50 |
| Pipe, HDPE, 8 in,, PCPT, Single Wall | 1272 | Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 8 inch diameter - ASTM F667. Material cost only. | Feet | $2.34 | 400 | $936.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 629 - Waste Treatment

**Scenario** #21 - Aerobic Circulator

**Scenario Description:**

Aerobic circulators are added to an existing lagoon or liquid storage pond with adequate minimum treatment volume (at least 270 days storage) and depth (at least 4.5 feet) to circulate lagoon water in order to allow for oxygen interchange at the surface of the lagoon, creating aerobic conditions in the lagoon and reducing emissions of odors and other volatile gases. Associated practices: Waste Treatment Lagoon (359)

**Before Situation:**

The existing uncovered anaerobic lagoon or liquid storage pond results in emissions of odors, ammonia, methane, and other volatile gases.

**After Situation:**

One aerobic circulator is added to the existing lagoon or storage pond for each 100 animal units of manure input to the lagoon or storage pond, resulting in a conversion of the anaerobic liquid storage to an aerobic liquid storage and reducing emissions of odors and other volatile gases. The circulators are spaced at least 25 feet apart.

**Feature Measure:** Number of Animal Units Treated

**Scenario Unit:** Animal Unit

**Scenario Typical Size:** 500.00

**Scenario Total Cost:** $65,014.28

**Scenario Cost/Unit:** $130.03

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| **Materials** | | | | | | |
| Aerator or Circulator, Pond, Large | 1709 | Aerator or Circulator for pond or tank, 10 or more HP and/or 10 or more acres of surface area. Materials only | Each | $12,928.64 | 5 | $64,643.20 |

**Practice:** 632 - Waste Separation Facility

**Scenario** #1 - Mechanical Separator

**Scenario Description:**

A small mechanical separation facility to partition solids, liquids, and/or associated nutrients from animal waste streams. The partitioning of the previously mentioned components facilitates the protection of air and water quality, protects animal health, and improves the management of an animal waste management system. Mechanical separators may include, but are not limited to: static inclined screens , vibratory screens, rotating screens, centrifuges, screw or roller presses, or other systems. Associated practices include Nutrient Management (590), Composting Facility (317), Anaerobic Digester (366), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Amendments for the Treatment of Agricultural Waste (591), Pumping Plant (533), Vegetated Treatment Area (635), Pond Lining or Sealing (521A-D), and Waste Treatment (629).

**Before 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 Situation:**

One small mechanical separation facility (a screw press) installed at livestock facility before storage or treatment or after treatment, for example, after an anaerobic digester. Part of an animal waste management system.

**Feature Measure:** Item

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $56,558.23

**Scenario Cost/Unit:** $56,558.23

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 7.5 | $3,497.03 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 16 | $486.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 32 | $719.36 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 3.7 | $68.82 |
| Vibratory or Rotating Screen | 1948 | Vibratory or Rotating Screen, includes materials, shipping and equipment. | Each | $51,349.47 | 1 | $51,349.47 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 632 - Waste Separation Facility

**Scenario** #3 - Earthen settling structure with pipe outlet

**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 - Compacted Soil (520), Pond Sealing or Lining - Concrete (522), and Waste Treatment (629).

**Before 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 Situation:**

One earthen settling basin structure (60 ft wide by 200 ft long by 3 ft deep, with one screening outlet structure) (estimate 0.5' of freeboard above the design storage) 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. The suspended solids and liquid is transferred to a Waste Storage Facility (313) using a Waste Transfer (634) pipe. Part of an animal waste management system.

**Feature Measure:** Cubic Foot of Design Storage

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 30,000.00

**Scenario Total Cost:** $6,915.08

**Scenario Cost/Unit:** $0.23

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 3.3 | $1,538.69 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 1000 | $3,930.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| **Materials** | | | | | | |
| Post, Wood, CCA treated, 6 in. x 8 ft. | 12 | Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $24.11 | 4 | $96.44 |
| Wire Mesh Screen, galvanized, 1/16 in | 1229 | Wire Mesh Screen, galvanized, 1/16 inch grid spacing. Materials only. | Square Feet | $4.28 | 32 | $136.96 |
| Lumber, planks, posts and timbers, treated | 1609 | Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor. | Board Feet | $4.15 | 37.3 | $154.80 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 632 - Waste Separation Facility

**Scenario** #4 - Concrete Settling Structure with pipe outlet

**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 Sealing or Lining - Compacted Soil (520), Pond Sealing or Lining - Concrete (522), and Waste Treatment (629).

**Before 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 Situation:**

One earthen settling basin structure with a 30 ft wide by 200 ft long bottom area, 5 ft deep with 3:1 sideslopes. 4.0' depth is used for storage volume computation with 1.0' freeboard. One screening outlet structure is 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. The suspended solids and liquid is transferred to a Waste Storage Facility (313) using a Waste Transfer (634) pipe. Part of an animal waste management system.

**Feature Measure:** Cubic Foot of Design Storage

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 35,800.00

**Scenario Total Cost:** $51,505.51

**Scenario Cost/Unit:** $1.44

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 95.9 | $44,715.29 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 1000 | $3,930.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| **Materials** | | | | | | |
| Post, Wood, CCA treated, 6 in. x 8 ft. | 12 | Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $24.11 | 4 | $96.44 |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 74.1 | $1,413.83 |
| Wire Mesh Screen, galvanized, 1/16 in | 1229 | Wire Mesh Screen, galvanized, 1/16 inch grid spacing. Materials only. | Square Feet | $4.28 | 32 | $136.96 |
| Lumber, planks, posts and timbers, treated | 1609 | Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor. | Board Feet | $4.15 | 37.3 | $154.80 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 632 - Waste Separation Facility

**Scenario** #5 - Concrete Settling Structure with picket screen outlet

**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 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

**Before 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 Situation:**

One concrete settling basin structure (20 ft wide by 40 ft long with 6 ft high walls and weeping wall/picket structure or outlet control) 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.

**Feature Measure:** Cubic Foot of Design Storage

**Scenario Unit:** Cubic Feet

**Scenario Typical Size:** 4,000.00

**Scenario Total Cost:** $17,423.34

**Scenario Cost/Unit:** $4.36

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 12.3 | $5,735.12 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 14.8 | $9,054.20 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 100 | $240.00 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 50 | $196.50 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 24 | $539.52 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 9.9 | $188.89 |
| Weeping Wall | 1765 | Weeping wall or picket screen structure for solid settling basin. Materials only. | Feet | $38.53 | 20 | $770.60 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 632 - Waste Separation Facility

**Scenario** #6 - 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 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 Situation:**

One concrete settling lane structure (22 ft wide by 740 ft long by 5 in. thick) constructed around or at a livestock feeding operation. A 20' long opening in wall is allowed as an outlet for this lane. 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.

**Feature Measure:** Square Foot of Settling Lane Footpr

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 16,280.00

**Scenario Total Cost:** $195,011.41

**Scenario Cost/Unit:** $11.98

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 301.5 | $140,580.41 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 72.1 | $44,108.62 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 2412 | $5,788.80 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 201 | $3,835.08 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 634 - Waste Transfer

**Scenario** #1 - Concrete Channel

**Scenario Description:**

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 an existing collection basin and/or waste storage facility. 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. 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.

**Before 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 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 an existing collection basin or waste storage facility. Includes safety chain for equipment. Alternative configurations can consist of the installation of a more narrow or wider channel that may or may not have curbs or a deeper shaped channel and may include a half pipe on the bottom.

**Feature Measure:** Bottom surface area of concrete ch

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 1,200.00

**Scenario Total Cost:** $20,945.21

**Scenario Cost/Unit:** $17.45

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 22 | $10,257.94 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 11 | $6,729.47 |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 8 | $611.04 |
| Excavation, common earth, small equipment, 50 ft | 1220 | Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor. | Cubic Yards | $2.65 | 4 | $10.60 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 8 | $281.04 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 24 | $1,147.44 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $15.24 | 26 | $396.24 |
| Safety gate, span manure transfer channel or chute | 1952 | Safety gate to span manure transfer channel at push off wall or chute outlet. Minimum of 4 ft. tall with openings that will not pass a 6 inch or larger sphere. Includes materials only. | Feet | $21.93 | 16 | $350.88 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 634 - Waste Transfer

**Scenario** #2 - Gravity flow, less than or equal to 18 inch diameter conduit

**Scenario Description:**

Gravity flow conduit is typically a large diameter water tight sanitary sewer pipe used to transfer manure by gravity from one location to another. The gravity transfer system typically consists of an existing inlet structure or hopper with attachment to a smooth interior large diameter pipe. The pipe conveys the slurry waste liquid between the waste collection point and a manure storage or waste treatment structure. Adequate head on the pipe flow or change in elevation must be available for the gravity system to function and should be evaluated by the design engineer. This practice includes the pipe attachment to an existing inlet structure and all other fittings, trench excavation and backfill, labor and a equipment for installation. This conduit 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. 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.

**Before Situation:**

An area of waste production is separated from the waste storage facility and current operations may cause water quality concerns as it is not efficient in transporting the waste to the storage. The site has a change in elevation between production area and treatment or storage structure that is adequate to provide sufficient head for a gravity flow conduit to transport the slurry waste liquid stream.

**After Situation:**

Install a 150 foot long 18" diameter water tight pipe to transfer manure by gravity from one location to another. A gravity transfer system typically consists of a sealed inlet at an existing waste collection structure to a smooth interior 18" sewer grade pipe that will gravity flow to an outlet at a site of manure treatment or storage. This scenario includes the pipe, inlet, outlet, couplers and all other fittings, trench excavation, pipe bedding and backfill. The site should be evaluated by the designing engineer to make sure there is adequate elevation drop before contracting. If required an inlet structure may be contracted under another scenario. The transfer conduit will provide collection and containment of the manure slurry, thereby protecting water quality resources.

**Feature Measure:** Length of pipe installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 150.00

**Scenario Total Cost:** $4,750.41

**Scenario Cost/Unit:** $31.67

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 97 | $232.80 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 57 | $340.86 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 45 | $152.55 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 24 | $539.52 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 10 | $478.10 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 10 | $186.00 |
| Pipe, HDPE, CPT, Double Wall, Soil Tight, 18 in. | 1245 | Pipe, Corrugated HDPE Double Wall, 18 inch diameter with soil tight joints - AASHTO M294. Material cost only. | Feet | $16.46 | 150 | $2,469.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** 634 - Waste Transfer

**Scenario** #3 - Gravity flow, greater than 18 inch diameter conduit

**Scenario Description:**

Gravity flow conduit is typically a large diameter water tight sanitary sewer pipe used to transfer manure by gravity from one location to another. The gravity transfer system typically consists of an existing inlet structure or hopper with attachment to a smooth interior large diameter pipe. The pipe conveys the slurry waste liquid between the waste collection point and a manure storage or waste treatment structure. Adequate head on the pipe flow or change in elevation must be available for the gravity system to function and should be evaluated by the design engineer. This practice includes the pipe attachment to an existing inlet structure and all other fittings, trench excavation and backfill, labor and a equipment for installation. This conduit 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. 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.

**Before Situation:**

An area of waste production is separated from the waste storage facility and current operations may cause water quality concerns as it is not efficient in transporting the waste to the storage. The site has a change in elevation between production area and treatment or storage structure that is adequate to provide sufficient head for a gravity flow conduit to transport the slurry waste liquid stream.

**After Situation:**

Install a 150 foot long 30" diameter water tight pipe to transfer manure by gravity from one location to another. A gravity transfer system typically consists of a sealed inlet at an existing waste collection structure to a smooth interior 30" sewer grade pipe that will gravity flow to an outlet at a site of manure treatment or storage. This scenario includes the pipe, inlet, outlet, couplers and all other fittings, trench excavation, pipe bedding and backfill. The site should be evaluated by the designing engineer to make sure there is adequate elevation drop before contracting. If required an inlet structure may be contracted under another scenario. The transfer conduit will provide collection and containment of the manure slurry, thereby protecting water quality resources.

**Feature Measure:** Length of pipe installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 150.00

**Scenario Total Cost:** $8,329.41

**Scenario Cost/Unit:** $55.53

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 125 | $300.00 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 57 | $340.86 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 45 | $152.55 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 24 | $539.52 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 10 | $478.10 |
| **Materials** | | | | | | |
| Aggregate, Sand, Graded, Washed | 45 | Sand, typical ASTM C33 gradation. Includes materials, and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $18.60 | 13 | $241.80 |
| Pipe, HDPE, CPT, Double Wall, Soil Tight, 30 in. | 1247 | Pipe, Corrugated HDPE Double Wall, 30 inch diameter with soil tight joints - AASHTO M294. Material cost only. | Feet | $39.50 | 150 | $5,925.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** 634 - Waste Transfer

**Scenario** #4 - Pressure flow, less than or equal to 6 inch diameter conduit

**Scenario Description:**

Pressure flow pipeline used to transfer manure wastewater by pumping from the waste storage pond to the field where it is to be applied according to the CNMP. These pipelines may also be utilized to transfer waste within the waste treatment system. Pressure flow transfer pipelines can be between 3" and 12" diameter but 6" diameter is a commonly used pipe size. Pressure pipe will handle an internal pumping pressure between 130 and 200 psi depending on the designed pumping system and must have gasketted joints to seal for the wastewater transfer. The pressure pipe moves the water by pumping from the intake riser location, through a buried mainline with outlet risers spaced at 300 ft intervals for a traveler applicator. 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, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. 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. 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; PS 635, Vegetated Treatment Area.

**Before Situation:**

The waste storage structure is separated from the application fields where wastewater nutrients are needed. Soil nutrients in the near fields have high phosphorus levels from over application near the waste storage facility. The current application operation is high in the use of time and energy and may cause water quality concerns as it is not efficient in transporting the waste to the field.

**After Situation:**

Install a 1000 foot long 6 inch diameter PVC gasketted 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. The transfer pipeline will deliver the manure slurry to the fields for agronomic nutrient utilization according to the CNMP, thereby protecting water quality resources.

**Feature Measure:** Length of pipe installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $17,220.21

**Scenario Cost/Unit:** $17.22

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 1 | $242.13 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 90 | $538.20 |
| Trenching, Earth, loam, 24 in. x 48 in. | 54 | Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $3.04 | 1000 | $3,040.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 10 | $478.10 |
| **Materials** | | | | | | |
| Pipe, PVC, 6 in., SDR 21 | 987 | Materials: - 6 inch - PVC - SDR 21 200 psi - ASTM D2241 | Feet | $10.61 | 1100 | $11,671.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** 634 - Waste Transfer

**Scenario** #5 - Pressure flow, 8 inch diameter conduit

**Scenario Description:**

Pressure flow pipeline used to transfer manure wastewater by pumping from the waste storage pond to the field where it is to be applied according to the CNMP. These pipelines may also be utilized to transfer waste within the waste treatment system. Pressure flow transfer pipelines can be between 3" and 12" diameter but 8" diameter is a commonly used pipe size. Pressure pipe will handle an internal pumping pressure between 130 and 200 psi depending on the designed pumping system and must have gasketted joints to seal for the wastewater transfer. The pressure pipe moves the water by pumping from the intake riser location, through a buried mainline with outlet risers spaced at 300 ft intervals for a traveler applicator. 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, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. 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. 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; PS 635, Vegetated Treatment Area.

**Before Situation:**

The waste storage structure is separated from the application fields where wastewater nutrients are needed. Soil nutrients in the near fields have high phosphorus levels from over application near the waste storage facility. The current application operation is high in the use of time and energy and may cause water quality concerns as it is not efficient in transporting the waste to the field.

**After Situation:**

Install a 1000 foot long 8 inch diameter PVC gasketted 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.

**Feature Measure:** Length of pipe installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $25,272.21

**Scenario Cost/Unit:** $25.27

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 1 | $242.13 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 90 | $538.20 |
| Trenching, Earth, loam, 24 in. x 48 in. | 54 | Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $3.04 | 1000 | $3,040.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 10 | $478.10 |
| **Materials** | | | | | | |
| Pipe, PVC, 8 in., SDR 21 | 988 | Materials: - 8 inch - PVC - SDR 21 200 psi - ASTM D2241 | Feet | $17.93 | 1100 | $19,723.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** 634 - Waste Transfer

**Scenario** #6 - Pressure flow, 10 inch diameter conduit

**Scenario Description:**

PVC pipelines are used to transfer manure wastewater by a low pressure pump from the waste storage pond to the field where it is applied according to the CNMP. These pipelines may also be utilized to transfer waste within the waste treatment system. PVC transfer pipelines can be between 3" and 30" diameter. 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, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. 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 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. 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; PS 635, Vegetated Treatment Area.

**Before Situation:**

The waste storage structure is separated from the application fields where wastewater nutrients are needed or other components of the waste management system. Soil nutrients in the near fields have high phosphorus levels from over application near the waste storage facility. The current application operation is high in the use of time and energy and may cause water quality concerns as it is not efficient in transporting the waste to the field.

**After Situation:**

Install a 1000 foot long 10 inch diameter PVC gasketted IPS pipe and is water tight to transfer the manure an/or wastewater. 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.

**Feature Measure:** Length of pipe installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $36,372.47

**Scenario Cost/Unit:** $36.37

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 1 | $242.13 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 127 | $759.46 |
| Trenching, Earth, loam, 24 in. x 48 in. | 54 | Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $3.04 | 1000 | $3,040.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 10 | $478.10 |
| **Materials** | | | | | | |
| Pipe, PVC, 10 in., SDR 21 | 1714 | Materials: - 10 inch - PVC - SDR 21 - ASTM D2241 | Feet | $27.82 | 1100 | $30,602.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** 634 - Waste Transfer

**Scenario** #7 - Pressure flow, 12 inch or greater diameter conduit

**Scenario Description:**

PVC pipelines are used to transfer manure wastewater by a low pressure pump from the waste storage pond to the field where it is applied according to the CNMP. These pipelines may also be utilized to transfer waste within the waste treatment system. PVC transfer pipelines can be between 3" and 30" diameter. 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, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. 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 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. 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; PS 635, Vegetated Treatment Area.

**Before Situation:**

The waste storage structure is separated from the application fields where wastewater nutrients are needed or other components of the waste management system. Soil nutrients in the near fields have high phosphorus levels from over application near the waste storage facility. The current application operation is high in the use of time and energy and may cause water quality concerns as it is not efficient in transporting the waste to the field.

**After Situation:**

Install a 300 foot long 12 inch diameter PVC gasketted IPS pipe and is water tight to transfer the manure an/or wastewater. 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.

**Feature Measure:** Length of pipe installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 300.00

**Scenario Total Cost:** $15,897.66

**Scenario Cost/Unit:** $52.99

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 2 | $484.26 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 97 | $232.80 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic Yards | $5.98 | 89 | $532.22 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 10 | $478.10 |
| **Materials** | | | | | | |
| Pipe, PVC, 12 in., SDR 21 | 1717 | Materials: - 12 inch - PVC - SDR 21 - ASTM D2241 | Feet | $39.15 | 330 | $12,919.50 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** 634 - Waste Transfer

**Scenario** #9 - Agitator, Slurry Transfer

**Scenario Description:**

This scenario is for a manure and wastewater agitator, piping and reception pit 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 tank or pond is between 10 and 15 feet deep. This scenario does not include a pump. 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 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.

**Before 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 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. Wastewater reception pit, Concrete Pump installation pit and transfer conduit have been included in this scenario to support the operation of this waste transfer system equipment.

**Feature Measure:** Agitator for wastewater, installed

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $35,198.52

**Scenario Cost/Unit:** $35,198.52

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $242.13 | 3 | $726.39 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 6 | $2,797.62 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 16.6 | $10,155.38 |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 160 | $228.80 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 12 | $364.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 24 | $1,147.44 |
| **Materials** | | | | | | |
| Pipe, PVC, 12 in., SDR 21 | 1717 | Materials: - 12 inch - PVC - SDR 21 - ASTM D2241 | Feet | $39.15 | 176 | $6,890.40 |
| Manure agitator, mixing depth 10 to 15 feet deep | 1766 | Agitator to move put settled manure solids into suspension for removal from an animal waste storage structure. Materials only. | Each | $11,727.13 | 1 | $11,727.13 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 634 - Waste Transfer

**Scenario** #60 - Lot Runoff Containment Wall

**Scenario Description:**

Typical installation consists of a 2' high concrete wall with an adjacent 5' wide, 5" thick concrete slab. Typical length is 300'. The purpose is to direct lot runoff to a collection basin or waste storage facility. Wall also allows manure to be scraped to waste storage facility. Associated practices may include: 313, Waste Storage Facility; 533, Pumping Plant; 632, Waste Separation Facility; 590, Nutrient Management; 633, Waste Recycling; 561, Heavy Use Protection Area.

**Before Situation:**

Current facility operations are allowing manure laden lot runoff to discharge from the feedlot and cause water resources to be contaminated.

**After Situation:**

Installation of a concrete wall with footing to direct manure laden lot runoff to a collection basin and/or waste storage facility. 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. 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.

**Feature Measure:** Length of Wall Installed

**Scenario Unit:** Feet

**Scenario Typical Size:** 300.00

**Scenario Total Cost:** $28,523.04

**Scenario Cost/Unit:** $95.08

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 14 | $6,527.78 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $611.77 | 34 | $20,800.18 |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 4 | $305.52 |
| **Labor** | | | | | | |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 4 | $140.52 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $15.24 | 32 | $487.68 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 635 - Vegetated Treatment Area

**Scenario** #1 - Concrete Curb, with or without flow spreaders

**Scenario Description:**

This is a permanent herbaceous vegetative area or channel installed down slope from a livestock production area. Wastewater (runoff or milking parlor wastewater) is properly collected and released with a controlled gravity outflow into 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), 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 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 Situation:**

Typical VTA is 2.0 ac in size, includes a concrete curb for distribution flow (sheet flow) into the VTA. Usually 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) could be contracted to provide pre-treatment 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.

**Feature Measure:** Amount of VTA installed

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $9,196.05

**Scenario Cost/Unit:** $4,598.03

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 7 | $3,263.89 |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | $1.30 | 600 | $780.00 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 70 | $168.00 |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 24 | $1,833.12 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 20 | $449.60 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 24 | $843.12 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 70 | $1,335.60 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 635 - Vegetated Treatment Area

**Scenario** #2 - Concrete Curb with major shaping

**Scenario Description:**

This is a permanent herbaceous vegetative area or channel installed down slope from a livestock production area. Wastewater (runoff or milking parlor wastewater) is properly collected and released with a controlled gravity outflow into 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), 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 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 Situation:**

Typical VTA is 2.0 ac in size, includes a concrete curb for distribution flow (sheet flow) into the VTA. Typically requires considerable grading and shaping on a small area to maintain sheet flow throughout the VTA (at least 3000 cy/ac). A settling basin for wastewater collection is contracted using Solid/Liquid Waste Separation Facility (632). For milkhouse waste, Waste Treatment (629) could be contracted to provide pre-treatment 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.

**Feature Measure:** Amount of VTA installed

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $25,662.28

**Scenario Cost/Unit:** $12,831.14

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic Yards | $466.27 | 7 | $3,263.89 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 6453 | $21,875.67 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 635 - Vegetated Treatment Area

**Scenario** #3 - Gated Pipe, with or without flow spreaders

**Scenario Description:**

This is a permanent herbaceous vegetative area or channel installed down slope from a livestock production area. Wastewater (runoff or milking parlor wastewater) is properly collected and released with a controlled outflow into 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), 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 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 Situation:**

Typical VTA is 10.0 ac in size, includes a gated irrigation pipe to promote sheet flow through the VTA. Usually requires grading and shaping, gravel spreader trenches 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) could be contracted to provide pre-treatment prior to being released into the VTA. The establishment of the permanent vegetation within the VTA will be completed under the Critical Area Planting (342) Standard. 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.

**Feature Measure:** Acres in the Treatment Area

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $27,558.86

**Scenario Cost/Unit:** $2,755.89

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | $1.30 | 2800 | $3,640.00 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 310 | $744.00 |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 50 | $71.50 |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 24 | $1,833.12 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 20 | $449.60 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 24 | $843.12 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 310 | $5,914.80 |
| Pipe, PVC, 6 in., SCH 40 | 980 | Materials: - 6 inch - PVC - SCH 40 - ASTM D1785 | Feet | $11.38 | 50 | $569.00 |
| Pipe, aluminum, smooth wall gated irrigation, 8 in. | 2029 | 8 inch diameter smooth wall gated irrigation aluminum pipe. Material only. | Feet | $18.53 | 700 | $12,971.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 635 - Vegetated Treatment Area

**Scenario** #4 - Gated Pipe with major shaping

**Scenario Description:**

This is a permanent herbaceous vegetative area or channel installed down slope from a livestock production area. Wastewater (runoff or milking parlor wastewater) is properly collected and released with a controlled outflow into 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), 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 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 Situation:**

Typical VTA is 2 ac in size, includes a gated irrigation pipe to promote sheet flow through the VTA. Typically requires considerable grading and shaping on a small area to maintain sheet flow throughout the VTA (at least 3000 cy/ac). A settling basin for wastewater collection is contracted using Solid/Liquid Waste Separation Facility (632). For milkhouse waste, Waste Treatment (629) could be contracted to provide pre-treatment prior to being released into the VTA. The establishment of the permanent vegetation within the VTA will be completed under the Critical Area Planting (342) Standard. 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.

**Feature Measure:** Acres in the Treatment Area

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $25,633.09

**Scenario Cost/Unit:** $12,816.55

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 6453 | $21,875.67 |
| Trenching, Earth, 12 in. x 48 in. | 53 | Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling | Feet | $1.43 | 50 | $71.50 |
| **Materials** | | | | | | |
| Pipe, PVC, 6 in., SCH 40 | 980 | Materials: - 6 inch - PVC - SCH 40 - ASTM D1785 | Feet | $11.38 | 50 | $569.00 |
| Pipe, aluminum, smooth wall gated irrigation, 8 in. | 2029 | 8 inch diameter smooth wall gated irrigation aluminum pipe. Material only. | Feet | $18.53 | 140 | $2,594.20 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 635 - Vegetated Treatment Area

**Scenario** #5 - Sprinkler, Solid Set 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 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 Situation:**

Typical VTA is 8.0 ac in size. Typically does not require grading and shaping to maintain as uniform application onto the VTA is made through a solid set type sprinkler system. 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. 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 onto 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.

**Feature Measure:** Amount of VTA installed

**Scenario Unit:** Acres

**Scenario Typical Size:** 8.00

**Scenario Total Cost:** $66,825.56

**Scenario Cost/Unit:** $8,353.20

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Trencher, 8 in. | 936 | Equipment and power unit costs. Labor not included. | Hours | $51.59 | 24 | $1,238.16 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 24 | $539.52 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 24 | $706.08 |
| **Materials** | | | | | | |
| Irrigation, Solid Set, w/Appurtenances | 324 | Solid Set irrigation system that includes pipe, sprinklers, connections, installation and appurtenances. | Acres | $5,940.43 | 8 | $47,523.44 |
| Pipe, PVC, 2 in., SCH 40 | 976 | Materials: - 2 inch - PVC - SCH 40 - ASTM D1785 | Feet | $2.19 | 3200 | $7,008.00 |
| Pipe, PVC, 6 in., SDR 21 | 987 | Materials: - 6 inch - PVC - SDR 21 200 psi - ASTM D2241 | Feet | $10.61 | 900 | $9,549.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 635 - Vegetated Treatment Area

**Scenario** #6 - Sprinkler, Mobile Pods

**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 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 Situation:**

Typical VTA is 3.0 ac in size. Typically does not require grading and shaping to maintain as uniform application onto the VTA is made through a mobile pod type sprinkler system. 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. 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 onto 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. The system is sized such that the total number of Pods will distribute wastewater to about a quarter of 3 acre VTA. The pods will be relocated to distribute wastewater throughout the VTA. The VTA is 440 ft x 300 ft. Each Pod Line is 150 ft long with 5 pods spaced evenly. The total number of Pods is 20 (4 lines x 5 pods/line = 20 pods).

**Feature Measure:** Amount of VTA installed

**Scenario Unit:** Acres

**Scenario Typical Size:** 3.00

**Scenario Total Cost:** $12,465.32

**Scenario Cost/Unit:** $4,155.11

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 3 | $165.90 |
| Trencher, 8 in. | 936 | Equipment and power unit costs. Labor not included. | Hours | $51.59 | 16 | $825.44 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 19 | $558.98 |
| **Materials** | | | | | | |
| Irrigation, Pod System, w/Appurtenances | 323 | Pod irrigation system that includes pod, pipe, sprinklers, connections, and appurtenances. Includes materials only. | Each | $306.03 | 20 | $6,120.60 |
| Pipe, PVC, 4 in., SDR 21 | 986 | Materials: - 4 inch - PVC - SDR 21 200 psi - ASTM D2241 | Feet | $4.89 | 800 | $3,912.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 635 - Vegetated Treatment Area

**Scenario** #7 - Sprinkler, Center Pivot

**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 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 Situation:**

Typical VTA is 8.0 ac in size. Typically does not require grading and shaping to maintain as uniform application onto the VTA is made through a center pivot type sprinkler system. 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. 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 onto 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.

**Feature Measure:** Amount of VTA installed

**Scenario Unit:** Acres

**Scenario Typical Size:** 8.00

**Scenario Total Cost:** $35,301.62

**Scenario Cost/Unit:** $4,412.70

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 8 | $442.40 |
| Trencher, 8 in. | 936 | Equipment and power unit costs. Labor not included. | Hours | $51.59 | 16 | $825.44 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 16 | $470.72 |
| **Materials** | | | | | | |
| Irrigation, Center pivot system with appurtenances, fixed cost portion | 317 | Fixed cost portion of the center pivot system with appurtenances. This portion includes the following items: pivot point, pipe, towers, pad, controls, sprinklers, installation. | Each | $5,041.57 | 1 | $5,041.57 |
| Irrigation, Center pivot system with appurtenances, variable cost portion | 318 | Variable cost portion of the center pivot system with appurtenances. This portion includes the following items: pivot point, pipe, towers, pad, controls, sprinklers, installation. | Feet | $73.96 | 333 | $24,628.68 |
| Pipe, PVC, 6 in., SDR 21 | 987 | Materials: - 6 inch - PVC - SDR 21 200 psi - ASTM D2241 | Feet | $10.61 | 333 | $3,533.13 |

**Practice:** 638 - Water and Sediment Control Basin

**Scenario** #1 - WASCOB base

**Scenario Description:**

Typical scenario for the construction of 700 CY earthen embankment. 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. 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. 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 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 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) to be transported into the riparian areas and water bodies downstream.

**After Situation:**

Water and Sediment Control Basis is constructed with 700 CY of 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.

**Feature Measure:** CY of WASCOB Embankment

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 700.00

**Scenario Total Cost:** $2,798.81

**Scenario Cost/Unit:** $4.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 700 | $2,751.00 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |

**Practice:** 638 - Water and Sediment Control Basin

**Scenario** #9 - WASCOB, Crop Season Construction

**Scenario Description:**

Typical scenario for the construction of 700 CY earthen embankment with a surface area of 0.4 acres. Prior to building 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 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. Foregone income reflects entire construction area to account for crop loss while constructing during the growing season.

**Before 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 Situation:**

Water and Sediment Control Basis is constructed with 700 CY of 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.

**Feature Measure:** CY of WASCOB Embankment

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 700.00

**Scenario Total Cost:** $3,119.17

**Scenario Cost/Unit:** $4.46

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 700 | $2,751.00 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 250 | $212.50 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.2 | $58.69 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.2 | $49.17 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |

**Practice:** 640 - Waterspreading

**Scenario** #1 - Dikes

**Scenario Description:**

A waterspreading system of dikes installed to uniformly distribute surface water to the field. Dikes are commonly installed on 2% slopes. Dikes are installed with gates to manage the release of the water.

**Before Situation:**

A field managed for forage with uncontrolled surface water that is not uniformly applied to the field for crop use.

**After Situation:**

A waterspreading system of dikes are installed to uniformly distribute surface water to the field. The dikes are typically built with a height of 3 feet and have a 4 foot top with 5:1 sideslopes to allow the dike to mowed or cut. The dikes are seeded with a sod forming grass. Each dike will retain water on the field and allow the water to be drained through a 18" CMP pipe with a slide gate (typically a Waterman C8E gate). The typical field size would be 20 acres and would have three dikes approximatley 1000' long installed with 200-300 feet between dikes. The system would address the resource concern of Water Quantity - Inefficient water use on nonirrigated land. Associated practices with the system are 342 Critical Area Planting, 412 - Grassed Waterway, 587 - Structure for Water Control, 511 - Forage Harvest Management.

**Feature Measure:** Acres with supplemental water

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $40,929.60

**Scenario Cost/Unit:** $2,046.48

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 8233 | $32,355.69 |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 5 | $276.50 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 1900 | $1,615.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 7 | $245.91 |
| **Materials** | | | | | | |
| Pipe, CMP, 18 in., 16 Gauge | 1743 | 18 inch Corrugated Metal Pipe, Galvanized, Uncoated, 16 gauge. Material cost only. | Feet | $29.90 | 120 | $3,588.00 |
| Slide gate, steel, 2 ft. diameter, low head | 1829 | 2 ft. diameter steel slide gate for low head installations | Each | $619.26 | 3 | $1,857.78 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 642 - Water Well

**Scenario** #3 - Shallow Well, 100 ft. deep or less

**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 or irrigation. An average well depth is 75 feet. Well casings are 4-6" in diameter. Plastic casing is installed to a depth of 55 feet.

**Before Situation:**

Livestock have insufficient water or are fenced from their water source. There is insufficient water for use in micro-irrigation.

**After Situation:**

Sufficient water is available for livestock or irrigation. Utilize Pumping Plant (533) and Pipeline (516) as associated practices. Use Critical Area Seeding (342) where necessary to prevent erosion following construciton activities.

**Feature Measure:** Depth of Well

**Scenario Unit:** Feet

**Scenario Typical Size:** 75.00

**Scenario Total Cost:** $5,535.47

**Scenario Cost/Unit:** $73.81

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Rotary Drill Rig | 1595 | Rotary drill rig including equipment and power unit costs. Labor not included. | Hours | $370.17 | 8 | $2,961.36 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| **Materials** | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel. includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Cubic Yards | $19.08 | 1 | $19.08 |
| Test, Standard Water Test, Well Water | 309 | Well Water Suitability test. Includes materials and shipping only. | Each | $50.05 | 1 | $50.05 |
| Grout, cement | 1333 | 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 Yards | $656.66 | 2 | $1,313.32 |
| Chlorine | 1335 | Liquid chlorine bleach. Includes materials only. | Gallons | $6.68 | 1 | $6.68 |
| Well Cap, 4 in. | 1785 | Well cap, 4 inch. Materials only. | Each | $34.77 | 1 | $34.77 |
| Well Casing, Plastic, 4 in. | 1803 | PVC or ABS non-threaded well casing, 4 inch. Materials only. | Feet | $5.19 | 55 | $285.45 |
| Well Screen, plastic, 4 in. | 1998 | 4 inch PVC well screen. Materials only. | Feet | $8.11 | 20 | $162.20 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 642 - Water Well

**Scenario** #153 - Steel or Copper, 100 ft. or deeper

**Scenario Description:**

Typical construction is for the installation of a well, in areas where sufficient water is known to occur greater than 2000 feet from 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 or micro-irrigation. An average well depth is 2500 feet. Plastic Surface casings are 6 in diameter with smaller diameter casing and screen extending into the water bearing formation. Steel casing and screen is installed to a typical depth of 2500 feet.

**Before Situation:**

Livestock have insufficient water or are fenced from their water source. There is insufficient water for use in micro-irrigation.

**After Situation:**

Sufficient water is available for livestock or micro-irrigation. Utilize Pumping Plant (533) and Pipeline (516) as associated practices. Use Critical Area Seeding (342) where necessary to prevent erosion following construction activities.

**Feature Measure:** Depth of Well

**Scenario Unit:** Linear Feet

**Scenario Typical Size:** 2,000.00

**Scenario Total Cost:** $162,853.85

**Scenario Cost/Unit:** $81.43

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Rotary Drill Rig | 1595 | Rotary drill rig including equipment and power unit costs. Labor not included. | Hours | $370.17 | 120 | $44,420.40 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 200 | $4,496.00 |
| **Materials** | | | | | | |
| Test, Standard Water Test, Well Water | 309 | Well Water Suitability test. Includes materials and shipping only. | Each | $50.05 | 1 | $50.05 |
| Grout, cement | 1333 | 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 Yards | $656.66 | 1 | $656.66 |
| Chlorine | 1335 | Liquid chlorine bleach. Includes materials only. | Gallons | $6.68 | 1 | $6.68 |
| Well Cap, 6 in. | 1786 | Well cap, 6 inch. Materials only. | Each | $52.34 | 1 | $52.34 |
| Well Casing, Stainless Steel/Copper, 2 in. | 1796 | Stainless steel or Copper well casing, 2 inch. Materials only. | Feet | $52.66 | 2000 | $105,320.00 |
| Well Casing, Plastic, 6 in. | 1804 | PVC or ABS non-threaded well casing, 6 inch. Materials only. | Feet | $9.97 | 500 | $4,985.00 |
| Well Screen, stainless steel, 2 in. | 2278 | 2 inch Stainless steel well screen. Materials only. | Feet | $46.88 | 50 | $2,344.00 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 643 - Restoration of Rare or Declining Natural Communities

**Scenario** #1 - Monitoring & Management, Low Intensity and Complexity - No Foregone Income

**Scenario Description:**

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. Monitoring will be used to determine if the conservation system meets or exceeds the minimum planning criteria for the targeted wildlife. Management will be implemented based on the findings of the habitat assessment and monitoring. Habitat management and monitoring needed to treat the resource concerns requires no training, no qualitative data assessment, no water quality monitoring and is low in complexity and intensity. Examples of prescribed monitoring, include but are not limited to: photo points taken, documentation of livestock utilization, regeneration/breeding success, completing an annual management records log, documenting wildlife sightings, documenting location and species of invasive plants and condition of vegetative and structural treatments. No decision or treatment associated with this practice or facilitating practices will require foregone income. The planner will specify locations and identify the methods to the customer who will implement the monitoring and management plan.

**Before Situation:**

Existing degraded plant conditions and resulting inadequate habitat for fish and wildlife have resulted in low use of the area by target species identified as Rare and Declining and other associated species.

**After Situation:**

Based on the results of a State approved upland wildlife habitat assessment process, the application of habitat management efforts and prescribed monitoring have been implemented. With the application of this practice alone, or in combination with other supporting and facilitating practices, the inadequate habitat conditions have been addressed. Monitoring and resulting management has maximized the benefits of the needed habitat treatment efforts.

**Feature Measure:** Acres Managed and Monitored

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $436.32

**Scenario Cost/Unit:** $4.36

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 2 | $38.56 |
| Aerial Imagery | 966 | Aerial imagery. RBG (color), infrared or NDVI single image. | Acres | $1.85 | 100 | $185.00 |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 1 | $50.67 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** 643 - Restoration of Rare or Declining Natural Communities

**Scenario** #37 - Habitat Monitoring and Management, High Intensity and Complexity

**Scenario Description:**

This scenario is applied to all landuse types including those with wildlife as a modifier, where any resource concern is identified for wildlife, and where high intensity and complexity of monitoring or management will treat the identified resource concern. Two - four monitoring efforts are needed and each requiring less than 2 people and less than 8 hours per effort. The adaptive management actions (2 - 5 efforts) such as cutting of limbs that are impeding access of birds into nest boxes, replacing damaged fence markers, cleaning of nest structures and debris around other structures requires hand labor and light equipment, requiring a 2-person crew less than 1 day per

**Before Situation:**

Wildlife habitat is deficient due to the absence of annual monitoring and adaptive management actions of high intensity and complexity.

**After Situation:**

Wildlife habitat is improved by implementation of annual adaptive management actions of high intensity and complexity.

**Feature Measure:** Monitoring efforts and adaptive m

**Scenario Unit:** Acres

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $2,088.93

**Scenario Cost/Unit:** $26.11

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 8 | $55.36 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 6 | $154.08 |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 3 | $95.46 |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 1 | $50.67 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 20 | $449.60 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 3 | $88.26 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 10 | $1,195.50 |

**Practice:** 643 - Restoration of Rare or Declining Natural Communities

**Scenario** #56 - Beaver Dam Analogues or Post-Assisted Log Structures

**Scenario Description:**

This scenario includes installation of low-tech woody structures (Beaver Dam Analogues (BDAs) or Post-Assisted Log Structures (PALS)) to facilitate process-based restoration in perennial, intermittent, or ephemeral streams and riparian areas. These simple structures are low, semi-permeable, and hand-built using native materials (wood, sod, etc.). Untreated wooden fence posts are added where necessary for extra stability. Structures are designed to be short-lived and used primarily as a temporary tool to promote natural process recovery. Structures mimic the function of natural beaver dams and wood accumulation in streams by reducing water velocities, raising water tables, enhancing floodplain connectivity, and inducing other dynamic ecological and hydrogeomorphic processes. Typically, complexes consisting of multiple structures within a reach are used to meet project objectives. Structures can be used on all land uses to address a variety of resource concerns and are strategically placed to meet specific purposes, such as, mesic and wetland vegetation expansion, floodplain development in incised channels, increased habitat complexity for fish and wildlife, and beaver re-establishment. Associated practices include: 528, 391, 644, 612, 382. Typical scenario includes 20 structures averaging 20 ft length each (total = 400 lin ft of structures). Crew of one biologist, one crew manager, and three laborers (one skilled).

**Before Situation:**

Degraded stream channel and associated riparian/mesic/wetland vegetation are impaired by lack of structural complexity, channel incision, reduced floodplain connectivity, or inadeqaute habitat features. Extent of potential riparian/mesic/wetland vegetation is reduced due to lack of floodplain inundation or low water table. Channel condition/complexity is insufficient to permit proper hydrologic function, vegetation maintenance/recovery, or to support desired fish and wildlife habitat.

**After Situation:**

Low-tech structures mimic and promote ecological and physical processes that foster recovery of streams, riparian areas, wet meadows, or aquatic ecosystems. Channel complexity is increased and condition improved by promoting riparian/mesic/wetland vegetation expansion, reconnecting floodplains, and increasing habitat structure for fish and wildlife. Additional treatments may be needed through time until ecosystem is self-sustaining.

**Feature Measure:** Linear Feet

**Scenario Unit:** Linear Feet

**Scenario Typical Size:** 400.00

**Scenario Total Cost:** $17,063.27

**Scenario Cost/Unit:** $42.66

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 24 | $166.08 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 12 | $308.16 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 18 | $347.04 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 48 | $614.88 |
| Portable Post Driver | 2722 | Gas or Hydraulic Powered Post Driver, Portable, <300 lbs, labor not included | Hours | $18.03 | 48 | $865.44 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 72 | $2,188.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 120 | $2,697.60 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 60 | $2,868.60 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 30 | $3,586.50 |
| **Materials** | | | | | | |
| Post, Wood, Untreated, 3-4 in. x 7 ft. | 2721 | Round Post, Wood, Untreated, 3-4 inch diameter x 7 feet | Each | $8.37 | 400 | $3,348.00 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** 643 - Restoration of Rare or Declining Natural Communities

**Scenario** #106 - Rock Structure

**Scenario Description:**

A low cost, low risk, rock structure will be installed at the head of the gully to arrest the continued cutting of the gully uphill. The structure is designed to protect the soil surface from further erosion while dissipating water energy. Below the head cut structure a series of structures will be installed to reduce water velocity and cause deposition of sediments to heal the gully and reduce drainage from the adjacent upland area. This will reduce the loss of and restore mesic riparian/meadow habitats. Typical installation involves the installation of one structure to address head-cutting and three additional structures to reduce stream velocity and collect sediment. The head cut structure typically requires 1.5 cubic yards of rock. Typical sediment checks require 1.0 cubic yards of rock. This scenario addresses Soil Erosion, classic gully and inadequate fish and wildlife habitat.

**Before Situation:**

Head cutting is proceeding uphill creating a gully that serves as a drain to the adjacent habitat lowering the local water table, reducing the available moisture to the adjacent mesic plant communities. Mesic riparian/meadow habitats shift to more xeric habitats and the period of active growth is reduced.

**After Situation:**

Head cut is arrested, stopping the advance of the gully uphill and protecting mesic riparian/meadow habitats upstream. Additionally, sediment is collected, raising the base of the gully and restoring the hydrologic regime and mesic riparian/meadow habitats. Re-vegetation is generally via natural regeneration. Should additional re-vegetation be needed, use vegetation standards, 612, Tree and shrub establishment, 550, Range Planting, 342 Critical Area Treatment, and/or 420 Wildlife Habitat Planting as appropriate.

**Feature Measure:** Cubic Yards

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 4.00

**Scenario Total Cost:** $2,802.63

**Scenario Cost/Unit:** $700.66

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Backhoe, 80 HP | 926 | Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $55.30 | 8 | $442.40 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 1 | $25.68 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 2 | $38.56 |
| Truck, dump, 8 CY | 1401 | Dump truck for moving bulk material. Typically capacity is 12 ton or 8 cubic yards. Includes equipment only. | Hours | $55.89 | 8 | $447.12 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 64 | $1,438.72 |
| **Materials** | | | | | | |
| Rock Riprap, graded, angular, material and shipping | 1200 | Graded Rock Riprap for all gradation ranges. Includes materials and local delivery within 20 miles of quarry. Placement costs are not included. | Ton | $37.10 | 4.5 | $166.95 |

**Practice:** 644 - Wetland Wildlife Habitat Management

**Scenario** #3 - Management and monitoring only, foregone income (FI)

**Scenario Description:**

Site management will include managing/monitoring the site to provide food and cover for wetland wildlife species on cropland. Annual vegetation (crops or other annual vegetation) will be allowed to establish and persist during critical nesting and brood rearing seasons and will remain standing (not harvested) until migratory species have left the site. The setting is on lands used for the production of crops where the slope gradient is less than two percent and soils are not excessivly drained. The State-approved habitat evaluation or appraisal found that a limiting factor for wetland wildlife is the absence of sufficient cover and food in the area. The manipulation of existing cover will be accomplished through mechanical methods to provide a diverse vegetation mosaic, within and adjacent to the existing wetland, addressing inadequate habitat for wetland wildlife. Where this occurs on cropped fields, annual crops will be lost for one growing season (foregone income is included).

**Before Situation:**

The site lacks sufficient and diverse cover and food needed for optimal wetland wildlife habitat or target species. Typically the site has been previously manipulated and utilized for agricultural. With the loss of abundant and diverse cover and food throughout the site, both plant and animal species that are dependent on these elements are no longer present, or are in decline, within the planning unit.

**After Situation:**

Agricultural crop or annual vegetation has been allowed to persist providing needed food and cover for identified species. Crops and annual vegetation will not be harvested during the critical seasons as identified by the habitat evaluation. As a result of the installation, habitat needs have been adequately met.

**Feature Measure:** Wetland Wildlife Cover and Food

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $2,561.47

**Scenario Cost/Unit:** $256.15

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Primary | 946 | Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs. | Acres | $19.97 | 10 | $199.70 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 3.3 | $968.39 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 3.3 | $811.34 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 3.4 | $582.05 |

**Practice:** 644 - Wetland Wildlife Habitat Management

**Scenario** #26 - Establishment of seasonal wildlife forage or cover on non-cropland

**Scenario Description:**

The habitat assessment identifies the need to provide seasonal forage or cover for target wildlife species or guild. This habitat need will be met through the establishment of annual plants by planting of seed. The typical scenario will occur on areas supporting perinneal herbaceous vegetaion, not currently in cropland. Due to existing dense vegetation, these area will need to be mowed 2-3 weeks prior to disking (primarily disking), then followed by a light disking. Seed bed preparation will be furthered by firming the seed bed by cultipacking the site. Mixed fertilizer is required to establish planted wildlife forage. A seedmix consisting of annuals is typical for this activity.

**Before Situation:**

The existing habitat has an excess of herbaceous perineal habitat suitable for cover, but is lacking high quality forage seasonal forage, or the cover conditions is too thick and establishement of annuals create a diverse cover condition for the target wildlife species.

**After Situation:**

The availability of high-quality seasonal forage for the target wildlife species is provided and target wildlife health is improved, and populations are increased.

**Feature Measure:** acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $1,692.26

**Scenario Cost/Unit:** $169.23

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 3 | $95.46 |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 20 | $264.20 |
| Tillage, Primary | 946 | Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs. | Acres | $19.97 | 10 | $199.70 |
| Fertilizer, ground application, dry bulk | 950 | Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $7.54 | 10 | $75.40 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 10 | $220.90 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 10 | $94.40 |
| **Materials** | | | | | | |
| Nitrogen (N), Ammonium Sulfate | 70 | Price per pound of N supplied by Ammonium Sulfate. Price is not per pound of total product applied, no conversion is needed. | Pound | $1.60 | 60 | $96.00 |
| Phosphorus, P2O5 | 73 | Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.67 | 60 | $40.20 |
| Potassium, K2O | 74 | K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.56 | 60 | $33.60 |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 10 | $572.40 |

**Practice:** 644 - Wetland Wildlife Habitat Management

**Scenario** #45 - Management and Monitoring on Idled Cropland for Wetland Wildlife, foregone income - Level 1 (Year 2-5)

**Scenario Description:**

This scenario addresses wildlife habitat management for wetter or more water saturated portions of cropland fields which are valuable source of forage and cover for many waterfowl, shorebird and wading bird species. The cession of cropping and maintenance of hydrology will provide adequate forage and cover in areas where normal cropland production restricts the growth of cover and forage sources. Where this occurs on cropped fields, annual crops will be lost for one growing season (foregone income is included).

**Before Situation:**

Setting is any prairie pothole. The wetlands must be wholly or partially in cropland. These wetlands are currently cropped, and hydrology has or could be diverted from the wetland by way of tiling, field or road ditching, diking or any other feature that removes wetland hydrology. These wetter or more water saturated portions of cropland fields have the potential to produce a significant amount of moist soil plants which are valuable source of forage and cover for many waterfowl, shorebird and wading bird species. Under normal cropland production, the native vegetation is restricted on these sites through mechanical and/or chemical control. The current system provides little to no wildlife habitat with habitat limiting factors such as quality, quantity and continuity of forage, cover, shelter and space being identified. Drainage could also result in inadequate wildlife water and inadequate habitat.

**After Situation:**

The planning unit is adequately covered with permanent and/or annual (non-persistent) vegetation. The cession of cropping and maintenance of hydrology provides adequate forage and cover in areas where normal cropland production restricts the growth of cover and forage sources. Monitoring assures hydrology is intact and provides wildlife water and habitat. Acres will be assessed and score 0.5 or greater as both Wetlands and Cropland on the Wildlife Habitat Evaluation Guide. Monitoring will be used to determine if the hydrology remains intact and cover is adequate and free of invasive weed species. Examples of monitoring include but are not limited to: photo points with comparisons to surrounding wetlands, use documentation by livestock, regeneration or breeding success, completing an annual management records log, documenting wildlife sightings, documenting location and species of invasive plants and condition of vegetative and structural treatments.

**Feature Measure:** Area idled from crop production to

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $549.81

**Scenario Cost/Unit:** $274.91

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| **Foregone Income** | | | | | | |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 1 | $245.86 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 1 | $171.19 |
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |

**Practice:** 644 - Wetland Wildlife Habitat Management

**Scenario** #46 - Idling Cropland for Wetland Wildlife - Level 2

**Scenario Description:**

This scenario addresses wildlife habitat management for wetter or more water saturated portions of cropland fields which are valuable source of forage and cover for many waterfowl, shorebird and wading bird species. The cession of cropping and maintenance of hydrology will provide adequate forage and cover in areas where normal cropland production restricts the growth of cover and forage sources. Where this occurs on cropped fields, annual crops will be lost for one growing season (foregone income is included).

**Before Situation:**

Setting is any wetland being 2 acres or less on the National Wetland Inventory with fully intact hydrology. The wetlands must be wholly or partially in cropland. These wetlands are currently cropped, and hydrology could be diverted from the wetland by way of tiling, field or road ditching, diking or any other feature that removes wetland hydrology. These wetter or more water saturated portions of cropland fields have the potential to produce a significant amount of moist soil plants which are valuable source of forage and cover for many waterfowl, shorebird and wading bird species. Under normal cropland production, the native vegetation is restricted on these sites through mechanical and/or chemical control. The current system provides little to no wildlife habitat with habitat limiting factors such as quality, quantity and continuity of forage, cover, shelter and space being identified. Drainage could also result in inadequate wildlife water and inadequate habitat.

**After Situation:**

The planning unit is adequately covered with annual (non-persistent) vegetation. The cession of cropping and maintenance of hydrology provides adequate forage and cover in areas where normal cropland production restricts the growth of cover and forage sources. Monitoring assures hydrology is intact and provides wildlife water and habitat. Acres will be assessed and score 0.5 or greater as both Wetlands and Cropland on the Wildlife Habitat Evaluation Guide. Monitoring will be used to determine if the hydrology remains intact and cover is adequate and free of invasive weed species. Examples of monitoring include but are not limited to: photo points with comparisons to surrounding wetlands, use documentation by livestock, regeneration or breeding success, completing an annual management records log, documenting wildlife sightings, documenting location and species of invasive plants and condition of vegetative and structural treatments.

**Feature Measure:** Area idled from crop production to

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $563.02

**Scenario Cost/Unit:** $281.51

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 2 | $26.42 |
| **Foregone Income** | | | | | | |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 1 | $245.86 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 1 | $171.19 |
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |

**Practice:** 644 - Wetland Wildlife Habitat Management

**Scenario** #47 - Monitoring and Management - Level 3

**Scenario Description:**

This scenario applies to cropped wetlands, two acres or less in size identified on the National Wetland Inventory, with intact hydrology, currently cropped (typically in a corn-wheat-soybean rotation) and lacking adequate food and cover for migratory water fowl during critical periods. The inadequate wildlife habitat resource concern can be addressed by allowing EXISTING annual vegetation (crops or other annual vegetation) to establish and persist during critical nesting and brood rearing seasons. Annual crops may be lost for one growing season.

**Before Situation:**

Existing habitat is a cropped wetland, lacking wildlife food and cover during the cropping season. Normal seeding and/or harvest occurs about 30% of the time. Excess wetness during the early planting season in the remaining years often cause ag producers to seed these small areas after the initial seeding date resulting in soil compaction, reduced hydrology, and limited crop success. As these areas are intermingled with upland, managing as a separate land use is unfeasible. Monitoring (with supporting photo documentation) and a State-approved Wildlife Habitat Evaluation Guide confirms an inadequate wildlife habitat resource concern exists.

**After Situation:**

Agricultural crop or annual vegetation will be allowed to persist providing food and cover essential for migratory birds. Crops and annual vegetation will not be harvested during the primary nesting season as identified by the habitat evaluation guide. This allows for successful nesting and brood rearing. The Wildlife Habitat Evaluation Guide documents an increase in planning criteria (and at a minimum meet planning criteria) for the inadequate wildlife habitat resource concern. Monitoring (with supporting photo documentation) demonstrates wildlife habitat has been improved to levels consistent with management goals/objectives, as well as observed use of the wetland habitat by wildlife.

**Feature Measure:** NWI for sizing

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $411.49

**Scenario Cost/Unit:** $205.74

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Foregone Income** | | | | | | |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.7 | $172.10 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.7 | $119.83 |
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |

**Practice:** 645 - Upland Wildlife Habitat Management

**Scenario** #6 - Honeybee Habitat Multi Species Mix with Monitoring and Foregone Income

**Scenario Description:**

Setting is cropland with the potential to provide foraging habitat for European honey bees and the decision of the land user is to forgo planting of corn, soybeans or wheat for this year to benefit the bee. Safe honey bee forage will be provided during the summer under this scenario. This scenario will include the planting of a multi-specie annual mixture for honey bee forage. Monitoring will be used to determine if the goal of providing safe forage for the honey bee is being met. Monitoring will involve measuring the use of different flowering species by honey bees and native pollinators, per NRCS monitoring guidelines.

**Before Situation:**

Corn, soybeans and wheat fields planted continuously or in rotation with other grain crops. Insects, fungi and flowering weeds are managed with the use of periodic application of pesticides, without regard to the honey bee. Minimal forage and cover habit is available to native pollinators and other wildlife.

**After Situation:**

In lieu of planting the area to grain, this area will be planted to a mixture of multi species annuals for honey bee forage this year. Application of pesticides will not be applied during the flowering season. These area will provide safe honey bee forage for a maximum period of time during the growing season, resulting in improved hive health and improved forage and cover habitat for associated wildlife. Monitoring data is used to assist in adaptive management decisions such as pesticide spraying timing and termination of planting following flowering to maximize benefits to the honeybee and minimize risks to the health of the bee associated with pesticide applications.

**Feature Measure:** Acres Managed and Monitored

**Scenario Unit:** Acres

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $27,315.41

**Scenario Cost/Unit:** $341.44

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 80 | $1,767.20 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 26.7 | $7,835.12 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 26.7 | $6,564.46 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 26.6 | $4,553.65 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 38 | $1,155.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 18 | $860.58 |
| **Materials** | | | | | | |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 80 | $4,579.20 |

**Practice:** 645 - Upland Wildlife Habitat Management

**Scenario** #7 - Honeybee Monitoring

**Scenario Description:**

Setting is land with cover that has the potential to provide foraging habitat for European honey bees. Safe honey bee forage will be provided and managed throughout the summer. Monitoring will be used to determine if the goal of providing safe forage for the honey bee is being met. Monitoring will involve measuring the use of different flowering species by honey bees and native polinators, per NRCS monitoring guidelines.

**Before Situation:**

Insects, fungi and flowering weeds are managed with the use of periodic application of pesticides, without regard to the honey bee. Minimal forage and cover habit is available to native pollinators and other wildlife.

**After Situation:**

This area will be managed honey bee forage. Application of pesticides will not be applied during the flowering season. These area will provide safe honey bee forage for a maximum period of time during the growing season, resulting in improved hive health and improved forage and cover habitat for associated wildlife. Monitoring data is used to assist in adaptive management decisions such as pesticide spraying timing and termination of planting following flowering to maximize benefits to the honeybee and minimize risks to the health of the bee associated with pesticide applications.

**Feature Measure:** Acres Managed and Monitored

**Scenario Unit:** Acres

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $2,015.78

**Scenario Cost/Unit:** $25.20

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 38 | $1,155.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 18 | $860.58 |

**Practice:** 645 - Upland Wildlife Habitat Management

**Scenario** #32 - Establishment of seasonal wildlife forage or cover on cropland, no FI

**Scenario Description:**

This typical scenario occurs on cropland. The habitat assessment identified the need to provide seasonal forage or cover for target wildlife species or guild. This habitat need will be met through the establishment of annual food plants or cover plants by planting of seed. The typical scenario for seasonal forage or cover will be established outside of crop season, thus FI is not needed. Seedbed preparation (light tillage) will be furthered by firming the seed bed by cultipacking the site. The only fertilizer need is N as this is cropland and P and K levels are sufficient. Cropland, so mobilization of equipment not needed.

**Before Situation:**

Cropland that fails to provided food or cover for target species at the proper location and season to meet the needs of wildlife.

**After Situation:**

The availability of high-quality seasonal forage or seasonal cover for the target wildlife species is provided. Target wildlife health is improved and populations are increased.

**Feature Measure:** acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $1,191.20

**Scenario Cost/Unit:** $119.12

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 10 | $132.10 |
| Fertilizer, ground application, dry bulk | 950 | Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $7.54 | 10 | $75.40 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 10 | $220.90 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 10 | $94.40 |
| **Materials** | | | | | | |
| Nitrogen (N), Ammonium Sulfate | 70 | Price per pound of N supplied by Ammonium Sulfate. Price is not per pound of total product applied, no conversion is needed. | Pound | $1.60 | 60 | $96.00 |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 10 | $572.40 |

**Practice:** 645 - Upland Wildlife Habitat Management

**Scenario** #310 - Interseeding Milkweed Into Existing Habitat

**Scenario Description:**

Inter-seeding milkweed into an existing stand of vegetation that has sufficient nectar plant richness and distribution, but lacks reproductive habitat (milkweed is lacking). Existing vegetation will be treated with herbicides in strips. Entire area will be burned or mowed prior to application of herbicides to 6-10 foot wide strips. Drilling of milkweed will be in the treated (herbicide strips). Seeding in strips will be 25% of the field.

**Before Situation:**

An open field that may support enough forb species richness, abundance and distribution to provide good or excellent monarch nectaring habitat, but milkweed is lacking. These conditions fail to meet the limiting factor for monarchs as required to meet Upland Wildlife Habitat (654) as reproductive habitat is identified as the limiting factor for this species. Application of the Monarch WHEG finds the habitat quality rating to be poor or fair.

**After Situation:**

The open field supports good or excellent monarch reproductive habitat. Application of the Monarch WHEG finds the habitat quality rating to be good or excellent.

**Feature Measure:** acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 5.00

**Scenario Total Cost:** $854.49

**Scenario Cost/Unit:** $170.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 5 | $31.45 |
| Mechanical weed control, Vegetation termination | 957 | Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs. | Acres | $22.43 | 5 | $112.15 |
| Seeding Operation, No Till/Strip Till Planter | 1230 | No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor. | Acres | $27.29 | 5 | $136.45 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1.25 | $20.85 |
| Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability | 2619 | Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping. | Acres | $442.87 | 1.25 | $553.59 |

**Practice:** 647 - Early Successional Habitat Development-Mgt

**Scenario** #1 - Mowing

**Scenario Description:**

This scenario addresses inadequate habitat for fish and wildlife where succession is set back by mowing short, herbaceous vegetation prior to using another treatment, to create early successional habitat (disking, herbicide application, etc.). Mowing can be used to increase structural diversity by creating areas of shorter vegetation preferred by some species or during certain life stages of species. The typical setting for this scenario is at the edge of crop fields, in pastures, at the edge of woodlands or brushy areas, and in odd areas such as pivot corners. Where additional chemical control of weeds, including invasives grasses, 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, or 550, Range Planting. Where the need is to create early successional habitat within or at the edge of a woodland or forest use conservation practice 666, forest stand improvement, to remove trees.

**Before Situation:**

The site is static or trending to a later successional plant community. The disturbance regime to maintain an earlier successional plant community is lacking. Pastures are often monotypic, lacking in diversity. Competition for sunlight from dense grass stands prevents seedling establishment. Stands are often dense and inhibit the movements of young wildlife such as game bird chicks. Area lacks diversity in the height of vegetation.

**After Situation:**

Early successsional habitat created or maintained. Mowing has provided more sunlight for forb establishment or has prepared the site for another treatment (disking, herbicide application, etc.). Typically, mowing, by itself, is not an effective tool for the creation of early successional habitat unless the site already contains features such as bare ground, low litter, above average diversity of forbs, etc. The heterogeneity of the habitat structure has been increased.

**Feature Measure:** width and length of treated area

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $242.56

**Scenario Cost/Unit:** $12.13

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 3 | $95.46 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 5 | $147.10 |

**Practice:** 647 - Early Successional Habitat Development-Mgt

**Scenario** #2 - 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 creating 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, or 666, forest stand improvement, 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 planting is required, use conservation practice 550, range seeding, or 327, Conservation Cover. Where the need is to create early successional habitat within or at the edge of woodland or forest, use conservation practice 666, forest stand improvement, to remove trees.

**Before 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 such as game bird chicks.

**After 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 openess of the plant community that allows chicks to negotiate the terrain and exploit those food resources.

**Feature Measure:** width and length of treated area

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $599.10

**Scenario Cost/Unit:** $29.96

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Primary | 946 | Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs. | Acres | $19.97 | 30 | $599.10 |

**Practice:** 647 - Early Successional Habitat Development-Mgt

**Scenario** #3 - Chemical

**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 creating 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, or 666, forest stand improvement, 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 planting is required, use conservation practice 550, range seeding, or 327, Conservation Cover. Where the need is to create early successional habitat within or at the edge of woodland or forest, use conservation practice 666, forest stand improvement, to remove trees.

**Before 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 such as game bird chicks. The site may need to be "pre-treated" with mowing or a prescribed burn (338) in order to make the herbicide more effective.

**After 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 openess of the plant community that allows chicks to negotiate the terrain and exploit those food resources.

**Feature Measure:** width and length of treated area

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $571.20

**Scenario Cost/Unit:** $28.56

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 6 | $134.88 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 20 | $333.60 |

**Practice:** 649 - Structures for Wildlife

**Scenario** #5 - Escape Ramp

**Scenario Description:**
Retrofit an existing watering trough/tank with an appropriately designed and installed wildlife escape ramp to reduce wildlife mortality and maintain water quality within the watering facility. The typical size range for this scenario is 4 watering facilities retrofitted to include an escape ramp (2 ramps per tank).

**Before Situation:**
Existing watering facilities lack escape potential for wildlife. This results in death of the small wildlife accessing the facility for water, and resulting poor water quality as the animal decays.

**After Situation:**
Watering facilities provide wildlife safe access. Water quality is improved within the watering facility and wildlife mortality is reduced.

**Feature Measure:** Each Ramp

**Scenario Unit:** Each

**Scenario Typical Size:** 8.00

**Scenario Total Cost:** $739.60

**Scenario Cost/Unit:** $92.45

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 5 | $112.40 |
| **Materials** | | | | | | |
| Wildlife Escape Ramp | 242 | Pool size 15' x 30', for small mammals less than one pound. | Each | $78.40 | 8 | $627.20 |

**Practice:** 649 - Structures for Wildlife

**Scenario** #6 - Fence Markers, Vinyl Undersill

**Scenario Description:**

Existing fences are retrofitted with vinyl markers that increase wire visibility and reduce mortality due to collision for wildlife species of concern. Markers are installed on the top and third wires according to state standards. Scenario is typically implemented along fences in potential high risk areas (red areas in SGI Fence Collision Risk Model) or where a known problem exists. The typical size range for this scenario is 1 mile of fence.

**Before Situation:**

Wire fences located in high risk areas pose a collision threat to wildlife of special concern.

**After Situation:**

Fence related mortality of species of special concern is reduced.

**Feature Measure:** feet of fence marked

**Scenario Unit:** Feet

**Scenario Typical Size:** 5,280.00

**Scenario Total Cost:** $928.32

**Scenario Cost/Unit:** $0.18

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 2 | $38.56 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| **Materials** | | | | | | |
| Vinyl Undersill Strips | 241 | Marking material using the undersill strips of vinyl siding. Priced per foot of fence per each wire. Materials only. | Feet | $0.08 | 10560 | $844.80 |

**Practice:** 649 - Structures for Wildlife

**Scenario** #47 - Perch Deterrent

**Scenario Description:**

Existing structures or fabricated windbreaks are retrofitted with perch deterrents that decrease areas for predator perches. Decrease mortality of wildlife species of concern. Perch deterrent are installed on top of structures or on top of fabricated windbreak. Scenario is typically implemented on structures in priority areas for Sage Grouse.

**Before Situation:**

Structures and fabricated windbreaks create perches for predators that target wildlife species of concern.

**After Situation:**

Predator threat for mortality of the special species of concern is reduced.

**Feature Measure:** Linear Feet

**Scenario Unit:** Linear Feet

**Scenario Typical Size:** 160.00

**Scenario Total Cost:** $1,552.33

**Scenario Cost/Unit:** $9.70

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| **Materials** | | | | | | |
| Predator Guard | 1461 | Predator guards (i.e. stove pipes, cone, hole guard, etc.) for habitat boxes. Materials only. Includes material and shipping only. | Each | $45.11 | 15 | $676.65 |
| Lumber, planks, posts and timbers, untreated, rot resistant | 1612 | Untreated dimension lumber with nominal thickness greater than 2 inches, milled from rot resistant species such as cedar. Includes lumber and fasteners. Does not include labor. | Board Feet | $4.59 | 160 | $734.40 |

**Practice:** 654 - Road/Trail/Landing Closure and Treatment

**Scenario** #15 - Road/Trail/Landing Closure and Treatment, <35% hillslope

**Scenario Description:**

The practice includes permanent road/trail/landing closure, treatment, or removal and to hydrologically reconnect the hillslope to applicable drainage networks. The treatment will prohibit future access. The typical scenario includes decommissioning a 500 ft of an 18-foot wide trail/road with a landing on 30% forest slopes, using heavy equipment such as a bulldozer or similar equipment (excavator or road grader with ripper) to re-shape and obliterate the road base and landings in order to re-establish native cool season vegetation. It also includes restoring hydrology with the removal of culverts and drainage fills. Necessary erosion control measures such as water bars are installed. Some hand-work may be necessary to clear the site for the equipment. The work will be supervised by a consultant forester, land manager, or other resource professional. Tree/Shrub Site Prep is not included, however, Tree/Shrub Planting is recommended. When completed, there is no additional maintenance with heavy equipment needed. This practice addresses one or more resource concerns: Excessive sediment in surface waters and Concentrated flow erosion. Since not all segments of the road/trail system may require this level of treatment, this scenario applies only to those segments that are causing the resource concerns.

**Before Situation:**

The legacy trail/road is severely affecting wetlands, riparian areas, slope stability, water quality and possibly T&E species. The trail/road can no longer serve it's intended use and is incapable of handling needed equipment and traffic. Alternative access is possible. Therefore abandonment and site restoation are the best approaches to address the resource concerns and problems that are being created.

**After Situation:**

The resource concerns are addressed by the abandonment of the road and its drainage elements, and by re-seeding to native grasses.

**Feature Measure:** length

**Scenario Unit:** Feet

**Scenario Typical Size:** 500.00

**Scenario Total Cost:** $3,215.13

**Scenario Cost/Unit:** $6.43

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 6 | $458.28 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 3 | $390.06 |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 4 | $27.68 |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Seeding Operation, Broadcast, Ground | 959 | Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs. | Acres | $12.75 | 1 | $12.75 |
| Water Bars | 1500 | Installation of graded trail water controlling structures such as water bars, broad based dips for erosion control. Typical cross section is 1.5 feet high with 4:1 side slopes yielding about 0.33 CY/ft of length. | Feet | $3.12 | 225 | $702.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 6 | $210.78 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Low Density | 2750 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $126.91 | 1 | $126.91 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 654 - Road/Trail/Landing Closure and Treatment

**Scenario** #16 - Road/Trail removal and restoration (Vegetative)

**Scenario Description:**

Minimal re-shaping to natural conditions using light equipment and the establishment of permanent vegetation. This scenario includes using smaller equipment (ag tractor/skidsteer/small dozer/backhoe/) for the installation of water control devices such as water bars and rolling dips, controlling access, and pulling drainages on 500 feet of 12' wide road on 5%-35% hill slopes and little grade. The site is re-vegetated to permanent improved grass and temporarily protected with a thin layer of hay mulch. Soil amendments are applied as per the FOTG guidance. This practice addresses one or more resource concerns: Excessive sediment in surface waters, Wildlife habitat degradation, and Concentrated flow erosion. Since not all segments of the road/trail system may require this level of treatment, this scenario applies only to those segments that are causing the resource concerns.

**Before Situation:**

Legacy trail/road is not necessary and is affecting wetlands, riparian areas, water quality, and possibly T&E species. The trail/road can no longer serve it's intended use and is incapable of handling needed equipment and traffic. Alternative access was possible. Therefore abandonment and site restoration are the best approaches to address the resource concerns and problems that are being created.

**After Situation:**

The re-vegetated, eliminated road addressed the resource concern.

**Feature Measure:** length of landing/trail(s)

**Scenario Unit:** Feet

**Scenario Typical Size:** 500.00

**Scenario Total Cost:** $1,499.92

**Scenario Cost/Unit:** $3.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Skidsteer, 80 HP | 933 | Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $60.12 | 1 | $60.12 |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Tillage, Primary | 946 | Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs. | Acres | $19.97 | 1 | $19.97 |
| Fertilizer, ground application, dry bulk | 950 | Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $7.54 | 1 | $7.54 |
| Lime application | 953 | Lime application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $12.33 | 1 | $12.33 |
| Seeding Operation, Broadcast, Ground | 959 | Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs. | Acres | $12.75 | 1 | $12.75 |
| Water Bars | 1500 | Installation of graded trail water controlling structures such as water bars, broad based dips for erosion control. Typical cross section is 1.5 feet high with 4:1 side slopes yielding about 0.33 CY/ft of length. | Feet | $3.12 | 100 | $312.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 6 | $134.88 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 2 | $58.84 |
| **Materials** | | | | | | |
| Nitrogen (N), Ammonium Nitrate | 69 | Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.98 | 15 | $14.70 |
| Phosphorus, P2O5 | 73 | Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.67 | 10 | $6.70 |
| Potassium, K2O | 74 | K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.56 | 10 | $5.60 |
| Lime, ENM | 75 | Fertilizer: Limestone Spread on field. | Ton | $84.28 | 1 | $84.28 |
| Straw | 1237 | Small grain straw (non organic and certified organic). Includes materials only. | Ton | $107.37 | 1 | $107.37 |
| Native Perennial Grasses, Low Density | 2750 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $126.91 | 1 | $126.91 |

**Mobilization**

| | | | | | | |
|---|---|---|---|---|---|---|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** 656 - Constructed Wetland

**Scenario** #1 - Medium, 0.5 ac or less

**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 for a medium site (i.e. 0.5 ac or less). 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)

**Before Situation:**

Contaminated agricultural runoff causes excess ponding and/or water quality degradation.

**After Situation:**

A 0.25 acre constructed wetland (i.e. 45' x 240') will be constructed with an average 18" depth. Only the earthwork and wetland vegetation are considered in this scenario. Any structures or sediment basins will be designed under a separate practice. The constructed wetland site is near the property boundary, but still takes cropland out of production (1/2 wetland acreage). The constructed wetland treats the influent by reducing excess nutrients and adding oxygen through wetland plants and functions before the effluent is transported to a waste storage facility or discharged off site, if permitted by regulation.

**Feature Measure:** Area of Constructed Wetland

**Scenario Unit:** Acres

**Scenario Typical Size:** 0.25

**Scenario Total Cost:** $3,673.16

**Scenario Cost/Unit:** $14,692.63

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Clearing and Grubbing | 40 | Clearing and Grubbing, includes materials, equipment and labor | Acres | $296.87 | 0.25 | $74.22 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 200 | $170.00 |
| Excavation, common earth, small equipment, 50 ft | 1220 | Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor. | Cubic Yards | $2.65 | 400 | $1,060.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 14 | $314.72 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 2 | $31.46 |
| Test, Plant Tissue Test | 301 | Tissue analysis for crops. Includes materials and shipping only. | Each | $24.50 | 1 | $24.50 |
| Test, Standard Water Test, Well Water | 309 | Well Water Suitability test. Includes materials and shipping only. | Each | $50.05 | 8 | $400.40 |
| Native Aquatic Plants, Emergent or Submerged | 2336 | Native aquatic emergent or submerged. All required materials for establishing vegetation. Includes material and shipping. | Each | $0.99 | 1350 | $1,336.50 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 656 - Constructed Wetland

**Scenario** #2 - Large, 0.5 to 1.0 ac.

**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 for a large site (i.e. >0.5 ac). 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).

**Before Situation:**

Contaminated agricultural runoff causes excess ponding and/or water quality degradation.

**After Situation:**

A 1.0 acre wetland (i.e. 95' x 460') will be constructed with an average 18" depth. Only the earthwork and wetland vegetation are considered in this scenario. Any structures or sediment basins will be designed under a separate practice. The constructed wetland site is near the property boundary, but still takes cropland out of production (1/2 wetland acreage). The constructed wetland treats the influent by reducing excess nutrients and adding oxygen through wetland plants and functions before the effluent is transported to a waste storage facility or discharged off site, if permitted by regulation.

**Feature Measure:** Area of Constructed Wetland

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $10,393.30

**Scenario Cost/Unit:** $10,393.30

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Clearing and Grubbing | 40 | Clearing and Grubbing, includes materials, equipment and labor | Acres | $296.87 | 1 | $296.87 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 809 | $687.65 |
| Excavation, common earth, small equipment, 50 ft | 1220 | Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor. | Cubic Yards | $2.65 | 1619 | $4,290.35 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 37 | $831.76 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 2 | $31.46 |
| Test, Plant Tissue Test | 301 | Tissue analysis for crops. Includes materials and shipping only. | Each | $24.50 | 1 | $24.50 |
| Test, Standard Water Test, Well Water | 309 | Well Water Suitability test. Includes materials and shipping only. | Each | $50.05 | 8 | $400.40 |
| Native Aquatic Plants, Emergent or Submerged | 2336 | Native aquatic emergent or submerged. All required materials for establishing vegetation. Includes material and shipping. | Each | $0.99 | 3605 | $3,568.95 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 656 - Constructed Wetland

**Scenario** #3 - Large, more than 1.0 ac.

**Scenario Description:**

This practice scenario includes the basic earthwork needed to create a constructed wetland to improve water quality for a large site (i.e. >1.0ac). 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. 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).

**Before Situation:**

Contaminated agricultural runoff causes excess ponding and/or water quality degradation.

**After Situation:**

A 1.25 acre wetland (i.e. 110' x 500') will be constructed with an average 12" depth. Only the earthwork is considered in this scenario. Any structures or sediment basins will be designed under a separate practice. The constructed wetland site iz near the property boundary, but still takes cropland out of production (1/2 wetland acreage). The constructed wetland treats the influent by reducing excess nutrients and adding oxygen through wetland plants and functions before the effluent is discharged off site.

**Feature Measure:** Area of Constructed Wetland

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,775.68

**Scenario Cost/Unit:** $9,775.68

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Clearing and Grubbing | 40 | Clearing and Grubbing, includes materials, equipment and labor | Acres | $296.87 | 1.25 | $371.09 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 1020 | $867.00 |
| Excavation, common earth, small equipment, 50 ft | 1220 | Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor. | Cubic Yards | $2.65 | 1020 | $2,703.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 46 | $1,034.08 |
| **Materials** | | | | | | |
| Native Aquatic Plants, Emergent or Submerged | 2336 | Native aquatic emergent or submerged. All required materials for establishing vegetation. Includes material and shipping. | Each | $0.99 | 4585 | $4,539.15 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 657 - Wetland Restoration

**Scenario** #1 - Fill in dugout

**Scenario Description:**

Restoring a wetland to its original condition by filling a dugout. Typical size is approximately 1,000 cu. yd. and 1 1/2 acres of land restored. 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 Situation:**

The site has a constructed dugout with spoil. A suitable seed bank exists for natural regeneration to re-establish hydrophytic vegetation. The site is grazed.

**After Situation:**

The dugout has been filled, allowing the wetland to function in its original state. 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. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

**Feature Measure:** Cubic Yards of Material Placed

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $3,889.00

**Scenario Cost/Unit:** $3.89

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic Yards | $3.39 | 1000 | $3,390.00 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 657 - Wetland Restoration

**Scenario** #2 - Depression Sediment Removal

**Scenario Description:**

A Depressional HGM (Hydrogeomorphic approach to classifying the seven types of wetlands as defined by Brinson, 1993) class wetland is to be restored by removing sediment. The typical size of sediment removal is 1 acre. 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 Situation:**

The wetland has been converted to agricultural production, and the tract may or may not be drained with a surface ditch. The watershed has been converted from a native to an agricultural landuse, and the resultant soil erosion has deposited an average of 9 inches of sediment in the bottom of the depression.

**After Situation:**

The deposition has been removed down to the original topsoil layer. A herbaceous plant community has been seeded. Facilitative practices include 327-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. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

**Feature Measure:** Cubic Yards of Excavation

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 1,613.00

**Scenario Total Cost:** $6,063.85

**Scenario Cost/Unit:** $3.76

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, common earth, large equipment, 1500 ft | 1221 | Bulk excavation of common earth including sand and gravel with scrapers with average haul distance of 1500 feet. Includes equipment and labor. | Cubic Yards | $3.45 | 1613 | $5,564.85 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 657 - Wetland Restoration

**Scenario** #4 - Ditch plug - Lateral Restoration

**Scenario Description:**

A Depressional HGM class wetland (Hydrogeomorphic approach to classifying the seven types of wetlands as defined by Brinson, 1993) is to be restored by filling in the drainage ditch. 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 Situation:**

The wetland has been converted to agricultural production, and the tract has been drained with a surface ditch. The watershed has been converted from a native to an agricultural landuse.

**After Situation:**

The drain has been closed by lateral restoration. The ditch has been filled for a distance determined by the permeability of the soil. The earthfill is done with compactive effort. Facilitative practices include 327-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. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

**Feature Measure:** Cubic Yards of Earthfill

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 111.00

**Scenario Total Cost:** $935.23

**Scenario Cost/Unit:** $8.43

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 111 | $436.23 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 658 - Wetland Creation

**Scenario** #1 - Wetland Creation, Excavation

**Scenario Description:**

A wetland is created on a flat mineral upland at a location where surface runoff may be intercepted and ponded by excavation. The wetland is created by excavating a depression. Resource concern is 22 - INDEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

**Before Situation:**

The site is in cropland on an upland, non floodplain site (interfluve).

**After Situation:**

An excavation with an average depth of 24" 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. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

**Feature Measure:** Cubic Yards of Excavation

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 1,613.00

**Scenario Total Cost:** $4,370.20

**Scenario Cost/Unit:** $2.71

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 1613 | $3,871.20 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 1 | $499.00 |

**Practice:** 658 - Wetland Creation

**Scenario** #3 - Excavation and Embankment

**Scenario Description:**

A wetland is created on a flat mineral upland at a location where surface runoff may be intercepted and ponded by excavation. The wetland is created by excavating a depression and building a dike to intercept runoff. Resource concern is 22 - INDEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

**Before Situation:**

The site is in cropland on an upland, non floodplain site (interfluve).

**After Situation:**

An excavation with an average depth of 24" has created a shallow depression in a broad swale which intercepts surface runoff. The excavated material has been spread on adjacent areas. A dike is also constructed at the site with a 8' topwidth, 3:1 sideslopes, 2' fill height for 200'. 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. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

**Feature Measure:** Cubic Yards of Earth Moved

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 1,613.00

**Scenario Total Cost:** $6,873.11

**Scenario Cost/Unit:** $4.26

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 207 | $813.51 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 1406 | $5,061.60 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 659 - Wetland Enhancement

**Scenario** #1 - Excavation

**Scenario Description:**

A Depressional HGM class wetland (Hydrogeomorphic approach to classifying the seven types of wetlands as defined by Brinson, 1993) 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 Situation:**

The wetland has been converted to agricultural production, and the wetland has lost size and storage volume from accumulated sediments. The wetland receives surface runoff from an adjacent upland watershed, and ponds water on a shallow perched layer. The watershed has been converted from a native to an agricultural landuse, and the resultant soil erosion has deposited 6" of sediment in the bottom of the depression.

**After Situation:**

Any deposited sediment has been excavated and the depth ofthe wetland has been increased to add storage volume. A herbaceous plant community has been seeded. Facilitative practices include 327-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. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

**Feature Measure:** Cubic Yards of Excavation

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 8,067.00

**Scenario Total Cost:** $20,358.80

**Scenario Cost/Unit:** $2.52

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 8067 | $19,360.80 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 659 - Wetland Enhancement

**Scenario** #3 - Depression Sediment Removal and Ditch Plug

**Scenario Description:**

A Depressional HGM class wetland (Hydrogeomorphic approach to classifying the seven types of wetlands as defined by Brinson, 1993) 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 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' 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 a native to an agricultural landuse, and the resultant soil erosion has deposited 6" of sediment in the bottom of the depression.

**After 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 327-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. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

**Feature Measure:** Cubic Yards of Earth Moved

**Scenario Unit:** Cubic Yards

**Scenario Typical Size:** 8,317.00

**Scenario Total Cost:** $21,341.30

**Scenario Cost/Unit:** $2.57

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic Yards | $2.40 | 8067 | $19,360.80 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic Yards | $3.93 | 250 | $982.50 |
| **Mobilization** | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | $499.00 | 2 | $998.00 |

**Practice:** 666 - Forest Stand Improvement

**Scenario** #3 - Timber Stand Improvement, Chemical, Ground

**Scenario Description:**
Using ground applied chemicals to release young desirable trees from competing and/or overtopping vegetation. Resource concerns include: Undesirable plant productivity and health, and Wildlife habitat degradation.

**Before Situation:**
An adequately stocked stand of desirable species and trees is not growing to its potential for the site due to severe competition from undesirable trees and brush. Releasing the desirable trees from the competition will be achieved through the application of appropriate herbicides according to label directions. Application will be by ground equipment as an over-the-top spray.

**After Situation:**
The released stand of trees contains the composition and quality needed to meet the landowner's objectives and address the resource concerns.

**Feature Measure:** Acres treated

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $2,375.60

**Scenario Cost/Unit:** $59.39

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 40 | $251.60 |
| **Materials** | | | | | | |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 40 | $2,034.40 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 40 | $89.60 |

**Practice:** 666 - Forest Stand Improvement

**Scenario** #6 - Competition Control, Mechanical, Heavy Equipment

**Scenario Description:**

Using equipment such as a masticator or mulcher to control vegetation that is competing with desirable trees and species or to reduce the stocking level of a stand of desirable trees. The trees to be retained will be marked by a consultant. Resource concerns include Undesirable plant productivity and health; Wildlife habitat degradation; Wildfire hazard; and Inadequate structure and composition.

**Before Situation:**

A stand of desirable trees is adversely affected by competition either from undesirable species, cull trees, or because the stand is overstocked. The vegetation to be controlled is too large to be mowed or shredded. Therefore other mechanical methods such as using masticators or mulchers is necessary.

**After Situation:**

The released stand of trees contains the composition and quality needed to meet the landowner's objectives and address the resource concerns.

**Feature Measure:** Area treated

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $6,392.61

**Scenario Cost/Unit:** $639.26

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 30 | $3,216.30 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 30 | $882.60 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 17 | $2,032.35 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** 666 - Forest Stand Improvement

**Scenario** #8 - Thinning for Wildlife and Forest Health

**Scenario Description:**

A combination of hand and chemical treatments used to open the canopy of a stand to improve the wildlife habitat and tree health. Resource concerns include: Inadequate structure and composition, Undesirable plant productivity and health, and Habitat degradation.

**Before Situation:**

The stand of mature trees is overstocked resulting in a closed canopy. This condition is causing a lack of structure, herbaceous layer, and diversity that is needed to meet the landowner's objectives for improved wildlife habitat and forest health. Under the supervision of a consultant forester, it will be marked for thinning and timber stand improvement applications that will include cutting with hand tools (chainsaws) and injection. Costs involved in any commercial harvesting including marking, access, and transportation are not included in this scenario. However the costs involved in marking trees to be treated or left and supervising the TSI work is included.

**After Situation:**

The stand is treated to favor diversity of important commercial and wildlife species. The canopy is opened to the extent necessary to promote herbaceous growth and the work is performed without excessive damage to the residual trees and site.

**Feature Measure:** Acres treated

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $11,682.66

**Scenario Cost/Unit:** $1,168.27

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 60 | $415.20 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 40 | $2,736.00 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 16 | $308.48 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 76 | $1,708.48 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 46 | $5,499.30 |
| **Materials** | | | | | | |
| Tree Marking Paint | 313 | Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only. | Acres | $10.43 | 10 | $104.30 |
| Herbicide, Triazine | 1321 | Broad spectrum herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $91.09 | 10 | $910.90 |

**Practice:** 670 - Energy Efficient Lighting System

**Scenario** #2 - Lighting - LED

**Scenario Description:**

To install dimmable LEDs to replace incandescent lamps on a one-for-one basis. Light fixtures do not have to be replaced. A typical poultry house has 48 fixtures. LED requirements: minimum 6 Watt, 3700 Kelvin, dimmable, grow-out bulb; industrial grade; suitably protected from dirt accumulation. In high humidity environments or areas subject to wash down, gasketted or weatherproof housings are required to prevent corrosion and premature failure.

**Before Situation:**

An inefficient lighting system such as one using incandescent lamps has been identified by an on-farm energy audit.

**After Situation:**

More efficient lighting is provided by Light-Emitting Diode (LED) lamps in order to reduce energy use as evidenced by the energy audit.Associated practices/activities: 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Each lamp replaced

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $11.35

**Scenario Cost/Unit:** $11.35

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 0.17 | $3.82 |
| **Materials** | | | | | | |
| Lighting, bulb, LED, dimmable, minimum 450 lumens | 1167 | Light Emitting Diode (LED), typically 3700 Kelvin, dimmable, grow-out bulb; industrial grade; suitably protected from dirt accumulation. Materials only. | Each | $7.53 | 1 | $7.53 |

**Practice:** 670 - Energy Efficient Lighting System

**Scenario** #5 - Automatic Controller System

**Scenario Description:**

The typical scenario consists of an automatic control system installed on an existing manually controlled agricultural system. Typical components may include any of the following: wiring, sensors, data logger, logic controller, communication link, software, switches, and relay.

**Before Situation:**

A manually controlled system is existing in an agricultural facility that causes the inefficient use of energy, as evidenced by an on-farm energy audit.

**After Situation:**

An on-farm energy audit has determined that energy use can be reduced through use of an automatic controller that helps regulates the energy consumption of the existing system. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Each system

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $477.77

**Scenario Cost/Unit:** $477.77

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| **Materials** | | | | | | |
| Programable LED Dimmer | 2720 | Programable light dimmer/controller for poultry and hog barns - Includes material and shipping only | Each | $356.17 | 1 | $356.17 |

**Practice:** 670 - Energy Efficient Lighting System

**Scenario** #14 - Lighting - Replace Existing Lighting Fixture with General or Low Bay LED Lighting

**Scenario Description:**

To install LED lighting fixtures used to provide ambient lighting levels in indoor or outdoor work areas on a one-for-one basis. Associated materials for installation of replacement fixtures are included. Appropriate disposal of existing lamps, ballasts and other materials is required.

**Before Situation:**

An inefficient lighting system such as one using incandescent lamps has been identified by an on-farm energy audit.

**After Situation:**

More efficient lighting is provided by a Light-Emitting Diode (LED) flood lighting fixture in order to reduce energy use as evidenced by the energy audit. Some examples of general LED lighting fixtures include wall mounted LED wall pack fixtures, low intensity flood or ceiling mounted fixtures. Low bay lighting is typically used when ceilings are 20 feet or less in height. Low bay fixtures usually have diffuser mounted to the bottom of the fixture that serves to spread light over a large area. The typical fixture installed is a 50 watt light emitting diode (LED) with a 5000 Kelvin, 2,481 lumen flood lamp with an industrial grade fixture designed to withstand the environmental conditions where the system is installed. Associated practices/activities: CAP 128 AgEMP and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a CAP 128 Ag EMP or a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Each Fixture replaced

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $169.90

**Scenario Cost/Unit:** $169.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| **Materials** | | | | | | |
| Lighting, Fixture, Flood, LED, typically 4,000-8000 lumens, wet location | 2601 | Light emitting diode (LED) fixture, typical output of 4,000 - 8,000 lumens industrial grade with fixture; wet location; minimum 50,000 hour lifespan. Includes materials only. | Watt | $2.79 | 50 | $139.50 |

**Practice:** 670 - Energy Efficient Lighting System

**Scenario** #15 - Lighting - Replace Existing Lighting Fixture with Linear LED

**Scenario Description:**

"To install low energy linear LED lighting system to replace existing less efficient lighting fixtures on a one-for-one basis. Associated materials for installation of replacement fixtures are included. Appropriate disposal of existing lamps, ballasts and other materials is required. "

**Before Situation:**

An inefficient lighting system such as one using incandescent lamps has been identified by an on-farm energy audit.

**After Situation:**

More efficient lighting is provided by a linear Light-Emitting Diode (LED) fixture in order to reduce energy use as evidenced by the energy audit. The typical fixture installed is a low energy linear LED system which includes lamps and a fixture designed to withstand the environmental conditions where the system is installed. Associated practices/activities: 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a CAP 122-Ag EMP - HQ or a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Each fixture replaced

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $79.97

**Scenario Cost/Unit:** $79.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| **Materials** | | | | | | |
| Lighting, LED (Linear) | 2417 | LED Strip/Shop Light - minimum 4000 Lumens; non-dimmable, dry location, 50,000 hour lifespan or greater. Materials and shipping only. | Each | $49.57 | 1 | $49.57 |

**Practice:** 670 - Energy Efficient Lighting System

**Scenario** #16 - Lighting - Replace Existing Lighting Fixture with High Bay LED

**Scenario Description:**

To install high bay LED lighting system to replace existing less efficient lighting fixtures on a one-for-one basis. Associated materials for installation of replacement fixtures are included. Appropriate disposal of existing lamps, ballasts and other materials is required.

**Before Situation:**

An inefficient lighting system such as one using mercury vapor lighting fixtures has been identified by an on-farm energy audit.

**After Situation:**

More efficient lighting is provided by a Light-Emitting Diode (LED) fixture in order to reduce energy use as evidenced by the energy audit. High bay lighting is typically used when ceilings are 20 - 45 feet in height and where fixtures are mounted at the ceiling height instead of being suspended down to a lower level. High bay fixtures usually have an aluminum or mirror-like reflector which directs light downwards to the floor area or a prismatic reflector to spread light over larger areas. These are needed to ensure that the light reaches floor or working area level where it is needed. The typical fixture installed is a 150 watt light emitting diode (LED) with a 5000 Kelvin, 14,000 lumens lamp with an industrial grade fixture designed to withstand the environmental conditions where the system is installed. Associated practices/activities: CAP 128 AgEMP and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a CAP 128 Ag EMP or a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Each fixture replaced

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $243.59

**Scenario Cost/Unit:** $243.59

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| **Materials** | | | | | | |
| Lighting, Fixture, High Bay, LED, 24,000 lumens, Damp Location | 2602 | LED High Bay Fixture, typically 5000 Kelvin bulb, 24,000 lumens; industrial grade with fixture; suitably protected from dirt accumulation, and damp locations. Minimum lifespan of 50,000 hours. Includes materials only. | Each | $213.19 | 1 | $213.19 |

**Practice:** 670 - Energy Efficient Lighting System

**Scenario** #17 - Lighting - Replace Existing Lighting Fixture with High Intensity LED Flood

**Scenario Description:**

To install LED flood lighting system to replace existing less efficient lighting fixtures on a one-for-one basis. Associated materials for installation of replacement fixtures are included. Appropriate disposal of existing lamps, ballasts and other materials is required.

**Before Situation:**

An inefficient lighting system such as one using incandescent lamps has been identified by an on-farm energy audit.

**After Situation:**

More efficient lighting is provided by a Light-Emitting Diode (LED) flood lighting fixture in order to reduce energy use as evidenced by the energy audit. The typical fixture installed is a 100 watt light emitting diode (LED) with a 5700 Kelvin, 4,000 lumens flood lamp with an industrial grade fixture designed to withstand the environmental conditions where the system is installed. Associated practices/activities: CAP 128 AgEMP and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a CAP 128 Ag EMP or a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** each fixture replaced

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $201.49

**Scenario Cost/Unit:** $201.49

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| **Materials** | | | | | | |
| Lighting, Flood, LED Fixtures, Minimum 12,000 lumens, wet location | 2390 | light emitting diode (LED) flood light and fixture, minimum of 12,000 lumens, minimum lifespan of 50,000 hours; industrial grade with fixture; suitably protected from dirt accumulation and for wet location. Materials only. | Each | $171.09 | 1 | $171.09 |

**Practice:** 672 - Energy Efficient Building Envelope

**Scenario** #1 - Building Envelope - Attic Insulation

**Scenario Description:**

Install a minimum R-7 insulation in addition to existing attic or ceiling to reduce heat transfer. Increased insulation reduces seasonal heat loss and heat gain which reduces the respective need for heating and cooling equipment to operate.

**Before Situation:**

A poultry house with an inefficient building envelope with limited attic insulation.

**After Situation:**

A more effective and efficient building envelope can be created through addition of, or increased, attic insulation. Associated practices/activities: 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Area of Attic Insulated

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 20,000.00

**Scenario Total Cost:** $22,400.00

**Scenario Cost/Unit:** $1.12

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Insulation, Fiberglass or cellulose, R-15 | 1196 | Fiberglass or cellulose insulation R-15, includes materials, equipment and labor to install. | Square Feet | $1.12 | 20000 | $22,400.00 |

**Practice:** 672 - Energy Efficient Building Envelope

**Scenario** #2 - Building Envelope - Wall Insulation

**Scenario Description:**

Enclose both sidewalls and endwalls from ceiling to floor in one of two manners: 1) metal exterior, 3.5" fiberglass batts (R-11), vapor barrier, & interior plywood or OSB sheathing, or 2) closed-cell polyurethane foam application (minimum 1" thickness (R-7) of 2.5 lbs/cu.ft. or higher density, (3.0 or higher density preferred) with a form of physical protective barrier on lower 2' (may be 6 lbs/cu.ft. or higher density 1/8" thick foam, or treated lumber). Based on a 40' x 400' poultry house.

**Before Situation:**

A poultry house with an inefficient building envelope with limited wall insulation.

**After Situation:**

A more effective and efficient building envelope can be created through addition of, or increased, insulation. Associated practices/activities: may include 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Area of Attic Insulated

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 4,500.00

**Scenario Total Cost:** $11,160.00

**Scenario Cost/Unit:** $2.48

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Insulation, Panel, R-11 with sheathing | 1197 | Insulated wall panel typically 3.5 inch fiberglass batts (R-11), vapor barrier and OSB sheathing, or equal, includes materials, equipment and labor to install. | Square Feet | $2.48 | 4500 | $11,160.00 |

**Practice:** 672 - Energy Efficient Building Envelope

**Scenario** #3 - Building Envelope - Sealant

**Scenario Description:**

A typical scenario is sealing the gaps between walls, gables, ceiling, etc. in a poultry house or greenhouse. Sealing is performed by a professional contractor, not merely use of spray foam from a can. The unit basis of payment in this scenario is each house based on 60' x 500' poultry house with an assumed need of sealant to seal 2400 linear feet of gap.

**Before Situation:**

An agricultural facility with an inefficient building envelope with gaps between walls, ceiling, etc. for a total of 2400 linear feet.

**After Situation:**

A more effective and efficient building envelope can be created through interior sealing of the exterior walls at the footer plate, eaves, ridge cap, and gable ends. The sealant reduces seasonal heat loss and heat gain due to infiltration which reduces the respective need for heating and cooling equipment to operate. Associated practices/activities: may include 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Perimeter of heated structure

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,400.00

**Scenario Total Cost:** $4,824.00

**Scenario Cost/Unit:** $2.01

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Materials** | | | | | | |
| Sealant | 1150 | Greenhouse and building gap sealant. Performed by a professional contractor spraying the areas with an approved sealant for poultry production facilities. Includes materials, equipment and labor to install. | Feet | $2.01 | 2400 | $4,824.00 |

**Practice:** 672 - Energy Efficient Building Envelope

**Scenario** #5 - Greenhouse - Insulate Unglazed Walls

**Scenario Description:**

A typical scenario is the installation insulation in green house to address energy loss. The insulation can be either of the cellouse or bubble type (or equivalent). The increased insulation reduces seasonal heat loss and heat gain which reduces the respective need for heating and cooling equipment to operate.

**Before Situation:**

Green house with standard glazing, plastic or polycarbonate walls and no insulation. Heating and cooling of an existing greenhouse is inefficient due to excessive heat loss.

**After Situation:**

The greenhouse is fitted with insulation installed truss-to-truss or gutter-to-gutter and/or non glazed endwalls and/or sidewalls, reducing heat loss and gain in the greenhouse. Associated practices/activities: may include 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Square Feet of insulation

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 25,000.00

**Scenario Total Cost:** $9,736.40

**Scenario Cost/Unit:** $0.39

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 16 | $486.40 |
| **Materials** | | | | | | |
| Insulation, Greenhouse, Reflective Bubble | 2410 | Double bubble reflective insulation with aluminum foil on both sides. Includes materials and shipping only. | Square Feet | $0.37 | 25000 | $9,250.00 |

**Practice:** 672 - Energy Efficient Building Envelope

**Scenario** #58 - Building Envelope - Greenhouse Screens

**Scenario Description:**

The mechanical energy screen system consists of a drive motor, support cables, controls, and shade material, which may be woven, knitted, or non-woven strips of aluminum fiber, polyethylene, nylon or other synthetic material. The screen provides a means to better control solar heat gain and heat transfer during night or cold weather conditions to reduce energy use. Screens and similar devices may also be used to divide internal areas and allow for differentiated heating, ventilation, or cooling system operation to reduce energy use.

**Before Situation:**

Heating and cooling of an existing greenhouse, or similar structure with conditioned spaces, is inefficient due to poorly regulated heat transfer. A need to regulate an entire space for uniform conditions when some portions have differing, intermittent requirements can also reduce efficiency.

**After Situation:**

The greenhouse is fitted with a mechanically controlled energy screen installed truss-to-truss or gutter-to-gutter, with side screens as necessary, reducing heat loss in the greenhouse. Associated practices/activities: may include 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

**Feature Measure:** Area of Screen

**Scenario Unit:** Square Feet

**Scenario Typical Size:** 25,000.00

**Scenario Total Cost:** $77,986.40

**Scenario Cost/Unit:** $3.12

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 16 | $486.40 |
| **Materials** | | | | | | |
| Thermal blanket 10,001 - 50,000 square foot | 1148 | Thermal blanket greenhouse screens: mechanical energy screen system consists of a drive motor, support cables, controls, and shade material, which may be woven, knitted, or non-woven. Size Range is 10,001 to 50,000 square feet. Materials only. | Square Feet | $3.10 | 25000 | $77,500.00 |

**Practice:** 724 - Water Treatment Facility

**Scenario** #1 - Reverse Osmosis

**Scenario Description:**

This scenario consists of installing a Reverse Osmosis unit to treat livestock water that exceeds the recommend maximum water quality criteria for livestock. The system will produce between 300 and 1500 gallons per hour of treated water from an existing water source to below the maximum recommend levels. Payment quantity based on the number of gallons per hour treated water produced by the system. The purpose of this practice is to address resource concerns related to water resources and proper grazing distribution. Scenario is needed where producer has a groundwater well with poor water quality. Potential Associated Practices: Critical Area Planting (342), Fence (382), Heavy Use Area Protection (561), Livestock Pipeline (516), Pumping Plant (533), Water Well (642), Watering Facility (614)

**Before Situation:**

Deep wells can produce water that is either unsuitable for livestock consumption when the well test was completed or are becoming unsuitable after a few years of use.

**After Situation:**

Cooperators see the benefit of the well water for livestock performance, grazing efficiency and grazing distribution which in turn improves soil health by redistributing important nutrients to the soil and improving organic matter implementation by hoof action, increased water infiltration and reduces water erosion on the soil surface.

**Feature Measure:** Treatment Facility

**Scenario Unit:** Gallons per Hour

**Scenario Typical Size:** 900.00

**Scenario Total Cost:** $22,742.27

**Scenario Cost/Unit:** $25.27

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 30 | $674.40 |
| **Materials** | | | | | | |
| Test, Standard Water Test, Well Water | 309 | Well Water Suitability test. Includes materials and shipping only. | Each | $50.05 | 4 | $200.20 |
| Switches and Controls, programmable controller | 1193 | Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $528.75 | 1 | $528.75 |
| Reverse Osmosis unit, fixed cost portion | 2224 | Fixed cost portion of a reverse osmosis unit used for maple syrup processing. Materials only. | Each | $3,240.20 | 1 | $3,240.20 |
| Reverse Osmosis unit, variable cost portion | 2225 | Variable cost portion of a reverse osmosis unit used for maple syrup processing. Materials only. | Gallons per Hour | $19.08 | 900 | $17,172.00 |
| Pump House, Above Ground | 2470 | Above ground prefabricated pump house. Includes material and shipping only. | Each | $926.72 | 1 | $926.72 |

**Practice:** 724 - Water Treatment Facility

**Scenario** #2 - Screen Filtration

**Scenario Description:**

This scenario consists of installing a screen filtration system to treat livestock water that exceeds the recommend maximum water quality criteria for livestock. The system will produce between 300 and 1500 gallons per hour of treated water from an existing water source to below the maximum recommend levels. Payment quantity based on a per each system installed. The purpose of this practice is to address resource concerns related to water resources and proper grazing distribution. Scenario is needed where producer has a groundwater well with poor water quality. Potential Associated Practices: Critical Area Planting (342), Fence (382), Heavy Use Area Protection (561), Livestock Pipeline (516), Pumping Plant (533), Water Well (642), Watering Facility (614)

**Before Situation:**

Deep wells can produce water that is either unsuitable for livestock consumption when the well test was completed or are becoming unsuitable after a few years of use.

**After Situation:**

Cooperators see the benefit of the well water for livestock performance, grazing efficiency and grazing distribution which in turn improves soil health by redistributing important nutrients to the soil and improving organic matter implementation by hoof action, increased water infiltration and reduces water erosion on the soil surface.

**Feature Measure:** Treatment Facility

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,563.43

**Scenario Cost/Unit:** $3,563.43

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 20 | $449.60 |
| **Materials** | | | | | | |
| Test, Standard Water Test, Well Water | 309 | Well Water Suitability test. Includes materials and shipping only. | Each | $50.05 | 4 | $200.20 |
| Pipe, PVC, 3 in., SCH 40 | 977 | Materials: - 3 inch - PVC - SCH 40 - ASTM D1785 | Feet | $4.54 | 50 | $227.00 |
| Switches and Controls, programmable controller | 1193 | Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $528.75 | 1 | $528.75 |
| Micro Irrigation, screen filter, < 100 gpm | 1617 | Screen filter for Micro Irrigation used in small systems. Includes filter. No controls are included or needed. | Each | $95.24 | 4 | $380.96 |
| Filter, effluent, municipal grade | 2063 | Effluent filter rated 8,000 to 10,000 gallons per day with 1/16 to 1/32 inch filtration. Includes materials and shipping only. | Each | $444.23 | 4 | $1,776.92 |

**Practice:** 724 - Water Treatment Facility

**Scenario** #3 - High Temperature Reverse Osmosis

**Scenario Description:**

This scenario consists of installing a Reverse Osmosis unit to treat livestock water that exceeds the recommend maximum water quality criteria for livestock. The system will produce between 300 and 1500 gallons per hour of treated water from an existing high temperature water source to below the maximum recommend levels. Payment quantity based on the number of gallons per hour treated water produced by the system. The purpose of this practice is to address resource concerns related to water resources and proper grazing distribution. Scenario is needed where producer has a groundwater well with poor water quality. Potential Associated Practices: Critical Area Planting (342), Fence (382), Heavy Use Area Protection (561), Livestock Pipeline (516), Pumping Plant (533), Water Well (642), Watering Facility (614)

**Before Situation:**

Deep wells can produce water that is either unsuitable for livestock consumption when the well test was completed or are becoming unsuitable after a few years of use.

**After Situation:**

Cooperators see the benefit of the well water for livestock performance, grazing efficiency and grazing distribution which in turn improves soil health by redistributing important nutrients to the soil and improving organic matter implementation by hoof action, increased water infiltration and reduces water erosion on the soil surface.

**Feature Measure:** Treatment Facility

**Scenario Unit:** Gallons per Hour

**Scenario Typical Size:** 900.00

**Scenario Total Cost:** $58,961.89

**Scenario Cost/Unit:** $65.51

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| **Materials** | | | | | | |
| Test, Standard Water Test, Well Water | 309 | Well Water Suitability test. Includes materials and shipping only. | Each | $50.05 | 4 | $200.20 |
| Plate Cooler, 750 - 999 gal/hr capacity | 1178 | Stainless Steel, dual pass plate cooler with 750 - 999 gallon/hour capacity. Includes materials and shipping only. | Each | $35,994.82 | 1 | $35,994.82 |
| Switches and Controls, programmable controller | 1193 | Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $528.75 | 1 | $528.75 |
| Reverse Osmosis unit, fixed cost portion | 2224 | Fixed cost portion of a reverse osmosis unit used for maple syrup processing. Materials only. | Each | $3,240.20 | 1 | $3,240.20 |
| Reverse Osmosis unit, variable cost portion | 2225 | Variable cost portion of a reverse osmosis unit used for maple syrup processing. Materials only. | Gallons per Hour | $19.08 | 900 | $17,172.00 |
| Pump House, Above Ground | 2470 | Above ground prefabricated pump house. Includes material and shipping only. | Each | $926.72 | 1 | $926.72 |

**Practice:** B000BFF1 - Buffer Bundle#1

**Scenario** #1 - Buffer Bundle#1

**Scenario Description:**
Addresses water quality degradation, degraded plant condition, fish/wildlife inadequate habitat, and/or air quality impacts.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 3.00

**Scenario Total Cost:** $9,161.59

**Scenario Cost/Unit:** $3,053.86

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 8 | $205.44 |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 7 | $44.03 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 6 | $168.90 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 10 | $192.80 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 1 | $9.44 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 10 | $128.10 |
| Mechanical tree planter | 1600 | Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor. | Hours | $6.09 | 6 | $36.54 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 1.23 | $360.94 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 1.08 | $265.53 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.69 | $118.12 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 6 | $176.52 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 6 | $286.86 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 5 | $83.40 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 5 | $77.85 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 5 | $11.20 |
| Shrub, Seedling, Medium | 1507 | Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.69 | 341 | $576.29 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 2518 | $4,784.20 |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 1 | $57.24 |
| Native Perennial Grasses, Legumes and/or Forbs, Medium Density | 2754 | A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping. | Acres | $270.37 | 1 | $270.37 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** B000CPL10 - YEAR 1 Irrigated Cropland (MRBI/Ogallala)

**Scenario** #9 - YEAR 1 Irrigated Cropland (MRBI/Ogallala)

**Scenario Description:**
Addresses water quality degradation, insufficient water, soil erosion, and inefficient energy.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $13,527.04

**Scenario Cost/Unit:** $135.27

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 30 | $770.40 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 19 | $577.60 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 16 | $764.96 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 41 | $4,901.55 |
| **Materials** | | | | | | |
| Nitrogen-Urease inhibitor | 260 | Nitrogen-Urease inhibitor | Acres | $10.47 | 100 | $1,047.00 |
| Test, Soil Nitrogen Testing | 311 | Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only. | Each | $10.36 | 5 | $51.80 |
| Switches and Controls, temp sensors | 1192 | Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $697.95 | 3 | $2,093.85 |
| Data Logger with Telemetry System | 1454 | Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only. | Each | $1,660.98 | 1 | $1,660.98 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 20 | $733.60 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** B000CPL11 - YEAR 2+ Irrigated Cropland (MRBI/Ogallala)

**Scenario** #9 - YEAR 2+ Irrigated Cropland (MRBI/Ogallala)

**Scenario Description:**
Addresses water quality degradation, insufficient water, and soil erosion.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $4,465.34

**Scenario Cost/Unit:** $44.65

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 41 | $1,246.40 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 24 | $1,147.44 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Nitrogen-Urease inhibitor | 260 | Nitrogen-Urease inhibitor | Acres | $10.47 | 100 | $1,047.00 |
| Test, Soil Nitrogen Testing | 311 | Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only. | Each | $10.36 | 5 | $51.80 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 20 | $733.60 |

**Practice:** B000CPL12 - Non-Irrigated Precision Ag (MRBI)

**Scenario** #9 - Non-Irrigated Precision Ag (MRBI)

**Scenario Description:**
Addresses water quality degradation, soil quality, and soil erosion.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $4,285.50

**Scenario Cost/Unit:** $42.86

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, precision application | 949 | Chemical application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.68 | 100 | $968.00 |
| Fertilizer, precision application | 952 | Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.27 | 100 | $927.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 9 | $1,075.95 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 35 | $550.55 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 20 | $733.60 |

**Practice:** B000CPL13 - Non-Irrigated Cropland (MRBI)

**Scenario** #9 - Non-Irrigated Cropland (MRBI)

**Scenario Description:**
Addresses water quality degradation, soil quality, and soil erosion.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $3,362.30

**Scenario Cost/Unit:** $33.62

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 11 | $334.40 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 10 | $1,195.50 |
| **Materials** | | | | | | |
| Nitrogen-Urease inhibitor | 260 | Nitrogen-Urease inhibitor | Acres | $10.47 | 100 | $1,047.00 |
| Test, Soil Nitrogen Testing | 311 | Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only. | Each | $10.36 | 5 | $51.80 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 20 | $733.60 |

**Practice:** B000CPL14 - YEAR 1 Irrigated Precision Ag Cropland (MRBI)

**Scenario** #9 - YEAR 1 Irrigated Precision Ag Cropland (MRBI)

**Scenario Description:**
Addresses water quality degradation, insufficient water, soil erosion, and inefficient energy.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $13,905.79

**Scenario Cost/Unit:** $139.06

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 30 | $770.40 |
| Fertilizer, precision application | 952 | Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.27 | 100 | $927.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 19 | $577.60 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 16 | $764.96 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 41 | $4,901.55 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 35 | $550.55 |
| Switches and Controls, temp sensors | 1192 | Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $697.95 | 3 | $2,093.85 |
| Data Logger with Telemetry System | 1454 | Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only. | Each | $1,660.98 | 1 | $1,660.98 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 20 | $733.60 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** B000CPL15 - YEAR 2+ Irrigated Precision Ag Cropland (MRBI)

**Scenario** #9 - YEAR 2+ Irrigated Precision Ag Cropland (MRBI)

**Scenario Description:**
Addresses water quality degradation, insufficient water, and soil erosion.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $4,844.09

**Scenario Cost/Unit:** $48.44

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Fertilizer, precision application | 952 | Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.27 | 100 | $927.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 41 | $1,246.40 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 24 | $1,147.44 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 35 | $550.55 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 20 | $733.60 |

**Practice:** B000CPL16 - Non-Irrigated Cropland with Water Bodies (MRBI)

**Scenario** #9 - Non-Irrigated Cropland with Water Bodies (MRBI)

**Scenario Description:**
Addresses water quality degradation, soil erosion, and soil quality

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $4,151.45

**Scenario Cost/Unit:** $41.51

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 2 | $12.58 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 2 | $44.18 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.82 | $240.63 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.72 | $177.02 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.46 | $78.75 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 11 | $334.40 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 9 | $1,075.95 |
| **Materials** | | | | | | |
| Nitrogen-Urease inhibitor | 260 | Nitrogen-Urease inhibitor | Acres | $10.47 | 100 | $1,047.00 |
| Test, Soil Nitrogen Testing | 311 | Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only. | Each | $10.36 | 5 | $51.80 |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 2 | $101.72 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 20 | $733.60 |
| Native Perennial Grasses, Low Density | 2750 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $126.91 | 2 | $253.82 |

**Practice:** B000CPL17 - Non-Irrigated Cropland with Water Bodies Riparian Forest Buffer (MRBI)

**Scenario** #9 - Non-Irrigated Cropland with Water Bodies Riparian Forest Buffer (MRBI)

**Scenario Description:**
Addresses water quality degradation, soil erosion, and soil quality

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $7,868.81

**Scenario Cost/Unit:** $78.69

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 18 | $462.24 |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 2 | $63.64 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 2 | $12.58 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 4 | $112.60 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 16 | $204.96 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.82 | $240.63 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.72 | $177.02 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.46 | $78.75 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 11 | $334.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 18 | $404.64 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 4 | $117.68 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 9 | $1,075.95 |
| **Materials** | | | | | | |
| Nitrogen-Urease inhibitor | 260 | Nitrogen-Urease inhibitor | Acres | $10.47 | 100 | $1,047.00 |
| Test, Soil Nitrogen Testing | 311 | Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only. | Each | $10.36 | 5 | $51.80 |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 1 | $15.57 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1 | $2.24 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 872 | $1,656.80 |
| Tree shelter, solid tube type, 4 in. x 48 in. | 1566 | 4 inch x 48 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $4.60 | 100 | $460.00 |
| Stakes, wood, 1 in. x 1 in. x 48 in. | 1578 | 1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.33 | 100 | $233.00 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 20 | $733.60 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** B000CPL18 - Crop Bundle #18 - Precision Ag

**Scenario** #9 - Crop Bundle #18 - Precision Ag

**Scenario Description:**
Addresses water quality degradation, fish and wildlife inadequate habitat, air quality impairment, and either soil erosion or soil quality degradation resource concerns.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $4,334.55

**Scenario Cost/Unit:** $43.35

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, precision application | 949 | Chemical application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.68 | 100 | $968.00 |
| Fertilizer, precision application | 952 | Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.27 | 100 | $927.00 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.17 | $49.89 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.17 | $41.80 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.17 | $29.10 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 8 | $956.40 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 35 | $550.55 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 20 | $733.60 |

**Practice:** B000CPL19 - Crop Bundle #19 - Soil Health Precision Ag

**Scenario** #9 - Crop Bundle #19 - Soil Health Precision Ag

**Scenario Description:**
Addresses water quality degradation, soil quality degradation, fish and wildlife inadequate habitat, and insufficient water resource concerns.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $4,330.87

**Scenario Cost/Unit:** $43.31

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, precision application | 949 | Chemical application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.68 | 100 | $968.00 |
| Fertilizer, precision application | 952 | Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.27 | 100 | $927.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 13 | $1,554.15 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 35 | $550.55 |
| Native Perennial Grasses, Legumes and/or Forbs, Medium Density | 2754 | A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping. | Acres | $270.37 | 1 | $270.37 |

**Practice:** B000CPL20 - Crop Bundle #20 - Soil Health Assessment

**Scenario** #9 - Crop Bundle #20 - Soil Health Assessment

**Scenario Description:**
Addresses water quality degradation, soil quality degradation, fish and wildlife inadequate habitat, and insufficient water resource concerns.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $3,882.72

**Scenario Cost/Unit:** $38.83

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 12 | $364.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 16 | $1,912.80 |
| **Materials** | | | | | | |
| Nitrogen-Urease inhibitor | 260 | Nitrogen-Urease inhibitor | Acres | $10.47 | 100 | $1,047.00 |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 15 | $235.95 |
| Test, Soil Nitrogen Testing | 311 | Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only. | Each | $10.36 | 5 | $51.80 |
| Native Perennial Grasses, Legumes and/or Forbs, Medium Density | 2754 | A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping. | Acres | $270.37 | 1 | $270.37 |

**Practice:** B000CPL21 - Crop Bundle #21 - Crop Bundle (Organic)

**Scenario** #9 - Crop Bundle #21 - Crop Bundle (Organic)

**Scenario Description:**
Addresses soil quality degradation, water quality degradation, and degraded plant condition resource concerns.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $5,586.14

**Scenario Cost/Unit:** $55.86

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 10 | $256.80 |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 2 | $12.58 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 10 | $192.80 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 1 | $9.44 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 10 | $128.10 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.82 | $240.63 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.72 | $177.02 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.46 | $78.75 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 10 | $304.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 9 | $1,075.95 |
| **Materials** | | | | | | |
| Nitrogen-Urease inhibitor | 260 | Nitrogen-Urease inhibitor | Acres | $10.47 | 100 | $1,047.00 |
| Test, Soil Nitrogen Testing | 311 | Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only. | Each | $10.36 | 5 | $51.80 |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 1 | $15.57 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1 | $2.24 |
| Shrub, Seedling, Medium | 1507 | Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.69 | 341 | $576.29 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 340 | $646.00 |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 1 | $57.24 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** B000CPL22 - Crop Bundle #22 - Erosion Bundle (Organic)

**Scenario** #9 - Crop Bundle #22 - Erosion Bundle (Organic)

**Scenario Description:**
Addresses soil quality degradation, water quality degradation, soil erosion, and fish and wildlife inadequate habitat resource concerns.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** acres of cropland where enhancem

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $4,171.67

**Scenario Cost/Unit:** $41.72

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 13 | $395.20 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 14 | $1,673.70 |
| **Materials** | | | | | | |
| Nitrogen-Urease inhibitor | 260 | Nitrogen-Urease inhibitor | Acres | $10.47 | 100 | $1,047.00 |
| Test, Soil Nitrogen Testing | 311 | Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only. | Each | $10.36 | 5 | $51.80 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 20 | $733.60 |
| Native Perennial Grasses, Legumes and/or Forbs, Medium Density | 2754 | A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping. | Acres | $270.37 | 1 | $270.37 |

**Practice:** B000CPL23 - Crop Bundle #23 - Pheasant and quail habitat

**Scenario** #3 - Crop Bundle #23 - Pheasant and quail habitat

**Scenario Description:**
Addresses wildlife inadequate habitat, water quality degradation and/or air quality impacts, and soil health and/or degraded plant condition.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standards applied as part of the bundle.

**After Situation:**
The adoption of these enhancements will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** Acres where the bundle is impleme

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $2,373.33

**Scenario Cost/Unit:** $59.33

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.41 | $120.31 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.36 | $88.51 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.23 | $39.37 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 20 | $1,144.80 |
| Introduced Perennial Grasses, Legumes and/or Forbs, High Density | 2749 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at high density (greater than 60 pure live seeds/sq ft). Includes material and shipping. | Acres | $84.41 | 1 | $84.41 |
| Native Perennial Grasses, Legumes and/or Forbs, Medium Density | 2754 | A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping. | Acres | $270.37 | 1 | $270.37 |

**Practice:** B000CPL24 - Crop Bundle #24 - Cropland Soil Health Management System

**Scenario** #9 - Crop Bundle #24- Cropland Soil Health Management System

**Scenario Description:**
Addresses soil health, water quality (or water quality and air quality), and either soil erosion, soil compaction, or plant pest pressure.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standards applied as part of the bundle.

**After Situation:**
The adoption of these enhancements will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $3,097.12

**Scenario Cost/Unit:** $30.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 14 | $1,673.70 |
| **Materials** | | | | | | |
| Nitrogen-Urease inhibitor | 260 | Nitrogen-Urease inhibitor | Acres | $10.47 | 100 | $1,047.00 |
| Test, Soil Nitrogen Testing | 311 | Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only. | Each | $10.36 | 5 | $51.80 |
| Test, Soil Health, Basic Package | 2734 | Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling. | Number | $131.91 | 2 | $263.82 |

**Practice:** B000CPL25 - Climate Smart Advanced Soil Health

**Scenario** #9 - Crop Land Bundle# 25- Climate Smart Advanced Soil Health

**Scenario Description:**
Improve crop land soil health by minimizing soil disturbance, PAMS pest management, building soil organic matter, providing habitat and reducing nutrient and pesticide loss to water.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standards applied as part of the bundle.

**After Situation:**
The adoption of these enhancements will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** Acres applied

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $13,690.02

**Scenario Cost/Unit:** $136.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 100 | $1,321.00 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 100 | $629.00 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 100 | $2,209.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 11 | $334.40 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 17 | $2,032.35 |
| **Materials** | | | | | | |
| Nitrogen-Urease inhibitor | 260 | Nitrogen-Urease inhibitor | Acres | $10.47 | 100 | $1,047.00 |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 100 | $5,724.00 |
| Test, Soil Health, Basic Package | 2734 | Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling. | Number | $131.91 | 1 | $131.91 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** B000FST1 - Forest Bundle#1

**Scenario** #1 - Forest Bundle#1

**Scenario Description:**
Addresses forest management on sites that are not adapted to natural fire disturbances. Addresses resouce concerns air quality impacts, degraded plant condition and fish/wildlife inadequate habitat.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 111.00

**Scenario Total Cost:** $10,413.95

**Scenario Cost/Unit:** $93.82

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 45 | $311.40 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 15 | $385.20 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 41 | $2,804.40 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 11 | $140.91 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.41 | $120.31 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.36 | $88.51 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.23 | $39.37 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 7 | $212.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 49 | $1,101.52 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 12 | $1,434.60 |
| CAP Labor, forester | 1302 | Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage. | Hours | $84.00 | 17 | $1,428.00 |
| **Materials** | | | | | | |
| Tree Marking Paint | 313 | Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only. | Acres | $10.43 | 20 | $208.60 |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Herbicide, Picloram | 337 | Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $23.10 | 21 | $485.10 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 1 | $15.57 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1 | $2.24 |
| Shrub, Seedling, Medium | 1507 | Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.69 | 605 | $1,022.45 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 218 | $414.20 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** B000FST2 - Forest Bundle #2 - Post-fire Management

**Scenario** #11 - Forest Bundle #2 - Post-fire Management

**Scenario Description:**
Forest stand improvement that improves forest health to reduce the risk of wildfire and wildlife habitat. Addresses air quality impacts, degraded plant condition, and fish/wildlife inadequate habitat.

**Before Situation:**
Resources are protected at the minimum level of conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of these enhancements will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $10,149.24

**Scenario Cost/Unit:** $1,014.92

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 8 | $55.36 |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 28 | $3,001.88 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 30 | $2,052.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 28 | $823.76 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 19 | $2,271.45 |
| **Materials** | | | | | | |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 30 | $1,525.80 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** B000FST3 - Forest Bundle #3

**Scenario** #9 - B000FST3 - Forest Bundle #3

**Scenario Description:**
Forest stand improvement that improves forest health due to poor logging practices. Addresses soil organic matter depletion, degraded plant condition, and inadequate fish/wildlife habitat.

**Before Situation:**
Resources are protected at the minimum level of conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of these enhancements will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $9,889.12

**Scenario Cost/Unit:** $494.46

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 27 | $186.84 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 5 | $128.40 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 43 | $2,941.20 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 20 | $385.60 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 59 | $1,793.60 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1.5 | $71.72 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 21 | $2,510.55 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 10 | $157.30 |
| Tree Marking Paint | 313 | Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only. | Acres | $10.43 | 15 | $156.45 |
| Herbicide, Picloram | 337 | Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $23.10 | 1 | $23.10 |
| Herbicide, Triazine | 1321 | Broad spectrum herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $91.09 | 10 | $910.90 |
| Certified Organic, Perennial Grasses, Legumes and/or Forbs | 2340 | Perennial grasses, legumes, and/or forbs, mostly introduced but may be native, may include biennials. Used for permanent plantings such as pastures. Certified organic. Includes material and shipping only. | Acres | $83.14 | 3 | $249.42 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** B000FST4 - Forest Bundle #4

**Scenario** #9 - B000FST4 - Forest Bundle #4

**Scenario Description:**
Forest management to improve sugar maple stands. Addresses soil organic matter depletion, degraded plant condition, and inadequate fish/wildlife habitat.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $24,700.47

**Scenario Cost/Unit:** $1,235.02

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 33 | $228.36 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 10 | $256.80 |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 16 | $1,715.36 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 50 | $3,420.00 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 12 | $231.36 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 36 | $461.16 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 33 | $1,003.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 44 | $989.12 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 16 | $470.72 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 10 | $478.10 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 40 | $4,782.00 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 10 | $157.30 |
| Tree Marking Paint | 313 | Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only. | Acres | $10.43 | 15 | $156.45 |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1.5 | $25.02 |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 20 | $1,017.20 |
| Herbicide, Picloram | 337 | Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $23.10 | 10 | $231.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 1.5 | $23.36 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1.5 | $3.36 |
| Shrub, Potted, Small | 1524 | Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $6.82 | 340 | $2,318.80 |
| Tree, Hardwood, Potted, Small | 1529 | Potted hardwood seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $8.88 | 360 | $3,196.80 |
| Tree shelter, solid tube type, 4 in. x 60 in. | 1567 | 4 inch x 60 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $5.64 | 360 | $2,030.40 |
| Cable ties, plastic | 1575 | Plastic cable ties (typ. 8-12 in.) to assist in securing items. Materials only. | Each | $0.07 | 360 | $25.20 |
| Stakes, wood, 3/4 in. x 3/4 in. x 60 in. | 1583 | 3/4 in. x 3/4 in. x 60 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.44 | 360 | $878.40 |
| Certified Organic, Perennial Grasses, Legumes and/or Forbs | 2340 | Perennial grasses, legumes, and/or forbs, mostly introduced but may be native, may include biennials. Used for permanent plantings such as pastures. Certified organic. Includes material and shipping only. | Acres | $83.14 | 3 | $249.42 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** B000GRZ1 - Grazing Bundle 1 - Range and Pasture

**Scenario** #9 - Grazing Bundle 1 - Range and Pasture

**Scenario Description:**
This bundle addresses soil erosion, degraded plant condition, and fish and wildlife inadequate habitat resource concerns through adoption of enhancements E528L, E315A, and E645A.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $3,550.00

**Scenario Cost/Unit:** $88.75

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 24 | $616.32 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 2 | $136.80 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 24 | $328.08 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 10 | $312.90 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 58 | $1,303.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 1 | $58.54 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** B000GRZ2 - Grazing Bundle 2 - Range and Pasture

**Scenario** #9 - Grazing Bundle 2 - Range and Pasture

**Scenario Description:**
This bundle addresses water quality degradation, fish and wildlife inadequate habitat, and soil erosion resource concerns through adoption of enhancements E472A, E382A, and E580A.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 4.00

**Scenario Total Cost:** $8,416.12

**Scenario Cost/Unit:** $2,104.03

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 5 | $49.95 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 13 | $333.84 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 5 | $140.75 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 9 | $173.52 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 8 | $109.36 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 8 | $102.48 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 81 | $1,820.88 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 5 | $147.10 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll | 1 | Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only. | Each | $127.46 | 4 | $509.84 |
| Post, Wood, CCA treated, 3-4 in. x 7 ft. | 9 | Wood Post, Line 3-4 inch dia. X 7 ft., CCA Treated. Includes materials and shipping only. | Each | $10.64 | 20 | $212.80 |
| Post, Wood, CCA treated, 6 in. x 8 ft. | 12 | Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $24.11 | 8 | $192.88 |
| Post, Steel T, 1.33 lbs, 6 ft. | 15 | Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only. | Each | $7.39 | 90 | $665.10 |
| Fence, Wire Assembly, Barbed Wire | 30 | Brace pins, battens, clips, staples. Includes materials and shipping only. | Feet | $0.21 | 1320 | $277.20 |
| Vinyl Undersill Strips | 241 | Marking material using the undersill strips of vinyl siding. Priced per foot of fence per each wire. Materials only. | Feet | $0.08 | 2000 | $160.00 |
| Gate, Pipe, 12 ft. | 1057 | 6 rail tube gate, 16 gauge. Includes materials and shipping only. | Each | $244.45 | 2 | $488.90 |
| Shrub, Potted, Small | 1524 | Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $6.82 | 65 | $443.30 |
| Tree, Hardwood, Potted, Small | 1529 | Potted hardwood seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $8.88 | 65 | $577.20 |
| Tree, Conifer, Potted, Small | 1534 | Potted conifer seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $7.01 | 65 | $455.65 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Tree shelter, mesh tree tube, 48 in. | 1556 | 48 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only. | Each | $1.26 | 65 | $81.90 |
| Tree shelter, solid tube type, 4 in. x 24 in. | 1563 | 4 inch x 24 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $2.49 | 65 | $161.85 |
| Tree shelter, solid tube type, 4 in. x 48 in. | 1566 | 4 inch x 48 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $4.60 | 65 | $299.00 |
| Stakes, wood, 1 in. x 1 in. x 48 in. | 1578 | 1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.33 | 195 | $454.35 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** B000GRZ3 - Grazing Bundle 3 - Range and Pasture

**Scenario** #9 - Grazing Bundle 3 - Range and Pasture

**Scenario Description:**
This bundle addresses water quality degradation, fish and wildlife inadequate habitat, and soil erosion resource concerns through adoption of enhancements E472A, E390B, and E580A.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 6.00

**Scenario Total Cost:** $9,546.76

**Scenario Cost/Unit:** $1,591.13

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 5 | $49.95 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 13 | $333.84 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 4 | $25.16 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 2 | $44.18 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 5 | $140.75 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 8 | $154.24 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 8 | $109.36 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 8 | $102.48 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.82 | $240.63 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.72 | $177.02 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.46 | $78.75 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 81 | $1,820.88 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 5 | $147.10 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll | 1 | Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only. | Each | $127.46 | 4 | $509.84 |
| Post, Wood, CCA treated, 3-4 in. x 7 ft. | 9 | Wood Post, Line 3-4 inch dia. X 7 ft., CCA Treated. Includes materials and shipping only. | Each | $10.64 | 20 | $212.80 |
| Post, Wood, CCA treated, 6 in. x 8 ft. | 12 | Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $24.11 | 8 | $192.88 |
| Post, Steel T, 1.33 lbs, 6 ft. | 15 | Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only. | Each | $7.39 | 90 | $665.10 |
| Fence, Wire Assembly, Barbed Wire | 30 | Brace pins, battens, clips, staples. Includes materials and shipping only. | Feet | $0.21 | 1320 | $277.20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 4 | $203.44 |
| Gate, Pipe, 12 ft. | 1057 | 6 rail tube gate, 16 gauge. Includes materials and shipping only. | Each | $244.45 | 2 | $488.90 |
| Shrub, Potted, Small | 1524 | Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $6.82 | 65 | $443.30 |
| Tree, Hardwood, Potted, Small | 1529 | Potted hardwood seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $8.88 | 65 | $577.20 |
| Tree, Conifer, Potted, Small | 1534 | Potted conifer seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $7.01 | 65 | $455.65 |
| Tree shelter, mesh tree tube, 48 in. | 1556 | 48 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only. | Each | $1.26 | 65 | $81.90 |
| Tree shelter, solid tube type, 4 in. x 24 in. | 1563 | 4 inch x 24 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $2.49 | 65 | $161.85 |
| Tree shelter, solid tube type, 4 in. x 48 in. | 1566 | 4 inch x 48 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $4.60 | 65 | $299.00 |
| Stakes, wood, 1 in. x 1 in. x 48 in. | 1578 | 1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.33 | 195 | $454.35 |
| Native Perennial Grasses, Legumes and/or Forbs, Medium Density | 2754 | A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping. | Acres | $270.37 | 2 | $540.74 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** B000GRZ4 - Grazing Bundle 4 - Range and Pasture

**Scenario** #9 - Grazing Bundle 4 - Range and Pasture

**Scenario Description:**
This bundle addresses water quality degradation, fish and wildlife inadequate habitat, and soil erosion resource concerns through adoption of enhancements E472A, E391C, and E580A.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 4.00

**Scenario Total Cost:** $12,234.34

**Scenario Cost/Unit:** $3,058.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 5 | $49.95 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 29 | $744.72 |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 2 | $63.64 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 2 | $12.58 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 9 | $253.35 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 8 | $154.24 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 8 | $109.36 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 24 | $307.44 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.82 | $240.63 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.72 | $177.02 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.46 | $78.75 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 99 | $2,225.52 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 9 | $264.78 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 12 | $573.72 |
| **Materials** | | | | | | |
| Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll | 1 | Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only. | Each | $127.46 | 4 | $509.84 |
| Post, Wood, CCA treated, 3-4 in. x 7 ft. | 9 | Wood Post, Line 3-4 inch dia. X 7 ft., CCA Treated. Includes materials and shipping only. | Each | $10.64 | 20 | $212.80 |
| Post, Wood, CCA treated, 6 in. x 8 ft. | 12 | Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $24.11 | 8 | $192.88 |
| Post, Steel T, 1.33 lbs, 6 ft. | 15 | Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only. | Each | $7.39 | 90 | $665.10 |
| Fence, Wire Assembly, Barbed Wire | 30 | Brace pins, battens, clips, staples. Includes materials and shipping only. | Feet | $0.21 | 1320 | $277.20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 1 | $15.57 |
| Gate, Pipe, 12 ft. | 1057 | 6 rail tube gate, 16 gauge. Includes materials and shipping only. | Each | $244.45 | 2 | $488.90 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1 | $2.24 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 872 | $1,656.80 |
| Shrub, Potted, Small | 1524 | Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $6.82 | 65 | $443.30 |
| Tree, Conifer, Potted, Small | 1534 | Potted conifer seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $7.01 | 65 | $455.65 |
| Tree shelter, mesh tree tube, 48 in. | 1556 | 48 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only. | Each | $1.26 | 65 | $81.90 |
| Tree shelter, solid tube type, 4 in. x 24 in. | 1563 | 4 inch x 24 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $2.49 | 65 | $161.85 |
| Tree shelter, solid tube type, 4 in. x 48 in. | 1566 | 4 inch x 48 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $4.60 | 165 | $759.00 |
| Stakes, wood, 1 in. x 1 in. x 48 in. | 1578 | 1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.33 | 295 | $687.35 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** B000GRZ5 - Grazing Bundle 5 - Range and Pasture

**Scenario** #9 - Grazing Bundle 5 - Range and Pasture

**Scenario Description:**
This bundle addresses livestock production limitation, degraded plant condition, and fish and wildlife inadequate habitat resource concerns through adoption of enhancements E528A, E315A, and E645A.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1,050.00

**Scenario Total Cost:** $6,614.71

**Scenario Cost/Unit:** $6.30

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 28 | $719.04 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 2 | $136.80 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 12 | $231.36 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 24 | $328.08 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 36 | $1,126.44 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 65 | $1,461.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 12 | $1,434.60 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 1 | $58.54 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |
| Tank, Polyethylene, 300 gallon | 291 | Portable heavy duty rubber stock tank. | Each | $325.13 | 1 | $325.13 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** B000LLP1 - Longleaf Pine Bundle#1

**Scenario** #1 - Longleaf Pine Bundle#1

**Scenario Description:**
?Improves conifer forest health through prescribed burning and grazing management. Addresses water quality degredation, degraded plant condition, and fish/wildlife inadequate habitat.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 110.00

**Scenario Total Cost:** $11,940.07

**Scenario Cost/Unit:** $108.55

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 5 | $49.95 |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 7 | $48.44 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 24 | $616.32 |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 2 | $63.64 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 2 | $12.58 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 9 | $253.35 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 3 | $205.20 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 2 | $38.56 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 16 | $204.96 |
| Water tank, portable | 1602 | Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only. | Hours | $12.99 | 2 | $25.98 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.82 | $240.63 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.72 | $177.02 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.46 | $78.75 |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 12 | $375.48 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 55 | $1,672.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 53 | $1,191.44 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 9 | $264.78 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 14 | $669.34 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |
| **Materials** | | | | | | |
| Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll | 1 | Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only. | Each | $127.46 | 4 | $509.84 |
| Post, Wood, CCA treated, 3-4 in. x 7 ft. | 9 | Wood Post, Line 3-4 inch dia. X 7 ft., CCA Treated. Includes materials and shipping only. | Each | $10.64 | 20 | $212.80 |
| Post, Wood, CCA treated, 6 in. x 8 ft. | 12 | Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $24.11 | 8 | $192.88 |
| Post, Steel T, 1.33 lbs, 6 ft. | 15 | Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only. | Each | $7.39 | 90 | $665.10 |
| Fence, Wire Assembly, Barbed Wire | 30 | Brace pins, battens, clips, staples. Includes materials and shipping only. | Feet | $0.21 | 1320 | $277.20 |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Herbicide, Picloram | 337 | Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $23.10 | 1 | $23.10 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 1 | $15.57 |
| Gate, Pipe, 12 ft. | 1057 | 6 rail tube gate, 16 gauge. Includes materials and shipping only. | Each | $244.45 | 2 | $488.90 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1 | $2.24 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 872 | $1,656.80 |
| Tree shelter, solid tube type, 4 in. x 48 in. | 1566 | 4 inch x 48 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $4.60 | 100 | $460.00 |
| Stakes, wood, 1 in. x 1 in. x 48 in. | 1578 | 1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.33 | 100 | $233.00 |
| Fuel, ignition fuel mixture | 1596 | Mixture of gasoline and diesel for ignition of prescribed burns. Materials only. | Gallons | $5.19 | 5 | $25.95 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** B000LLP2 - Longleaf Pine Bundle#2

**Scenario** #1 - Longleaf Pine Bundle#2

**Scenario Description:**
Improves conifer forest health through prescribed burning and forest stand management. Addresses air quality impacts, degraded plant condition, and fish/wildlife inadequate habitat.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $16,683.30

**Scenario Cost/Unit:** $333.67

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 67 | $463.64 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 42 | $1,078.56 |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 16 | $1,715.36 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 19 | $1,299.60 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 2 | $38.56 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 24 | $328.08 |
| Water tank, portable | 1602 | Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only. | Hours | $12.99 | 2 | $25.98 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 83 | $2,523.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 50 | $1,124.00 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 16 | $470.72 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 44 | $5,260.20 |
| **Materials** | | | | | | |
| Tree Marking Paint | 313 | Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only. | Acres | $10.43 | 5 | $52.15 |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 20 | $1,017.20 |
| Herbicide, Picloram | 337 | Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $23.10 | 1 | $23.10 |
| Fuel, ignition fuel mixture | 1596 | Mixture of gasoline and diesel for ignition of prescribed burns. Materials only. | Gallons | $5.19 | 5 | $25.95 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability | 2619 | Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping. | Acres | $442.87 | 1 | $442.87 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** B000LLP4 - Longleaf Pine Bundle #4

**Scenario** #9 - Longleaf Pine Bundle #4

**Scenario Description:**
Improves forest health and wildlife habitat through conversion of forest stands that are not predominantly longleaf pine. Addresses degraded plant condition, fish/wildlife inadequate food and habitat, and water quality.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standards applied as part of the enhancement.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standards applied.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $18,406.66

**Scenario Cost/Unit:** $368.13

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 157 | $1,086.44 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 18 | $462.24 |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 20 | $2,144.20 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 10 | $62.90 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 23 | $1,573.20 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 2 | $38.56 |
| Water tank, portable | 1602 | Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only. | Hours | $12.99 | 2 | $25.98 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 173 | $5,259.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 20 | $588.40 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 44 | $5,260.20 |
| **Materials** | | | | | | |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 20 | $1,017.20 |
| Herbicide, Picloram | 337 | Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $23.10 | 1 | $23.10 |
| Fuel, ignition fuel mixture | 1596 | Mixture of gasoline and diesel for ignition of prescribed burns. Materials only. | Gallons | $5.19 | 5 | $25.95 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** B000PST5 - Pasture Bundle 5

**Scenario** #9 - Pasture Bundle #5

**Scenario Description:**
Implementation of site specific strategies applied to range or pasture land uses through adoption of the following CSP enhancements: E528J, E315A, and E645A.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
Adoption of these bundled enhancements provides a combined benefit for resource protection that exceeds the minimum level for the associated practice standards in order to address the resource concerns Soil Erosion or Water Quality Degradation, Degraded Plant Condition, and Fish and Wildlife Inadequate Habitat.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 60.00

**Scenario Total Cost:** $3,820.52

**Scenario Cost/Unit:** $63.68

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 24 | $616.32 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 2 | $136.80 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 6 | $115.68 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 24 | $328.08 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 6 | $187.74 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 56 | $1,258.88 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 4 | $234.16 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |
| Tank, Polyethylene, 300 gallon | 291 | Portable heavy duty rubber stock tank. | Each | $325.13 | 1 | $325.13 |

**Practice:** B000PSTX - Pasture Bundle #6 - Pasture

**Scenario** #6 - Pasture Bundle #6

**Scenario Description:**

Managing the harvest of vegetation with grazing and/or browsing animals for the purposes of maintaining desired pasture composition/plant vigor and improving/maintaining quantity and quality of forage for the animals' health and productivity following the recommendations of a qualifying professional, as detailed in the documentation and implementation requirements. Establishing adapted and/or compatible species, varieties, or cultivars of perennial, herbaceous species that can provide the structure and composition needed to enhance livestock and wildlife habitat, particularly when targeted forage supply and quality, cover, and shelter are not available in other pastures.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing. Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Pasture and Hay Planting. Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 315-Herbaceous Weed Treatment

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing. The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Pasture and Hay Planting. The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 315-Herbaceous Weed Treatment.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $9,731.93

**Scenario Cost/Unit:** $97.32

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 25 | $642.00 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 2 | $136.80 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 12 | $231.36 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 4 | $54.68 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 36 | $1,126.44 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 5 | $112.40 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 12 | $1,434.60 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 4 | $234.16 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |
| Tank, Polyethylene, 300 gallon | 291 | Portable heavy duty rubber stock tank. | Each | $325.13 | 1 | $325.13 |
| Nutritional Balance Analyzer, fecal sample analysis only | 1127 | NIRS fecal analysis, animal performance report. Includes materials and shipping only. | Each | $47.39 | 6 | $284.34 |
| Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2747 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $45.45 | 100 | $4,545.00 |

**Practice:** B000RNG4 - Range Bundle 4

**Scenario** #9 - Range Bundle #4

**Scenario Description:**
Implementation of site specific strategies applied to range through adoption of the following CSP enhancements: E528N, E315A, and E645A.

**Before Situation:**
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

**After Situation:**
Adoption of these bundled enhancements provides a combined benefit for resource protection that exceeds the minimum level for the associated practice standards in order to address the resource concerns Soil Erosion, Degraded Plant Condition, and Fish and Wildlife Inadequate Habitat.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $4,273.45

**Scenario Cost/Unit:** $85.47

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 24 | $616.32 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 2 | $136.80 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 8 | $154.24 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 24 | $328.08 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 58 | $1,303.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 12 | $1,434.60 |

**Practice:** E199A - Comprehensive Conservation Plan

**Scenario** #9 - Single Enterprise-Low

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for one land use by each land management system included in the producer's operation. This typical scenario involves one agricultural enterprise and a.) 1 Land use with less than or equal to 4 priority resource concerns, OR b.) 2-3 Land Uses with less than or equal to two priority resource concern categories per land use.

**Before Situation:**

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for one land use and each land management system.

**After Situation:**

TSP conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements ofE199A Guide sheet and meets Conservation Plan CPA 199 or applicable conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $6,973.42

**Scenario Cost/Unit:** $6,973.42

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 10 | $1,081.50 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 8 | $829.12 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 60 | $5,062.80 |

**Practice:** E199A - Comprehensive Conservation Plan

**Scenario** #25 - Single Enterprise-Medium

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for one land use by each land management system included in the producer's operation. This typical scenario involves one agricultural enterprise and a.) 1 Land Use with greater than 4 priority resource concerns, OR b.) 2-3 Land Use with 3 to 4 priority resource concern categories per land use, OR c.) 4 or more Land Use with less than or equal to 2 priority resource concerns.

**Before Situation:**

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for one land use and each land management system.

**After Situation:**

TSP conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements ofE199A Guide sheet and meets Conservation Plan CPA 199 or applicable conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $9,075.58

**Scenario Cost/Unit:** $9,075.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 10 | $1,081.50 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 12 | $1,243.68 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 80 | $6,750.40 |

**Practice:** E199A - Comprehensive Conservation Plan

**Scenario** #57 - Multiple Enterprise-Medium

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for one land use by each land management system included in the producer's operation. This typical scenario involves two or more agricultural enterprises and a.) 1 Land Use with up to 4 priority resource concerns, OR b.) 2-3 Land Use with 1 to 2 priority resource concern categories per land use.

**Before Situation:**

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for one land use and each land management system.

**After Situation:**

TSP conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements ofE199A Guide sheet and meets Conservation Plan CPA 199 or applicable conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $12,496.94

**Scenario Cost/Unit:** $12,496.94

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 30 | $3,244.50 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 16 | $1,658.24 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 90 | $7,594.20 |

**Practice:** E199A - Comprehensive Conservation Plan

**Scenario** #73 - Multiple Enterprise-High

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for one land use by each land management system included in the producer's operation. This typical scenario involves two or more agricultural enterprises and a.) 2-3 Land Use with 3 to 4 priority resource concern categories per land use, OR b.) 2-3 Land Use with 4 or more priority resource concerns, OR c.) 4 or more Land Use with any amount of priority resource concerns

**Before Situation:**

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for one land use and each land management system.

**After Situation:**

TSP conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements ofE199A Guide sheet and meets Conservation Plan CPA 199 or applicable conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $14,422.24

**Scenario Cost/Unit:** $14,422.24

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, agronomist | 1295 | Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner. | Hours | $108.15 | 40 | $4,326.00 |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 16 | $1,658.24 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 100 | $8,438.00 |

**Practice:** E199A - Comprehensive Conservation Plan

**Scenario** #89 - Comprehensive Conservation Plan for Operation with > 2 land uses and 2 or more resource concerns

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for the identified land uses by each land management system included in each of the producer's operations. Does not include livestock waste storage planning or evaluation of existing components.

**Before Situation:**

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for all land uses and each land management system for each enterprise or farm operation.

**After Situation:**

Planner conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements of E199A Guidesheet.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,782.42

**Scenario Cost/Unit:** $3,782.42

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 8 | $829.12 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 35 | $2,953.30 |

**Practice:** E199A - Comprehensive Conservation Plan

**Scenario** #105 - Comprehensive Conservation Plan on 2 or more Land Use

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for the identified land uses by each land management system included in the producer's operation. Does not include livestock waste storage planning or evaluation of existing components.

**Before Situation:**

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for 2 land uses and each land management system for each enterprise or farm operation.

**After Situation:**

Planner conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements of E199A Guidesheet.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,360.52

**Scenario Cost/Unit:** $3,360.52

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 8 | $829.12 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 30 | $2,531.40 |

**Practice:** E199A - Comprehensive Conservation Plan

**Scenario** #121 - Basic Comprehensive Conservation Plan-One Land Use

**Scenario Description:**

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for one land use by each land management system included in the producer's operation. Does not include livestock waste storage planning or evaluation of existing components.

**Before Situation:**

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for one land use and each land management system.

**After Situation:**

Planner conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements ofE199A Guidesheet.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,516.72

**Scenario Cost/Unit:** $2,516.72

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| CAP Labor, professional engineer | 1297 | Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price). | Hours | $103.64 | 8 | $829.12 |
| Cap Labor, conservation scientist | 1300 | Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering. | Hours | $84.38 | 20 | $1,687.60 |

**Practice:** E300EAP1 - Existing Activity Payment-Land Use

**Scenario** #9 - CSP EAP Cropland and Farmstead

**Scenario Description:**

This existing activity payment component (EAP1) provides a CSP participant with a payment for existing stewardship specific to the land uses included in the operation. This scenario covers the land uses cropland and farmstead.

**Before Situation:**

Producer implements conservation activities on cropland or farmstead to achieve a base level of stewardship.

**After Situation:**

Through participation in the CSP, the producer continues to maintain or improve the base level of stewardship assessed at the time of enrollment.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7.50

**Scenario Cost/Unit:** $7.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| EAP - Cropland/Farmstead | 2737 | Existing Activity Payment for Cropland or Farmstead land use. | Acres | $7.50 | 1 | $7.50 |

**Practice:** E300EAP1 - Existing Activity Payment-Land Use

**Scenario** #32 - CSP EAP Range

**Scenario Description:**
This existing activity payment component (EAP1) provides a CSP participant with a payment for existing stewardship specific to the land uses included in the operation. This scenario covers the land use range.

**Before Situation:**
Producer implements conservation activities on range to achieve a base level of stewardship.

**After Situation:**
Through participation in the CSP, the producer continues to maintain or improve the base level of stewardship assessed at the time of enrollment.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1.00

**Scenario Cost/Unit:** $1.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| EAP - Range | 2739 | Existing Activity Payment for Range land use. | Acres | $1.00 | 1 | $1.00 |

**Practice:** E300EAP1 - Existing Activity Payment-Land Use

**Scenario** #48 - CSP EAP NIPF

**Scenario Description:**

This existing activity payment component (EAP1) provides a CSP participant with a payment for existing stewardship specific to the land uses included in the operation. This scenario covers the land uses non-industrial private forest land (NIPF).

**Before Situation:**

Producer implements conservation activities on NIPF to achieve a base level of stewardship.

**After Situation:**

Through participation in the CSP, the producer continues to maintain or improve the base level of stewardship assessed at the time of enrollment.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $0.50

**Scenario Cost/Unit:** $0.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| EAP - Non-Industrial Private Forestland (NIPF) | 2740 | Existing Activity Payment for Non-Industrial Private Forestland (NIPF). | Acres | $0.50 | 1 | $0.50 |

**Practice:** E300EAP1 - Existing Activity Payment-Land Use

**Scenario** #64 - CSP EAP AAL

**Scenario Description:**

This existing activity payment component (EAP1) provides a CSP participant with a payment for existing stewardship specific to the land uses included in the operation. This scenario covers the land use associated agricultural land (AAL).

**Before Situation:**

Producer implements conservation activities on AAL to achieve a base level of stewardship.

**After Situation:**

Through participation in the CSP, the producer continues to maintain or improve the base level of stewardship assessed at the time of enrollment.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $0.50

**Scenario Cost/Unit:** $0.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| EAP - Associated Agricultural Land (AAL) | 2741 | Existing Activity Payment for Associated Agricultural Land (AAL) | Acres | $0.50 | 1 | $0.50 |

**Practice:** E300EAP1 - Existing Activity Payment-Land Use

**Scenario** #73 - CSP EAP Pasture

**Scenario Description:**
This existing activity payment component (EAP1) provides a CSP participant with a payment for existing stewardship specific to the land uses included in the operation. This scenario covers the land use pasture.

**Before Situation:**
Producer implements conservation activities on pasture to achieve a base level of stewardship.

**After Situation:**
Through participation in the CSP, the producer continues to maintain or improve the base level of stewardship assessed at the time of enrollment.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3.00

**Scenario Cost/Unit:** $3.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| EAP - Pasture | 2738 | Existing Activity Payment for Pasture land use. | Acres | $3.00 | 1 | $3.00 |

**Practice:** E300EAP2 - Existing Activity Payment-Resource Concern

**Scenario** #9 - CSP EAP RC met at time of enrollment

**Scenario Description:**
This existing activity payment component (EAP2) provides a CSP participant with a payment for existing stewardship specific to the number of resource concerns met at the time of enrollment.

**Before Situation:**
Producer implements conservation activities across all land uses included in the operation to meet a minimum of two resource concerns at the time of enrollment.

**After Situation:**
Through participation in the CSP, the producer continues to maintain or improve the resource concerns met at the time of enrollment.

**Feature Measure:** Resource Concern Met

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $300.00

**Scenario Cost/Unit:** $300.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| EAP - Resource Concern | 2742 | Existing Activity Payment for Resource Concern(s). | Number | $300.00 | 1 | $300.00 |

**Practice:** E300GCI - Grassland Conservation Initiative

**Scenario** #9 - Grassland Conservation Initiative Activity

**Scenario Description:**

The Grassland Conservation Initiative Activity assists producers in protecting grazing uses; conserving and improving soil, water, and wildlife resources; and achieving related conservation values by conserving eligible land through grassland conservation contracts. Producers participating in the GCI must agree to meet or exceed planning criteria for at least one of the priority resource concerns: Soil Erosion, Soil Quality Degradation, Water Quality Degradation, Fish and Wildlife Habitat Improvement, Air Quality Impacts, Degraded Plant Condition, and/or Livestock Production Limitation.

**Before Situation:**

Eligible base acres have been maintained and reported as grass, idle, or fallow for all years between January 2009 and December 2017.

**After Situation:**

Through participation in the GCI, the producer will meet or exceed the planning criteria for at least one priority resource concern by managing the enrolled land to maintain grassland values even if the producer chooses to plant a crop on the enrolled acres.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $18.00

**Scenario Cost/Unit:** $18.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Grassland Conservation Initiative - Labor | 2736 | Labor to assist producers protect grazing uses through grassland conservation contracts. | Acres | $18.00 | 1 | $18.00 |

**Practice:** E314A - Brush management to improve wildlife habitat

**Scenario** #1 - Brush management to improve wildlife habitat

**Scenario Description:**

Brush management is employed to create a desired plant community, consistent with the related ecological site steady state, which will maintain or enhance the wildlife habitat desired for the identified wildlife species. It will be designed to provide plant structure, density and diversity needed to meet those habitat objectives. This enhancement does not apply to removal of woody vegetation by prescribed fire or removal of woody vegetation to facilitate a land use change.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 314 - Brush Management

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 314 - Brush Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,839.09

**Scenario Cost/Unit:** $18.39

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 12 | $375.48 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 32 | $972.80 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |

**Practice:** E315A - Herbaceous weed treatment to create plant communities consistent with the ecological site

**Scenario** #1 - Herbaceous weed treatment to create plant communities consistent with the ecological site

**Scenario Description:**
Mechanical, chemical, or biological, herbaceous weed treatment will be employed to control targeted, herbaceous weeds so as to create, release, or restore desired plant communities that are consistent with achievable, ecological site, steady state descriptions.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 315 - Herbaceous Weed Control

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 315 - Herbaceous Weed Control

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $136.80

**Scenario Cost/Unit:** $13.68

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 2 | $136.80 |

**Practice:** E327A - Conservation cover for pollinators and beneficial insects

**Scenario** #10 - Conservation cover for pollinators and beneficial insects

**Scenario Description:**
Seed or plug nectar and pollen producing plants in non-cropped areas such as field borders, vegetative barriers, contour buffer strips, grassed waterways, shelterbelts, hedgerows, windbreaks, conservation cover, and riparian forest and herbaceous buffers.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 327 Conservation Cover.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 327 Conservation Cover.

**Feature Measure:** acre planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $25,332.40

**Scenario Cost/Unit:** $506.65

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 11 | $282.48 |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 8 | $254.56 |
| Tillage, Primary | 946 | Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs. | Acres | $19.97 | 50 | $998.50 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 26 | $584.48 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 6 | $717.30 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability | 2619 | Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping. | Acres | $442.87 | 50 | $22,143.50 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** E327B - Establish Monarch butterfly habitat

**Scenario** #1 - Establish Monarch butterfly habitat

**Scenario Description:**
Seed or plug milkweed (Asclepias spp.), and high-value monarch butterfly nectar plants on marginal cropland, field borders, contour buffer strips, and similar areas.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 327 - Conservation Cover

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 327 - Conservation Cover

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $836.10

**Scenario Cost/Unit:** $836.10

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 1 | $31.82 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 2 | $136.80 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 1 | $9.44 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability | 2619 | Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping. | Acres | $442.87 | 1 | $442.87 |

**Practice:** E328A - Resource conserving crop rotation

**Scenario** #1 - Resource conserving crop rotation

**Scenario Description:**

Establish a Resource Conserving Crop Rotation. Rotation must include AT LEAST one resource conserving crop as determined by the State Conservationist in a minimum three year crop rotation. The crop rotation will reduce soil erosion (water and wind), improve soil health, improve soil moisture efficiency, and reduce plant pest pressures.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,673.70

**Scenario Cost/Unit:** $16.74

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 14 | $1,673.70 |

**Practice:** E328B - Improved resource conserving crop rotation

**Scenario** #1 - Improved resource conserving crop rotation

**Scenario Description:**

Improve an existing Resource Conserving Crop Rotation. Must enrich an existing rotation which already includes AT LEAST one resource conserving crop as determined by the State Conservationist in a minimum three year crop rotation. The crop rotation will reduce soil erosion (water and wind), improve soil health, improve soil moisture efficiency, and reduce plant pest pressures.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $597.75

**Scenario Cost/Unit:** $5.98

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |

**Practice:** E328C - Conservation crop rotation on recently converted CRP grass/legume cover

**Scenario** #1 - Conservation crop rotation on recently converted CRP grass/legume cover for water erosion

**Scenario Description:**

Implement a crop rotation management system on crop land acres that have recently converted from CRP grass/legume conservation cover to annual planted crops. Crop rotation minimizes disturbance resulting in a Soil Tillage Intensity Rating (STIR) less than 10 and reduces soil erosion from water or wind to below soil tolerance (T) level. The current NRCS wind and water erosion prediction technologies must be used to document the rotation, soil erosion estimate, and STIR calculations. *This enhancement is limited to acres where the conversion event took place not more than 2 years prior. Enhancement not applicable on hayland.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $358.65

**Scenario Cost/Unit:** $3.59

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |

**Practice:** E328D - Leave standing grain crops unharvested to benefit wildlife

**Scenario** #1 - Leave standing grain crops unharvested to benefit wildlife

**Scenario Description:**
Implement a crop rotation which allows a portion of grain crops to be left in fields un-harvested to provide food and cover for wildlife during winter months.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $168.60

**Scenario Cost/Unit:** $4.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.17 | $49.89 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.17 | $41.80 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.17 | $29.10 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |

**Practice:** E328E - Soil health crop rotation

**Scenario** #1 - Soil health crop rotation

**Scenario Description:**

Implement a crop rotation which addresses all four principle components of soil health: increases diversity of the cropping system; maintains residue throughout the year; keeps a living root; and minimizes soil chemical, physical and biological disturbance. The rotation will include at least 4 different crop and/or cover crop types (crop types include cool season grass, warm season grass, cool season broadleaf, warm season broadleaf) grown in a sequence that will produce a positive trend in the Organic Matter (OM) sub factor value over the life of the rotation, as determined by the Soil Conditioning Index (SCI). The current NRCS wind and water erosion prediction technologies must be used to document the rotation and SCI calculations.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $597.75

**Scenario Cost/Unit:** $5.98

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |

**Practice:** E328F - Modifications to improve soil health and increase soil organic matter

**Scenario** #1 - Modifications to improve soil health and increase soil organic matter

**Scenario Description:**

Use of soil health assessment to evaluate impact of current conservation crop rotation in addressing soil organic matter depletion (primary assessment made in Year 1). Modifications to the crop rotation and/or crop management will be made as a result of the assessment results (adding a new crop and/or cover crop to the rotation; making changes to planting and/or tillage system, harvest timing of crops, or termination timing of cover crops). During Year 3 a follow up assessment will be completed to allow time for the modifications to show increased soil organic matter. Modified system must produce a positive trend in the Organic Matter (OM) sub factor value over the life of the rotation, as determined by the Soil Conditioning Index (SCI). The current NRCS wind and water erosion prediction technologies must be used to document the rotation and SCI calculations.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $251.46

**Scenario Cost/Unit:** $2.51

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |
| **Materials** | | | | | | |
| Test, Soil Health, Basic Package | 2734 | Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling. | Number | $131.91 | 1 | $131.91 |

**Practice:** E328G - Crop rotation on recently converted CRP grass/legume cover for soil organic matter improvement

**Scenario** #1 - Crop rotation on recently converted CRP grass/legume cover for soil organic matter improvement

**Scenario Description:**

Crop rotation on acres converted, no more than 2 years prior, from CRP grass/legume cover to annual crops. Diverse rotation with living roots and residue cover throughout year and minimal disturbance. Enhancement not applicable on hayland.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $597.75

**Scenario Cost/Unit:** $5.98

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |

**Practice:** E328H - Conservation crop rotation to reduce the concentration of salts

**Scenario** #1 - Conservation crop rotation to reduce the concentration of salts

**Scenario Description:**

Implement a crop rotation to reduce the concentration of salts and other chemicals from saline seeps. The rotation should include at least 3 crops and/or cover crops grown in a sequence in the recharge areas of saline seeps that have rooting depths and water requirements adequate to fully utilize all available soil water. Do not use summer fallow. Use an approved water balance procedure to determine crop selection and sequence. Select crops with a tolerance to salinity levels that match the salinity of the discharge area. (See state lists )

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $478.20

**Scenario Cost/Unit:** $4.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |

**Practice:** E328I - Forage harvest to reduce water quality impacts by utilization of excess soil nutrients

**Scenario** #1 - Forage harvest to reduce water quality impacts by utilization of excess soil nutrients

**Scenario Description:**
Establish a forage crop (single species or mix) following a primary annual crop to take up excess soil nutrients. Select forage known to effectively utilize and scavenge nutrients. Forage shall be harvested for forage, but not be grazed or burned.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**Feature Measure:** Acres of Cropland with New Crop R

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $556.85

**Scenario Cost/Unit:** $5.57

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 5 | $78.65 |

**Practice:** E328J - Improved crop rotation to provide benefits to pollinators

**Scenario** #1 - Improved crop rotation to provide benefits to pollinators

**Scenario Description:**

Improve the existing crop rotation by adding pollinator friendly crops into the rotation. The crop rotation shall include a minimum of three different crops in a minimum five year crop rotation. Each year, the pollinator friendly crop will be planted on a minimum of 5% of cropland acres contained within the agricultural operation. Use of insecticides is limited for the pollinator friendly crop.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

**Feature Measure:** Acres planted to pollinator rotation

**Scenario Unit:** Acres

**Scenario Typical Size:** 5.00

**Scenario Total Cost:** $478.20

**Scenario Cost/Unit:** $95.64

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |

**Practice:** E328K - Multiple crop types to benefit wildlife

**Scenario** #9 - Multiple crop types to benefit wildlife

**Scenario Description:**
Alternating crops in a systematic arrangement of strips across a field to provide diverse rotations of crops that provide wildlife food. At least two crops will be planted in adjacent strips a minimum of 0.5 acres in size.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard 328 - Conservation Crop Rotation.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 328 - Conservation Crop Rotation.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $119.55

**Scenario Cost/Unit:** $5.98

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |

**Practice:** E328L - Leaving tall crop residue for wildlife

**Scenario** #9 - Leaving tall crop residue for wildlife

**Scenario Description:**

Fields may be harvested but must leave crop residue standing a minimum of 14 inches. Residue will be left through winter and into spring, providing valuable winter cover and forage for wildlife spanning late summer and through the following winter.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation.

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation.

**Feature Measure:** acres with small grain stubble/resi

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $478.20

**Scenario Cost/Unit:** $11.96

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |

**Practice:** E328M - Diversify crop rotation with canola or sunflower to provide benefits to pollinators

**Scenario** #25 - Diversify crop rotation with canola or sunflower to provide benefits to pollinators

**Scenario Description:**

Diversify the existing crop rotation by adding canola or sunflower into the rotation. Canola or sunflower must be planted on a minimum of 5% of cropland acres. Pesticide use is limited to pre-bloom or bloom and in accordance with IPM and industry best management practices.

**Before Situation:**

Resources are protected at the minimum level for the Conservation Practice Standard (CPS) 328- Conservation Crop Rotation.

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328-Conservation Crop Rotation

**Feature Measure:** Acres planned

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $478.20

**Scenario Cost/Unit:** $11.96

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |

**Practice:** E328N - Intercropping to Improve Soil Health

**Scenario** #9 - Intercropping to improve soil health

**Scenario Description:**

This enhancement involves the use of intercropping principles (i.e., growing two or more crops in close proximity to each other during part or all of their life cycles) to promote interactions that improve soil health, plant health, reduce inputs via increased biodiversity and contribute to pest management. Incorporating intercropping principles into an agricultural operation increases diversity and interaction between plants, arthropods, mammals, birds and microorganisms resulting in a more stable crop-ecosystem and a more efficient use of space, water, sunlight and nutrients. Furthermore, soil health is benefited by increasing ground coverage with living vegetation which reduces erosion and by increasing the quantity and diversity of root exudates which enhances soil fauna. This collaborative type of crop management mimics nature and is subject to fewer pest outbreaks, improved nutrient cycling and crop nutrient uptake, and increased water infiltration and moisture retention. This enhancement cannot be used for annual hay or silage crops. It is for grain/seed production only.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation.

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation.

**Feature Measure:** acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $597.75

**Scenario Cost/Unit:** $5.98

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |

**Practice:** E328O - Perennial Grain Conservation Crop Rotation

**Scenario** #9 - Perennial Grain Rotation

**Scenario Description:**

This practice payment is provided to the producer for the time needed to plan and implement the logistics of changing the rotation to effectively implement a conservation crop rotation on a cropland farm by adding a perennial grain as the third crop to their cropping system. The crop is intended to be a harvested and must be grown for at least 2 years after planting. No foregone income. Cost represents typical situations for conventional and organic producers. In this region this practice may be part of a conservation management system on both organic and non-organic operations that: (1) Reduces erosion; (2) Improves soil fertility and tilth; (3) Interrupts pest cycles; and (4) Builds soil organic matter. In applicable areas, reduces depletion of soil moisture or otherwise reduces the need for irrigation.

**Before Situation:**

Resources are protected at the minimum level for the Conservation Practice Standard (CPS) 328- Conservation Crop Rotation.

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328-Conservation Crop Rotation.

**Feature Measure:** Area Planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $6,411.19

**Scenario Cost/Unit:** $160.28

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 3 | $324.99 |
| **Equipment Installation** | | | | | | |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 40 | $883.60 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 40 | $899.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 40 | $1,912.40 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 20 | $2,391.00 |

**Practice:** E328P - Low Nitrogen Requirement Annual Crop Rotation

**Scenario** #9 - Low Nitrogen Requirement Annual Crop Rotation

**Scenario Description:**
Design an annual crop rotation which less than the average annual nitrogen fertilizer requirement compared to the current (benchmark) crop rotation.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $2,963.18

**Scenario Cost/Unit:** $29.63

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 5 | $239.05 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 20 | $2,391.00 |

**Practice:** E329A - No till to reduce soil erosion

**Scenario** #1 - No till to reduce soil erosion

**Scenario Description:**

Establish no till system to reduce sheet and rill erosion soil loss. Field(s) must have a soil loss at or below the soil tolerance (T) level for water and wind erosion for the crop rotation and a Soil Tillage Intensity Rating (STIR) of no greater than 10 for each crop in the planned rotation. The current NRCS wind and water erosion prediction technologies must be used to calculate soil loss and STIR.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $358.65

**Scenario Cost/Unit:** $3.59

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |

**Practice:** E329B - No till to reduce tillage induced particulate matter

**Scenario** #1 - No till to reduce tillage induced particulate matter

**Scenario Description:**

Establish no till system to reduce tillage induced particulate matter. Field(s) must have a soil loss at or below the soil tolerance (T) level for the crop rotation and a Soil Tillage Intensity Rating (STIR) of no greater than 10 for each crop in the planned rotation. The current NRCS wind and water erosion prediction technologies must be used to document soil loss and STIR calculations.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $358.65

**Scenario Cost/Unit:** $3.59

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |

**Practice:** E329C - No till to increase plant-available moisture

**Scenario** #1 - No till to increase plant-available moisture

**Scenario Description:**

Establish a no till system to increase plant-available moisture. Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 20. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations. Maintain a minimum 60 percent surface residue cover throughout the year to reduce evaporation from the soil surface.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $358.65

**Scenario Cost/Unit:** $3.59

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |

**Practice:** E329D - No till system to increase soil health and soil organic matter content

**Scenario** #1 - No till system to increase soil health and soil organic matter content

**Scenario Description:**

Establish a no till system to increase soil health and soil organic matter content. Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 20. The crop rotation must achieve a soil conditioning index (SCI) of zero or higher. The current NRCS wind and water erosion prediction technologies must be used to document STIR and SCI calculations. Residue shall not be burned, grazed, or harvested.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $478.20

**Scenario Cost/Unit:** $4.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |

**Practice:** E329E - No till to reduce energy

**Scenario** #1 - No till to reduce energy

**Scenario Description:**

Establish a no till system which reduces total energy consumption associated with field operations by at least 25% compared to current tillage system (benchmark). Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 20. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations and energy consumption.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $478.20

**Scenario Cost/Unit:** $4.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |

**Practice:** E334A - Controlled traffic farming to reduce compaction

**Scenario** #1 - Controlled traffic farming to reduce compaction

**Scenario Description:**

Establish a controlled traffic system where no more than 25% of the surface is tracked with heavy axel loads to minimize soil compaction. For row crops (e.g. corn in 30-inch rows) no tire should run on a row except for flotation tires on combines and/or fertilizer and lime spreading trucks. If wide flotation tires are used, they must be big enough that the inflation pressure will be below 18 psi to minimize compaction on trafficked rows.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 334 - Controlled Traffic Farming

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 334 - Controlled Traffic Farming

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $822.55

**Scenario Cost/Unit:** $8.23

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |

**Practice:** E338A - Strategically planned, patch burning for grazing distribution and wildlife habitat

**Scenario** #1 - Strategically planned, patch burning for grazing distribution and wildlife habitat

**Scenario Description:**

Patch burn grazing is the application of prescribed fires on portions of an identified grazing unit at different times of the year. Patch burn grazing allows grazing animals to select where they want to graze creating a mosaic of vegetation structures and diversity that will maintain or enhance the wildlife habitat desired for the identified wildlife species and maintain livestock production.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 338 - Prescribed Burning

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 338 - Prescribed Burning

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $761.26

**Scenario Cost/Unit:** $7.61

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Dozer, 140 HP | 927 | Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included. | Hours | $104.91 | 4 | $419.64 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 4 | $140.52 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |

**Practice:** E338B - Short-interval burns to promote a healthy herbaceous plant community

**Scenario** #1 - Short-interval burns to promote a healthy herbaceous plant community

**Scenario Description:**

The controlled use of fire is applied in a forest to restore fire-adapted plants while improving wildlife habitat, wildlife food supply, and reducing the risk of damage from intense, severe wildfires. The ideal interval between prescribed burns is not often achieved. To improve the effectiveness of prescribed burning, the frequency of prescribed burning is increased appropriately, for a specified time period, to help restore ecological conditions in forests and woodlands. Short return interval prescribed burning is used to regenerate desirable tree species, improve the condition of fire-adapted plants and native herbaceous vegetation, improve wildlife food supply, create wildlife habitat (snags and den/cavity trees), limit encroachment of competing vegetation including non-native species, and reduce the future risk of damage from intense, severe wildfires.

**Before Situation:**

The site has a mixture of woody sprouts and some herbaceous vegetation in the forest understory.

**After Situation:**

The site has a mixture of warm season perennial vegetation and cool-season annual forages. Grazing is occurring to manage the herbaceous vegetation and keep undesirable woody vegetation from occupying the forest understory.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $4,142.04

**Scenario Cost/Unit:** $103.55

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 8 | $611.04 |
| Truck, water | 1448 | Water tanker truck. Equipment only. Labor not included. | Hours | $198.55 | 8 | $1,588.40 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 24 | $539.52 |
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hours | $35.13 | 8 | $281.04 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** E338C - Sequential patch burning

**Scenario** #1 - Sequential patch burning

**Scenario Description:**

Conduct prescribed under burning beneath a forest canopy (ground fire), burning a portion of the area each year to create a mosaic of vegetation in several stages of development, to provide a more diverse understory and contribute to wildlife habitat. The health of conifer and oak-conifer forests, particularly longleaf pine with a characteristic herbaceous understory, is dependent on fire or another means of controlling encroaching woody vegetation. A healthy longleaf or shortleaf pine, or pine-oak forest, can support a wide array of wildlife including pollinators and several endangered or threatened species.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 338 - Prescribed Burning

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 338 - Prescribed Burning

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $1,650.20

**Scenario Cost/Unit:** $165.02

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 2 | $38.56 |
| Water tank, portable | 1602 | Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only. | Hours | $12.99 | 2 | $25.98 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 16 | $486.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |
| **Materials** | | | | | | |
| Fuel, ignition fuel mixture | 1596 | Mixture of gasoline and diesel for ignition of prescribed burns. Materials only. | Gallons | $5.19 | 5 | $25.95 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** E340A - Cover crop to reduce soil erosion

**Scenario** #1 - Cover crop to reduce soil erosion

**Scenario Description:**
Cover crop added to current crop rotation to reduce soil erosion from water and wind to below soil tolerance (T) level. Cover crops grown during critical erosion period(s). Species are selected that will have physical characteristics to provide adequate erosion protection.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $764.00

**Scenario Cost/Unit:** $7.64

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| **Materials** | | | | | | |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 20 | $733.60 |

**Practice:** E340B - Intensive cover cropping to increase soil health and soil organic matter content

**Scenario** #1 - Intensive cover cropping to increase soil health and soil organic matter content

**Scenario Description:**

Implementation of cover crop mix to provide soil coverage during ALL non-crop production periods in an annual crop rotation. Cover crop shall not be harvested or burned. Planned crop rotation including cover crops and associated management activities must achieve a soil conditioning index (SCI) of zero or higher. The current NRCS wind and water erosion prediction technologies must be used to document SCI calculations.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,383.90

**Scenario Cost/Unit:** $13.84

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 20 | $1,144.80 |

**Practice:** E340C - Use of multi-species cover crops to improve soil health and increase soil organic matter

**Scenario** #1 - Use of multi-species cover crops to improve soil health and increase soil organic matter

**Scenario Description:**

Implement a multi-species cover crop to add diversity and increase biomass production to improve soil health and increase soil organic matter. Cover crop mix must include a minimum of 4 different species. The cover crop mix will increase diversity of the crop rotation by including crop types currently missing, e.g. Cool Season Grass (CSG), Cool Season Broadleaves (CSB), Warm Season Grasses (WSG), Warm Season Broadleaves (WSB).

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,205.60

**Scenario Cost/Unit:** $12.06

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| **Materials** | | | | | | |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 20 | $1,144.80 |

**Practice:** E340D - Intensive orchard/vineyard floor cover cropping to increase soil health

**Scenario** #1 - Intensive orchard/vineyard floor cover cropping to increase soil health

**Scenario Description:**
Implement orchard or vineyard floor cover crops. Cover crop shall not be harvested, grazed, or burned. Must achieve a soil conditioning index of zero or higher and produce a positive trend in the Organic Matter subfactor over the life of the rotation.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,205.60

**Scenario Cost/Unit:** $12.06

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| **Materials** | | | | | | |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 20 | $1,144.80 |

**Practice:** E340E - Use of soil health assessment to assist with development of cover crop mix to improve soil health

**Scenario** #1 - Use of soil health assessment to assist with development of cover crop mix to improve soil health

**Scenario Description:**
Soil health assessment (year 1) to evaluate current crop rotation in addressing soil organic matter depletion. Results are utilized to select a multi-species cover crop mix to add to the current crop rotation. Follow up assessment completed (year 3).

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $339.10

**Scenario Cost/Unit:** $3.39

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |
| **Materials** | | | | | | |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 1 | $57.24 |
| Test, Soil Health, Basic Package | 2734 | Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling. | Number | $131.91 | 1 | $131.91 |

**Practice:** E340F - Cover crop to minimize soil compaction

**Scenario** #1 - Cover crop to minimize soil compaction

**Scenario Description:**
Establish a cover crop mix that includes plants with both fibrous root and deep rooted systems. Fibrous to treat and prevent both near surface (0-4") and deep (>4") soil compaction and deep rooted to break up deep compacted soils. Cover crop shall not be harvested, grazed, or burned.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,175.20

**Scenario Cost/Unit:** $11.75

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| **Materials** | | | | | | |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 20 | $1,144.80 |

**Practice:** E340G - Cover crop to reduce water quality degradation by utilizing excess soil nutrients

**Scenario** #1 - Cover crop to reduce water quality degradation by utilizing excess soil nutrients

**Scenario Description:**
Establish a cover crop mix to take up excess soil nutrients. Select cover crop species for their ability to effectively utilize nutrients. Terminate the cover crop as late as practical to maximize plant biomass production and nutrient uptake. Cover crop shall not be harvested, grazed, or burned.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,175.20

**Scenario Cost/Unit:** $11.75

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 1 | $30.40 |
| **Materials** | | | | | | |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 20 | $1,144.80 |

**Practice:** E340H - Cover crop to suppress excessive weed pressures and break pest cycles

**Scenario** #1 - Cover crop to suppress excessive weed pressures and break pest cycles

**Scenario Description:**

Establish a cover crop mix to suppress excessive weed pressures and break pest cycles. Select cover crop species for their life cycles, growth habits, and other biological, chemical and/or physical characteristics. Select cover crop species that do not harbor pests or diseases of subsequent crops in the rotation. Cover crop shall not be harvested, grazed, or burned.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,205.60

**Scenario Cost/Unit:** $12.06

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| **Materials** | | | | | | |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 20 | $1,144.80 |

**Practice:** E340I - Using cover crops for biological strip till

**Scenario** #9 - Using cover crops for biological strip till

**Scenario Description:**
Establish alternating strips of cover crops in which one strip acts as a biological strip-tiller and the adjacent strip promotes soil health with high residue cover crops. This will facilitate planting of the subsequent cash crop into the biologically strip-tilled row without the need for mechanical disturbance.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard 340 - Cover Crop.

**After Situation:**
The adoption of this enhancement will provide protection above the minimum level as described in Conservation Practice Standard 340 - Cover Crop.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,296.80

**Scenario Cost/Unit:** $12.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 5 | $152.00 |
| **Materials** | | | | | | |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 20 | $1,144.80 |

**Practice:** E345A - Reduced tillage to reduce soil erosion

**Scenario** #1 - Reduced tillage to reduce soil erosion

**Scenario Description:**

Establish a reduced tillage system to reduce soil loss. Field(s) must have a soil loss at or below the soil tolerance (T) level for water and wind erosion for the crop rotation and a Soil Tillage Intensity Rating (STIR) of no greater than 40 for each crop in the planned rotation. The current NRCS wind and water erosion prediction technologies must be used to calculate soil loss and STIR.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $478.20

**Scenario Cost/Unit:** $4.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |

**Practice:** E345B - Reduced tillage to reduce tillage induced particulate matter

**Scenario** #1 - Reduced tillage to reduce tillage induced particulate matter

**Scenario Description:**

Establish a reduced tillage system to reduce tillage induced particulate matter. Field(s) must have a soil loss at or below the soil tolerance (T) level for the crop rotation and a Soil Tillage Intensity Rating (STIR) of no greater than 40 for each crop in the planned rotation. The current NRCS wind and water erosion prediction technologies must be used to document soil loss and STIR calculations.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $358.65

**Scenario Cost/Unit:** $3.59

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |

**Practice:** E345C - Reduced tillage to increase plant-available moisture

**Scenario** #1 - Reduced tillage to increase plant-available moisture

**Scenario Description:**

Establish a reduced till system to increase plant-available moisture. Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 80. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations. Maintain a minimum 60 percent surface residue cover throughout the year to reduce evaporation from the soil surface.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $358.65

**Scenario Cost/Unit:** $3.59

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |

**Practice:** E345D - Reduced tillage to increase soil health and soil organic matter content

**Scenario** #1 - Reduced tillage to increase soil health and soil organic matter content

**Scenario Description:**

Establish a reduced till system to increase soil health and soil organic matter content. Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 80. The crop rotation must achieve a soil conditioning index (SCI) of zero or higher and produce a positive trend in the Organic Matter (OM) subfactor over the life of the crop rotation. The current NRCS wind and water erosion prediction technologies must be used to document STIR and SCI calculations. Residue shall not be burned, grazed, or harvested.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $478.20

**Scenario Cost/Unit:** $4.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |

**Practice:** E345E - Reduced tillage to reduce energy use

**Scenario** #1 - Reduced tillage to reduce energy use

**Scenario Description:**

Establish a reduced tillage system which reduces total energy consumption associated with field operations by at least 25% compared to conventional tillage systems (benchmark). Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 80. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations and energy consumption.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $358.65

**Scenario Cost/Unit:** $3.59

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |

**Practice:** E382A - Incorporating "wildlife friendly" fencing for connectivity of wildlife food resources

**Scenario** #1 - Incorporating "wildlife friendly" fencing for connectivity of wildlife food resources

**Scenario Description:**
Retrofitting or constructing fences that provide a means to control movement of animals, people, and vehicles, but minimizes wildlife movement impacts.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 382 - Fence

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 382 - Fence

**Feature Measure:** Acre

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $179.28

**Scenario Cost/Unit:** $0.18

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 1 | $19.28 |
| **Materials** | | | | | | |
| Vinyl Undersill Strips | 241 | Marking material using the undersill strips of vinyl siding. Priced per foot of fence per each wire. Materials only. | Feet | $0.08 | 2000 | $160.00 |

**Practice:** E382B - Installing electrical fence offsets and wire for cross-fencing to improve grazing management

**Scenario** #9 - Installing electrical fence offsets and wire for cross-fencing to improve grazing management

**Scenario Description:**
Retrofitting conventional fences such as barb wire, with new electrical offsets and electrical wire to facilitate cross-fencing for improved grazing management.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard 382 - Fence

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 382 - Fence

**Feature Measure:** Feet

**Scenario Unit:** Feet

**Scenario Typical Size:** 2,640.00

**Scenario Total Cost:** $1,303.55

**Scenario Cost/Unit:** $0.49

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 16 | $486.40 |
| **Materials** | | | | | | |
| Wire, High Tensile, 12.5 Gauge, 4,000' roll | 2 | High Tensile 12.5 gauge, 4,000' roll. Includes materials and shipping only. | Each | $167.24 | 1 | $167.24 |
| Electric, Ground Rods | 20 | Electric, Ground Rod for electric fence. Includes materials and shipping only. | Each | $14.39 | 3 | $43.17 |
| Electric, Insulated cable | 23 | Electric, Insulated cable for electric fence. Typically in spools of 100 to 200 feet. Includes materials and shipping only. | Each | $42.10 | 2 | $84.20 |
| Electric, Power Surge Protector | 24 | Electric, Power Surge Protector for electric fence. Includes materials and shipping only. | Each | $15.61 | 1 | $15.61 |
| Electric, Cutoff Switch | 25 | Electric, Cutoff Switch for electric fence. Includes materials and shipping only. | Each | $10.68 | 1 | $10.68 |
| Electric, Tester | 26 | Electric, Tester for electric fence. Includes materials and shipping only. | Each | $45.74 | 1 | $45.74 |
| Electric, Energizer, 6 joule | 29 | Electric, Energizer, 6 joule for electric fence. Includes materials and shipping only. | Each | $397.71 | 1 | $397.71 |
| Fence, Wire Assembly, High Tensile, Electric, 1 Strand | 32 | Brace pins, springs, strainers, battens, clips, crimp sleeves, staples, insulators, wrap around sleeves. Includes materials and shipping only. | Feet | $0.02 | 2640 | $52.80 |

**Practice:** E383A - Grazing-maintained fuel break to reduce the risk of fire

**Scenario** #1 - Grazing-maintained fuel break to reduce the risk of fire

**Scenario Description:**
The area has existing fuel break(s) of 30 to 60 feet in width, supporting a mixture of woody sprouts and some herbaceous vegetation. Warm-season perennial vegetation will be established on the fuel breaks, and will be over-seeded with cool-season annual forages in the fall. Grazing will be managed on the fuel breaks to remove or modify the fine fuel vegetation, thus reducing the risk of fire spread from ground fires. Ground cover will be maintained to control soil erosion and facilitate prescribed burning.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 383 - Fuel Break

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 383 - Fuel Break

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $2,978.51

**Scenario Cost/Unit:** $297.85

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Fertilizer, ground application, dry bulk | 950 | Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $7.54 | 10 | $75.40 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 10 | $220.90 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 24 | $539.52 |
| **Materials** | | | | | | |
| Nitrogen (N), Urea | 71 | Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.94 | 1000 | $940.00 |
| Annual Grasses, Legumes or Forbs | 2732 | A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $57.24 | 10 | $572.40 |
| Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2747 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $45.45 | 10 | $454.50 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** E384A - Biochar production from woody residue

**Scenario** #10 - Biochar production from woody residue

**Scenario Description:**

The adoption of this enhancement will go above the minimum level of woody residue treatment by creating a product that improves air quality by storing carbon, decreases fuel loads and fire hazard, and can improves soil quality. It will utilize woody debris remaining after a silvicultural practice or natural disturbance to create biochar. Biochar stores carbon and is a useful soil amendment that improves SOM and water-holding capacity.

**Before Situation:**

Area has woody residue that is unmerchantable and available for creation of quality biochar. Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 384 - Woody Residue Treatment

**After Situation:**

Woody debri has been coverted to biochar.

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $12,151.75

**Scenario Cost/Unit:** $6,075.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hours | $93.24 | 40 | $3,729.60 |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 40 | $276.80 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 15 | $385.20 |
| Water tank, portable | 1602 | Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only. | Hours | $12.99 | 80 | $1,039.20 |
| Biochar Kiln, open fire | 2681 | Open fire kiln or metal container used to produce biochar/charcoal production. Daily rental rate. Includes all material and equipment | Hours | $9.66 | 200 | $1,932.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 40 | $1,216.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 80 | $1,798.40 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 40 | $1,176.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |

**Practice:** E386A - Enhanced field borders to reduce soil erosion along the edge(s) of a field

**Scenario** #1 - Enhanced field borders to reduce soil erosion along the edge(s) of a field

**Scenario Description:**
Enhance existing field borders to a width of at least 30 feet and establish a single species or mixture of species that provide a dense ground cover along the edge(s) of the field.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 386 - Field Border

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 386 - Field Border

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $625.53

**Scenario Cost/Unit:** $625.53

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 1 | $9.44 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.41 | $120.31 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.36 | $88.51 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.23 | $39.37 |
| **Materials** | | | | | | |
| Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density | 2748 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Includes material and shipping. | Acres | $64.94 | 1 | $64.94 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** E386B - Enhanced field borders to increase carbon storage along the edge(s) of the field

**Scenario** #1 - Enhanced field borders to increase carbon storage along the edge(s) of the field

**Scenario Description:**
Enhance existing field borders to a width of at least 30 feet and establish a single species or mixture of species that provide a dense ground cover and dense rooting system along the edge(s) of the field.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 386 - Field Border

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 386 - Field Border

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $713.47

**Scenario Cost/Unit:** $713.47

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 1 | $9.44 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.41 | $120.31 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.36 | $88.51 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.23 | $39.37 |
| **Materials** | | | | | | |
| Native and Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density | 2756 | A mix of native and introduced perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to high density (41-60 pure live seeds/sq ft). Includes material and shipping. | Acres | $152.88 | 1 | $152.88 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** E386C - Enhanced field borders to decrease particulate emissions along the edge(s) of the field

**Scenario** #1 - Enhanced field borders to decrease particulate emissions along the edge(s) of the field

**Scenario Description:**
Enhance existing field borders to a width of at least 40 feet and establish a mixture of species that decrease the particulate emissions along the edge(s) of the field.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 386 - Field Border

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 386 - Field Border

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $645.00

**Scenario Cost/Unit:** $645.00

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 1 | $9.44 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.41 | $120.31 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.36 | $88.51 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.23 | $39.37 |
| **Materials** | | | | | | |
| Introduced Perennial Grasses, Legumes and/or Forbs, High Density | 2749 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at high density (greater than 60 pure live seeds/sq ft). Includes material and shipping. | Acres | $84.41 | 1 | $84.41 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** E386D - Enhanced field borders to increase food for pollinators along the edge(s) of a field

**Scenario** #1 - Enhanced field borders to increase food for pollinators along the edge(s) of a field

**Scenario Description:**
Enhance existing field borders to a width of at least 40 feet and establish a mixture of species that provide food for pollinators along the edge(s) of the field.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 386 - Field Border

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 386 - Field Border

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $713.47

**Scenario Cost/Unit:** $713.47

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 1 | $9.44 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.41 | $120.31 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.36 | $88.51 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.23 | $39.37 |
| **Materials** | | | | | | |
| Native and Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density | 2756 | A mix of native and introduced perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to high density (41-60 pure live seeds/sq ft). Includes material and shipping. | Acres | $152.88 | 1 | $152.88 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** E386E - Enhanced field borders to increase wildlife food and habitat along the edge(s) of a field

**Scenario** #1 - Enhanced field borders to increase wildlife food and habitat along the edge(s) of a field

**Scenario Description:**
Enhance existing field borders to a width of at least 40 feet and establish a mixture of species that provide wildlife food and habitat along the edge(s) of the field. The extended field border will also provide enhanced wildlife habitat continuity.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 386 - Field Border

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 386 - Field Border

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $713.47

**Scenario Cost/Unit:** $713.47

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 1 | $9.44 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.41 | $120.31 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.36 | $88.51 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.23 | $39.37 |
| **Materials** | | | | | | |
| Native and Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density | 2756 | A mix of native and introduced perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to high density (41-60 pure live seeds/sq ft). Includes material and shipping. | Acres | $152.88 | 1 | $152.88 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** E390A - Increase riparian herbaceous cover width for sediment and nutrient reduction

**Scenario** #1 - Increase riparian herbaceous cover width for sediment and nutrient reduction

**Scenario Description:**
Where an existing herbaceous riparian buffer is located along a river, stream, pond, lake, or other waterbody, increase the width of the buffer in order to allow a greater percentage of sediment and nutrient removal from surface and subsurface flows.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 390 - Riparian Herbaceous Cover

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 390 - Riparian Herbaceous Cover

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $1,017.48

**Scenario Cost/Unit:** $508.74

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 2 | $12.58 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 2 | $44.18 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.82 | $240.63 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.72 | $177.02 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.46 | $78.75 |
| **Materials** | | | | | | |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 2 | $101.72 |
| Native Perennial Grasses, Medium Density | 2751 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Includes material and shipping. | Acres | $181.30 | 2 | $362.60 |

**Practice:** E390B - Increase riparian herbaceous cover width to enhance wildlife habitat

**Scenario** #1 - Increase riparian herbaceous cover width to enhance wildlife habitat

**Scenario Description:**
Where an existing herbaceous riparian buffer is located along a river, stream, pond, lake, or other waterbody, increase the diversity of native species, control invasive species, install fencing and relocate equipment operations, trails, and livestock, and increase the width of the buffer.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 390 - Riparian Herbaceous Cover

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 390 - Riparian Herbaceous Cover

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 4.00

**Scenario Total Cost:** $1,431.58

**Scenario Cost/Unit:** $357.89

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 4 | $25.16 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 2 | $44.18 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 1 | $293.45 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 1 | $245.86 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.46 | $78.75 |
| **Materials** | | | | | | |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 4 | $203.44 |
| Native Perennial Grasses, Legumes and/or Forbs, Medium Density | 2754 | A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping. | Acres | $270.37 | 2 | $540.74 |

**Practice:** E391A - Increase riparian forest buffer width for sediment and nutrient reduction

**Scenario** #1 - Increase riparian forest buffer width for sediment and nutrient reduction

**Scenario Description:**
Where an existing forested riparian area is located along a river, stream, pond, lake, or other waterbody, increase the width of the buffer in order to allow a greater percentage of sediment and nutrient removal from surface and subsurface flows.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 391 - Riparian Forest Buffer

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 391 - Riparian Forest Buffer

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $4,529.74

**Scenario Cost/Unit:** $2,264.87

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 16 | $410.88 |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 2 | $63.64 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 2 | $12.58 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 4 | $112.60 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 16 | $204.96 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.82 | $240.63 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.72 | $177.02 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.46 | $78.75 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 4 | $117.68 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 1 | $15.57 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1 | $2.24 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 872 | $1,656.80 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Tree shelter, solid tube type, 4 in. x 48 in. | 1566 | 4 inch x 48 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $4.60 | 100 | $460.00 |
| Stakes, wood, 1 in. x 1 in. x 48 in. | 1578 | 1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.33 | 100 | $233.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** E391B - Increase stream shading for stream temperature reduction

**Scenario** #1 - Increase stream shading for stream temperature reduction

**Scenario Description:**
Riparian area tree canopy cover density is increased and the extent of the forested riparian area is increased to provide greater stream shading.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 391 - Riparian Forest Buffer

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 391 - Riparian Forest Buffer

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $4,574.70

**Scenario Cost/Unit:** $2,287.35

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 16 | $410.88 |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 2 | $63.64 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 2 | $12.58 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 4 | $112.60 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 16 | $204.96 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.82 | $240.63 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.72 | $177.02 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.46 | $78.75 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 18 | $404.64 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 4 | $117.68 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 1 | $15.57 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1 | $2.24 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 872 | $1,656.80 |
| Tree shelter, solid tube type, 4 in. x 48 in. | 1566 | 4 inch x 48 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $4.60 | 100 | $460.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Stakes, wood, 1 in. x 1 in. x 48 in. | 1578 | 1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.33 | 100 | $233.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** E391C - Increase riparian forest buffer width to enhance wildlife habitat

**Scenario** #1 - Increase riparian forest buffer width to enhance wildlife habitat

**Scenario Description:**
Where an existing riparian forest buffer is located along a river, stream, pond, lake, or other waterbody, increase the diversity of native species, control invasive species, install fencing and relocate equipment operations, trails, and livestock to increase the functional width of the buffer.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 391 - Riparian Forest Buffer

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 391 - Riparian Forest Buffer

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $4,574.70

**Scenario Cost/Unit:** $2,287.35

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 16 | $410.88 |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 2 | $63.64 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 2 | $12.58 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 4 | $112.60 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 16 | $204.96 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.82 | $240.63 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.72 | $177.02 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.46 | $78.75 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 18 | $404.64 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 4 | $117.68 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 1 | $15.57 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1 | $2.24 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 872 | $1,656.80 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Tree shelter, solid tube type, 4 in. x 48 in. | 1566 | 4 inch x 48 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $4.60 | 100 | $460.00 |
| Stakes, wood, 1 in. x 1 in. x 48 in. | 1578 | 1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.33 | 100 | $233.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** E393A - Extend existing filter strip to reduce water quality impacts

**Scenario** #1 - Extend existing filter strip to reduce water quality impacts

**Scenario Description:**
Extend existing filter strips for water quality protection. Extend the existing buffer for a total of 60 feet or more to enhance water quality functions. The extended buffers must be composed of at least 5 species of non-noxious, wildlife friendly grasses and/or perennial forbs best suited to site conditions. Include species that provide pollinator food and habitat where possible.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 393 - Filter Strip

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 393 - Filter Strip

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $952.57

**Scenario Cost/Unit:** $952.57

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tillage, Light | 945 | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acres | $13.21 | 1 | $13.21 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| Seeding Operation, No Till/Grass Drill | 960 | No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs. | Acres | $22.09 | 1 | $22.09 |
| Cultipacking | 1100 | Includes equipment, power unit and labor costs. | Acres | $9.44 | 1 | $9.44 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.41 | $120.31 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.36 | $88.51 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.23 | $39.37 |
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Native and Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density | 2756 | A mix of native and introduced perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to high density (41-60 pure live seeds/sq ft). Includes material and shipping. | Acres | $152.88 | 1 | $152.88 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** E412A - Enhance a grassed waterway

**Scenario** #9 - Waterway, reshape/extend/widen

**Scenario Description:**

Typical practice is 1500 ' long, 12' bottom, 8:1 side slopes, 1.1' depth. A grass waterway that is a shaped or graded channel and is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. Waterway area measured from top of bank to top of bank. Seeding will be completed under the Critical Area Planting (342) Practice Standard with seeding area up to 20% greater than waterway area to account for buffer area along the waterway. Costs include excavation and associated work to construct the overall shape and grade of the waterway. This scenario would apply to Grassed Waterways without erosion control blanket or rock checks.

**Before Situation:**

The field has a grassed waterway, but a gully cutting upstream, downstream, or adjacent to the existing grassed waterway has formed as time goes on, so the new gully needs to be stopped or controlled. The new gully has formed in field as a result of a change in runoff amounts from the original design from subsurface drainage outlets, change in cropping techniques, change in land use, etc.

**After Situation:**

An installed grassed waterway has been installed that is possibly wider or longer than the original grassed waterway that wasn't functioning properly anymore. The new installed grassed waterway is 1500 ' long, 12' bottom, 8:1 side slopes, 1.1' depth. The practice is installed using a dozer and/or scraper, with final grading with motor grader. Use Critical Area Planting (342) for establishment of waterway vegetation. If erosion control blankets or mulching for seedbed establishment/protection are needed, use conservation practice Mulching (484). Drainage tile, if needed, will be installed accoring to Subsurface Drain (606).

**Feature Measure:** Acres of Waterway reshaped, exte

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $3,921.48

**Scenario Cost/Unit:** $3,921.48

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yards | $0.85 | 411 | $349.35 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yards | $3.60 | 954 | $3,434.40 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |

**Practice:** E449A - Complete pumping plant evaluation for water savings

**Scenario** #1 - Complete pumping plant evaluation for water savings

**Scenario Description:**

The performance of pump tests and evaluations of all pumping plants to determine the potential to rehabilitate/replace/reconfigure pump performance to improve water delivery efficiency 10% or more. Develop and provide a written report with recordkeeping documents and list of adjustments and calculations of the reduction of water use based on before and after conditions.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 – Irrigation Water Management

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in the Conservation Practice Standard, (CPS) 449 – Irrigation Water Management.

**Feature Measure:** Each pump evaluated

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,140.97

**Scenario Cost/Unit:** $4,140.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 32 | $3,825.60 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** E449C - Advanced Automated IWM - Year 2-5, soil moisture monitoring

**Scenario** #1 - Advanced Automated IWM - Year 2-5, soil moisture monitoring

**Scenario Description:**
Advanced automated irrigation water management using soil moisture or water level monitoring (installed as per IWM plan) with data loggers.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 – Irrigation Water Management

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 125.00

**Scenario Total Cost:** $2,363.44

**Scenario Cost/Unit:** $18.91

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 40 | $1,216.00 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 24 | $1,147.44 |

**Practice:** E449D - Advanced Automated IWM - Year 1, Equipment and soil moisture or water level monitoring

**Scenario** #1 - Advanced Automated IWM - Year 1, Equipment and soil moisture or water level monitoring

**Scenario Description:**
Installing and monitoring soil moisture or water leveling equipment for advanced automated irrigation water management

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 - Irrigation Water Management

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 120.00

**Scenario Total Cost:** $6,864.72

**Scenario Cost/Unit:** $57.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 30 | $770.40 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 16 | $764.96 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Switches and Controls, temp sensors | 1192 | Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $697.95 | 3 | $2,093.85 |
| Data Logger with Telemetry System | 1454 | Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only. | Each | $1,660.98 | 1 | $1,660.98 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |

**Practice:** E449F - Intermediate IWM - Year 1, Equipment with Soil or Water Level monitoring

**Scenario** #9 - Intermediate IWM - Year 1, Equipment with Soil moisture or Water Level monitoring

**Scenario Description:**
This activity involves monitoring soil moisture or water levels within a irrigated field for intermediate irrigation water management include installation of equipment year 1.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 - Irrigation Water Management

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 160.00

**Scenario Total Cost:** $7,159.07

**Scenario Cost/Unit:** $44.74

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| **Materials** | | | | | | |
| Switches and Controls, temp sensors | 1192 | Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $697.95 | 1 | $697.95 |
| Flow Meter, with mechanical Index | 1450 | 10 inch, Turbine Type Flow Meter with Mechanical Index, permanently installed. Includes materials and shipping only. | Each | $1,644.47 | 1 | $1,644.47 |
| Data Logger | 1453 | Data Logger W/Graphic Output for water management. Materials only. | Each | $693.70 | 4 | $2,774.80 |
| Soil Moisture Sensor | 1456 | Soil moisture resistance sensor with 10 foot cables. Equipment only. | Each | $64.43 | 12 | $773.16 |
| Weather Station, Advanced | 2550 | Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring . | Each | $853.13 | 1 | $853.13 |

**Practice:** E449G - Intermediate IWM - Years 2-5, Soil or Water Level monitoring

**Scenario** #9 - Intermediate IWM - Years 2-5, Soil Moisture or Water Level monitoring

**Scenario Description:**

Field currently flooded through a cascade levee system will be converted to furrow irrigation. It is required that field is leveed on the lower end and approximately 25% up the sides for furrow irrigation prior to implementing the enhancement. After the previous year's crop is harvested, elevated planting beds and furrows will be reshaped as needed to guarantee proper irrigation of the rice crop. Layflat tubing will be utilized with the correct holes or gates installed to advance water down the furrows at the appropriate rate across the length of the field as prescribed by an NRCS "PHAUCET" design, Delta Plastic® Pipe Planner® or similar.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 - Irrigation Water Management

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 160.00

**Scenario Total Cost:** $1,412.20

**Scenario Cost/Unit:** $8.83

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 15 | $456.00 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 20 | $956.20 |

**Practice:** E449H - Intermediate IWM - Years 2 -5, using soil moisture or water level monitoring

**Scenario** #25 - Intermediate IWM - Years 2 - 5, using soil moisture or water level monitoring

**Scenario Description:**

Intermediate irrigation water management using soil moisture or water level monitoring with data loggers; specifically, multi-depth soil moisture sensors, water well and relift permanent flow meters, twice-daily water stage imaging water level devices, and quarter hour climate data element recording weather stations at approved IWM plan locations.

**Before Situation:**

Resources are protected at the minimum level of the CPS 449 - Irrigation Water Management.

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $1,912.40

**Scenario Cost/Unit:** $47.81

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 40 | $1,912.40 |

**Practice:** E449I - Sprinkler Irrigation Equipment Retrofit

**Scenario** #25 - IWM - Year 1, Retrofit Equipment with Speed Control on Sprinkler Irrigation

**Scenario Description:**
This activity involves installing speed control equipment to a sprinkler irrigated field for irrigation water management. The installation of the equipment is in year one. It is applicable to sprinkler irrigation systems that do not already have the functionality and are able to integrate the speed control technology.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 - Irrigation Water Management

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $1,831.02

**Scenario Cost/Unit:** $1,831.02

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| **Materials** | | | | | | |
| Center Pivot VRI, Speed Control | 2727 | Center pivot irrigation system using variable rate irrigation using speed control technology. Includes controller, sensors, GPS unit, and installation. | Number | $1,587.82 | 1 | $1,587.82 |

**Practice:** E449J - Intermediate IWM - 20% Reducing Water Usage

**Scenario** #9 - Intermediate IWM - 20% Reduced Water Usage

**Scenario Description:**

Intermediate irrigation water management involves monitoring soil moisture or water levels within an irrigated field by utilizing technological equipment to gather field specific data concerning weather, soil moisture or water levels throughout the irrigation season. The equipment will be utilized to log data through the season to be retrieved periodically so irrigation decisions can be made based on scientific data. Maximum time between data retrieval is weekly. Monitoring will be for the entire irrigation season and data gathered will be used to make sound decisions on irrigation water use. Supplimental Water usage will be reduced by 20% from previous years use and remain at that level for the remainder of the contract.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 – Irrigation Water Management.

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in the Conservation Practice Standard (CPS) 449 – Irrigation Water Management.

**Feature Measure:** Irrigated Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 125.00

**Scenario Total Cost:** $4,701.06

**Scenario Cost/Unit:** $37.61

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 32 | $3,825.60 |
| **Materials** | | | | | | |
| Soil Moisture Meter | 1455 | Soil Moisture Sensor Reader. Equipment only. | Each | $237.94 | 1 | $237.94 |
| Soil Moisture Sensor | 1456 | Soil moisture resistance sensor with 10 foot cables. Equipment only. | Each | $64.43 | 5 | $322.15 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** E472A - Manage livestock access to waterbodies to reduce nutrients or pathogens to surface water

**Scenario** #1 - Manage livestock access to waterbodies to reduce nutrients or pathogens to surface water

**Scenario Description:**
Installation of structures and implementation of grazing management actions that restrict livestock access to streams, ditches, and other waterbodies in order to reduce nutrient loading or reduce the introduction of pathogens from manure, bio-solids or compost to surface waters.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 472 - Access Control

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 472 - Access Control

**Feature Measure:** (Stream length protected * 2) + ((C

**Scenario Unit:** Feet

**Scenario Typical Size:** 1,320.00

**Scenario Total Cost:** $3,730.55

**Scenario Cost/Unit:** $2.83

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 5 | $49.95 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 5 | $128.40 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 5 | $140.75 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 33 | $741.84 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 5 | $147.10 |
| **Materials** | | | | | | |
| Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll | 1 | Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only. | Each | $127.46 | 4 | $509.84 |
| Post, Wood, CCA treated, 3-4 in. x 7 ft. | 9 | Wood Post, Line 3-4 inch dia. X 7 ft., CCA Treated. Includes materials and shipping only. | Each | $10.64 | 20 | $212.80 |
| Post, Wood, CCA treated, 6 in. x 8 ft. | 12 | Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only. | Each | $24.11 | 8 | $192.88 |
| Post, Steel T, 1.33 lbs, 6 ft. | 15 | Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only. | Each | $7.39 | 90 | $665.10 |
| Fence, Wire Assembly, Barbed Wire | 30 | Brace pins, battens, clips, staples. Includes materials and shipping only. | Feet | $0.21 | 1320 | $277.20 |
| Gate, Pipe, 12 ft. | 1057 | 6 rail tube gate, 16 gauge. Includes materials and shipping only. | Each | $244.45 | 2 | $488.90 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** E484A - Mulching to improve soil health

**Scenario** #1 - Mulching to improve soil health

**Scenario Description:**

Implement a crop rotation which utilizes mulch and addresses all four principle components of soil health: increases diversity of the cropping system; maintains residue throughout the year; keeps a living root; and minimizes soil chemical, physical and biological disturbance. Plant-based mulching materials will be applied at least once during the rotation. The rotation will include at least 4 different crops and/or cover crops grown in a sequence that will produce a positive trend in the Organic Matter (OM) subfactor value over the life of the rotation, as determined by the Soil Conditioning Index (SCI). The current NRCS wind and water erosion prediction technologies must be used to document the rotation and SCI calculations.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 484 - Mulching

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 484 - Mulching

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $239.10

**Scenario Cost/Unit:** $2.39

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |

**Practice:** E484B - Reduce particulate matter emissions by using orchard or vineyard generated woody materials as mulch

**Scenario** #1 - Reduce particulate matter emissions by using orchard or vineyard generated woody materials as mulch

**Scenario Description:**

Reduce particulate matter emissions by using orchard or vineyard generated woody materials as mulch. At least 90% of all woody materials are to be used as mulch on the operation. An exception may be made when it is determined that infected material must be burned to preserve crop health.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 484 – Mulching

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 484 - Mulching

**Feature Measure:** Actual Acres of Crop producing Wo

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $658.04

**Scenario Cost/Unit:** $16.45

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |

**Practice:** E484C - Mulching with natural materials in specialty crops for weed control

**Scenario** #9 - Mulching with natural materials in specialty crops for weed control

**Scenario Description:**
Application of straw mulch or other state approved natural material (such as wood chips, compost, green chop, dry hay or sawdust) for weed control in specialty crops.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard 484 - Mulching

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 484 - Mulching

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $570.31

**Scenario Cost/Unit:** $57.03

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 2 | $56.30 |
| Mulcher, straw blower | 1305 | Straw bale mulcher/blower to mechanically spread small or large straw bales. Labor not included. | Hours | $87.28 | 2 | $174.56 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 2 | $58.84 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |
| **Materials** | | | | | | |
| Straw | 1237 | Small grain straw (non organic and certified organic). Includes materials only. | Ton | $107.37 | 1.5 | $161.06 |

**Practice:** E511A - Harvest of crops (hay or small grains) using measures that allow desired species to flush or escape

**Scenario** #1 - Harvest of crops (hay or small grains) using measures that allow desired species to flush or escape

**Scenario Description:**

Harvest of crops (hay or small grains) using conservation measures that allow desired species to flush or escape. (For species list see State Wildlife Action Plan) Conservation measures include timing of harvest, idling land during the nesting or fawning period, and applying harvest techniques that reduce mortality to wildlife.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 511 - Forage Harvest Management

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 511 - Forage Harvest Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $190.83

**Scenario Cost/Unit:** $3.82

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Foregone Income** | | | | | | |
| FI, Hay, General Grass | 2122 | General Grass Hay is Primary Land Use | Ton | $50.94 | 1.67 | $85.07 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |

**Practice:** E511B - Forage harvest management that helps maintain wildlife habitat cover, shelter or continuity

**Scenario** #1 - Forage harvest management that helps maintain wildlife habitat cover, shelter or continuity

**Scenario Description:**
The timely cutting and removal of forages from the field as hay, green-chop, or ensilage in such a way, and in time frames, to optimize both forage yield/quality and wildlife cover and shelter and/or continuity between otherwise disconnected habitats.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 511 - Forage Harvest Management

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 511 - Forage Harvest Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $830.06

**Scenario Cost/Unit:** $8.30

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 25 | $782.25 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |

**Practice:** E511C - Forage testing for improved harvesting methods and hay quality

**Scenario** #9 - Hay quality record keepoing for livestock producers

**Scenario Description:**

This enhancement results in participants obtaining hay samples and submitting them to a land grant university or other accredited lab for quality analysis. The participant will record data for multiple harvests and use the data to make future decisions. The participant will discuss the results with NRCS or with their cooperative extensions service. Technical recommendations are made to the participant based upon the test results.

**Before Situation:**

The participant has hay that doesn't have quality analysis or doesn't know the quality of previous hay harvests. The hay will be fed when needed.

**After Situation:**

The participant has hay with hay quality analysis. The participant records data based upon the results to reference and make future decisions. The participant has a better understanding on the quality of hay so that adjustments in feeding or supplementation can be made.

**Feature Measure:** Each

**Scenario Unit:** Number

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $272.42

**Scenario Cost/Unit:** $136.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |
| **Materials** | | | | | | |
| Test, Feed Analysis | 1989 | Representative sample of feed. Includes materials and shipping only. | Each | $30.05 | 2 | $60.10 |

**Practice:** E511D - Forage Harvest Management to Improve Terrestrial Habitat for Wildlife during Over-Winter Periods

**Scenario** #9 - Forage Harvest Management Overwinter

**Scenario Description:**
Eliminate or forgo the last fall cutting of hay or haylage to optimize wildlife cover and shelter during critical over-winter periods and lengthen late season bloom period for invertebrates. Allowing late season stand maturity increases stand life and reduces risks of frost and winter damage while providing valuable wildlife habitat and an extended bloom periods.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 511-Forage Harvest Management

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in CPS - 511

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $1,067.59

**Scenario Cost/Unit:** $26.69

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Tractor, agricultural, 120 HP | 962 | Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included. | Hours | $65.82 | 3 | $197.46 |
| **Foregone Income** | | | | | | |
| FI, Hay, Alfalfa | 2121 | Alfalfa Hay is Primary Crop | Ton | $104.98 | 3 | $314.94 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 3 | $88.26 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 5 | $239.05 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |

**Practice:** E512A - Cropland conversion to grass-based agriculture to reduce soil erosion

**Scenario** #1 - Cropland conversion to grass-based agriculture to reduce soil erosion

**Scenario Description:**
Conversion of cropped land to grass-based agriculture to reduce soil erosion. Mixtures of perennial grasses, forbs, and legume species are established on cropland where annually-seeded cash crops have been grown.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,004.62

**Scenario Cost/Unit:** $10.05

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2747 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $45.45 | 20 | $909.00 |

**Practice:** E512B - Forage and biomass planting to reduce soil erosion or increase organic matter to build soil health

**Scenario** #1 - Forage and biomass planting to reduce soil erosion or increase organic matter to build soil health

**Scenario Description:**
Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production that can provide for reduced soil erosion, improving soil health.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $2,633.82

**Scenario Cost/Unit:** $26.34

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Low Density | 2750 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $126.91 | 20 | $2,538.20 |

**Practice:** E512C - Cropland conversion to grass for soil organic matter improvement

**Scenario** #1 - Cropland conversion to grass for soil organic matter improvement

**Scenario Description:**
Conversion of cropped land to grass-based agriculture. Mixtures of perennial grasses, forbs, and/or legume species are established on cropland where annually-seeded cash crops have been grown.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,432.16

**Scenario Cost/Unit:** $14.32

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2747 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $45.45 | 20 | $909.00 |

**Practice:** E512D - Forage plantings that help increase organic matter in depleted soils

**Scenario** #1 - Forage plantings that help increase organic matter in depleted soils

**Scenario Description:**
Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production that can help improve soil quality of depleted sites through increase or conservation of the organic matter in the soil.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,786.87

**Scenario Cost/Unit:** $17.87

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 25 | $782.25 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2747 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $45.45 | 20 | $909.00 |

**Practice:** E512E - Forage and biomass planting that produces feedstock for biofuels or energy production.

**Scenario** #1 - Forage and biomass planting that produces feedstock for biofuels or energy production.

**Scenario Description:**
Conversion of cropped land to grass-based agriculture. Mixtures of perennial grasses, forbs, and/or legume species are established on cropland where annually-seeded cash crops have been grown.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $6,584.60

**Scenario Cost/Unit:** $65.85

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Low Density | 2750 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $126.91 | 50 | $6,345.50 |

**Practice:** E512I - Establish pollinator and/or beneficial insect and/or monarch habitat

**Scenario** #1 - Establish pollinator and/or beneficial insect and/or monarch habitat

**Scenario Description:**

Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species that can provide nectar for Monarch butterflies and/or pollinators and forage and other habitat values for wildlife and livestock, particularly at times when targeted nectar, forage supply and quality, cover, and shelter are not available in other pastures.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $2,942.80

**Scenario Cost/Unit:** $29.43

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Legumes and/or Forbs, Medium Density | 2754 | A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping. | Acres | $270.37 | 10 | $2,703.70 |

**Practice:** E512J - Establish wildlife corridors to provide habitat continuity or access to water

**Scenario** #1 - Establish wildlife corridors to provide habitat continuity or access to water

**Scenario Description:**
Establishing adapted and/or compatible species, varieties, or cultivars of perennial, herbaceous species that can provide cover needed for wildlife species of concern to move from food/cover/water sources to other food/cover/water sources as needed for their life cycles, and/or to enhance the utility of underused wildlife habitat areas.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $2,146.97

**Scenario Cost/Unit:** $21.47

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 25 | $782.25 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Low Density | 2750 | Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $126.91 | 10 | $1,269.10 |

**Practice:** E512L - Diversifying Forage Base with Interseeding Forbs and Legumes to Increase Pasture Quality

**Scenario** #9 - Diversifying forage base with interseeding forbs and legumes to increase pasture quality.

**Scenario Description:**
Establishing adapted and/or compatible species, varieties, or cultivars of perennial, herbaceous species that increases the diversity to enhance livestock, forage supply and quality, not available in other pastures

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 Pasture and Hay Planting

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in the Conservation Practice Standard (CPS) 512 Pasture and Hay Planting

**Feature Measure:** acres treated

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $5,025.22

**Scenario Cost/Unit:** $100.50

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 8 | $254.56 |
| Seeding Operation, Broadcast, Ground | 959 | Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs. | Acres | $12.75 | 50 | $637.50 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 50 | $1,564.50 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 8 | $235.36 |
| **Materials** | | | | | | |
| Introduced Perennial Grasses, Legumes and/or Forbs, Low Density | 2747 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping. | Acres | $45.45 | 50 | $2,272.50 |

**Practice:** E512M - Forage Plantings that Improve Wildlife Habitat Cover and Shelter or Structure and Composition

**Scenario** #9 - Forage plantings that improve wildlife habitat cover and shelter or structure and composition

**Scenario Description:**
Establishing native adapted and/or compatible species, varieties, or cultivars of herbaceous species for pasture, hay, or biomass production that provide cover and shelter or structure and composition for wilddlife.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 Pasture and Hay Planting

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in the Conservation Practice Standard (CPS) 512 Pasture and Hay Planting

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $5,359.70

**Scenario Cost/Unit:** $53.60

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Legumes and/or Forbs, Low Density | 2753 | A mix of native perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Species typically easy to purchase. Includes material and shipping. | Acres | $176.63 | 30 | $5,298.90 |

**Practice:** E528A - Maintaining quantity and quality of forage for animal health and productivity

**Scenario** #1 - Maintaining quantity and quality of forage for animal health and productivity

**Scenario Description:**
Managing the harvest of vegetation with grazing and/or browsing animals for the purposes of maintaining desired pasture composition/plant vigor and improving/maintaining quantity and quality of forage for the animals' health and productivity following the recommendations of a qualifying professional, as detailed in the documentation and implementation requirements.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $4,563.02

**Scenario Cost/Unit:** $4.56

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 12 | $231.36 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 36 | $1,126.44 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 17 | $382.16 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 12 | $1,434.60 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 1 | $58.54 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |
| Tank, Polyethylene, 300 gallon | 291 | Portable heavy duty rubber stock tank. | Each | $325.13 | 1 | $325.13 |
| Nutritional Balance Analyzer, fecal sample analysis only | 1127 | NIRS fecal analysis, animal performance report. Includes materials and shipping only. | Each | $47.39 | 6 | $284.34 |

**Practice:** E528B - Grazing management that improves monarch butterfly habitat

**Scenario** #1 - Grazing management that improves monarch butterfly habitat

**Scenario Description:**
Implement a grazing management plan that will increase the abundance and diversity of monarch nectar-producing perennial forbs, including milkweed, while maintaining ecosystem benefits for other wildlife and livestock.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,142.95

**Scenario Cost/Unit:** $11.43

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 2.5 | $78.23 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 1 | $22.48 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 1 | $58.54 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 2 | $827.56 |

**Practice:** E528C - Incorporating wildlife refuge areas in contingency plans for wildlife.

**Scenario** #1 - Incorporating wildlife refuge areas in contingency plans for wildlife.

**Scenario Description:**
A prescribed grazing plan that includes 12 month (or longer) rest (non-grazing period equal or greater than one year) of a grazing unit that consists of native grasses and/or legumes and/or perennial forbs for the purpose of meeting the needs for drought/disaster contingency plans that will also provide wildlife habitat or wildlife access to water for a period of time.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,993.25

**Scenario Cost/Unit:** $19.93

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 6 | $115.68 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 15 | $469.35 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 4 | $234.16 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |
| Tank, Polyethylene, 300 gallon | 291 | Portable heavy duty rubber stock tank. | Each | $325.13 | 1 | $325.13 |

**Practice:** E528D - Grazing management for improving quantity and quality of food or cover and shelter for wildlife

**Scenario** #1 - Grazing management for improving quantity and quality of food or cover and shelter for wildlife

**Scenario Description:**
Grazing management employed will provide the plant structure, density and diversity needed for improving the quantity and quality of cover, shelter and food for the desired wildlife species of concern.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $586.43

**Scenario Cost/Unit:** $0.59

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 10 | $478.10 |

**Practice:** E528E - Improved grazing management for enhanced plant structure and composition for wildlife

**Scenario** #1 - Improved grazing management for enhanced plant structure and composition for wildlife

**Scenario Description:**
Managing the harvest of vegetation with grazing and/or browsing animals for the purpose of improving the quantity and quality of the structure and composition of the plant community that is available for wildlife.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $517.16

**Scenario Cost/Unit:** $5.17

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 15 | $469.35 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |

**Practice:** E528F - Stockpiling cool season forage to improve structure and composition or plant productivity and health

**Scenario** #1 - Stockpiling cool season forage to improve structure and composition or plant productivity and health

**Scenario Description:**
Grazing management employed to stop grazing events of selected paddock(s) to allow pasture forages to grow to maximum vegetative biomass accumulation before the end of the growing season.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $3,588.37

**Scenario Cost/Unit:** $35.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 6 | $115.68 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 10 | $312.90 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 1 | $58.54 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |
| Nitrogen (N), Urea | 71 | Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed. | Pound | $0.94 | 2000 | $1,880.00 |
| Tank, Polyethylene, 300 gallon | 291 | Portable heavy duty rubber stock tank. | Each | $325.13 | 1 | $325.13 |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 3 | $47.19 |

**Practice:** E528G - Improved grazing management on pasture for plant productivity and health with monitoring activities

**Scenario** #1 - Improved grazing management on pasture for plant productivity and health with monitoring activities

**Scenario Description:**
Managing the harvest of vegetation with grazing and/or browsing animals as adjusted when following recommendations of a qualifying professional, as detailed in the enhancement criteria, generated through pasture condition scoring (PCS).

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,432.63

**Scenario Cost/Unit:** $14.33

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 30 | $938.70 |
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 1 | $15.73 |

**Practice:** E528H - Prescribed grazing to improve/maintain riparian and watershed function-elevated water temperature

**Scenario** #1 - Prescribed grazing to improve/maintain riparian and watershed function-elevated water temperature

**Scenario Description:**
Grazing management employed will provide cover and density needed in the watershed in order to reduce runoff, improve infiltration, provide for above ground water filtration and sustain applicable fish and wildlife species habitat.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $1,717.64

**Scenario Cost/Unit:** $1.72

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 12 | $231.36 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 17 | $382.16 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 1 | $58.54 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |
| Tank, Polyethylene, 300 gallon | 291 | Portable heavy duty rubber stock tank. | Each | $325.13 | 1 | $325.13 |

**Practice:** E528I - Grazing management that protects sensitive areas -surface or ground water from nutrients

**Scenario** #1 - Grazing management that protects sensitive areas -surface or ground water from nutrients

**Scenario Description:**
Grazing management employed will provide cover and density needed in the watershed in order to protect sensitive areas such as sinkholes, streams, highly erodible areas, or locations with plants that cannot tolerate defoliation.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $1,884.82

**Scenario Cost/Unit:** $1.88

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 12 | $231.36 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 17 | $382.16 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Wire, Polytape | 7 | Wire, Polytape for electric fence. Rolls of 655' to 825'. Includes materials and shipping only. | Each | $56.43 | 4 | $225.72 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |
| Tank, Polyethylene, 300 gallon | 291 | Portable heavy duty rubber stock tank. | Each | $325.13 | 1 | $325.13 |

**Practice:** E528J - Prescribed grazing on pastureland that improves riparian and watershed function

**Scenario** #1 - Prescribed grazing on pastureland that improves riparian and watershed function

**Scenario Description:**
Grazing management employed will provide cover and density needed in the watershed in order to reduce runoff, improve infiltration, provide for above ground water filtration and sustain applicable fish and wildlife species habitat.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,836.80

**Scenario Cost/Unit:** $18.37

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 6 | $115.68 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 10 | $312.90 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 4 | $234.16 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |
| Tank, Polyethylene, 300 gallon | 291 | Portable heavy duty rubber stock tank. | Each | $325.13 | 1 | $325.13 |

**Practice:** E528L - Prescribed grazing that improves or maintains riparian and watershed function-erosion

**Scenario** #1 - Prescribed grazing that improves or maintains riparian and watershed function-erosion

**Scenario Description:**
Grazing management employed will provide cover and density needed in the watershed in order to reduce runoff, improve infiltration, provide for above ground water filtration and sustain applicable fish and wildlife species habitat.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,213.97

**Scenario Cost/Unit:** $12.14

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 10 | $312.90 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 1 | $58.54 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |

**Practice:** E528M - Grazing management that protects sensitive areas from gully erosion

**Scenario** #1 - Grazing management that protects sensitive areas from gully erosion

**Scenario Description:**
Grazing management employed will provide vegetative cover and density needed in the watershed in order to protect sensitive areas such as sinkholes, streams, highly erodible areas, or locations that cannot tolerate plant defoliation.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $1,715.53

**Scenario Cost/Unit:** $1.72

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 12 | $231.36 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 17 | $382.16 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Wire, Polytape | 7 | Wire, Polytape for electric fence. Rolls of 655' to 825'. Includes materials and shipping only. | Each | $56.43 | 1 | $56.43 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |
| Tank, Polyethylene, 300 gallon | 291 | Portable heavy duty rubber stock tank. | Each | $325.13 | 1 | $325.13 |

**Practice:** E528N - Improved grazing management through monitoring activities

**Scenario** #1 - Improved grazing management through monitoring activities

**Scenario Description:**

Three predominant key grazing areas are evaluated utilizing the Rangeland Health Assessment (where reference material is developed) or Describing Indicators of Rangeland Health protocols (where reference material is not developed) to determine how well the ecological processes of the site(s) are functioning. Utilizing knowledge learned from this as a part of the ranch resource assessment, a qualifying professional, as detailed in the enhancement criteria, will provide recommendations or follow-up evaluations toward mitigating some of the degradation risks that are initially identified.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1,000.00

**Scenario Total Cost:** $2,113.21

**Scenario Cost/Unit:** $2.11

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 8 | $154.24 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 12 | $1,434.60 |

**Practice:** E528O - Clipping mature forages to set back vegetative growth for improved forage quality

**Scenario** #9 - Clipping mature forages to set back vegetative growth for improved forage quality

**Scenario Description:**
Timely clipping of mature forages through mowing, swathing or some other mechanical cutting will occur to increase forage palatability by setting plants back to a vegetative state for improved grazing management and forage quality.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 528 - Prescribed Grazing

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 80.00

**Scenario Total Cost:** $3,252.53

**Scenario Cost/Unit:** $40.66

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 20 | $2,144.20 |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 1 | $50.67 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 24 | $706.08 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** E528P - Implementing Bale or Swath Grazing to increase organic matter and reduce nutrients in surface water

**Scenario** #9 - Implementing bale or swath grazing to increase organic matter or reduce nutrients in surface water

**Scenario Description:**

Bale or swath grazing to improve organic matter, aggregate stability or soil organism habitat or to reduce nutrient risks to surface water by leaving field harvested forages on site or supplementing with off-field forages. Grazing forages in this manner, will help reduce nutrient concentrations from confined animal lots while incorporating organic matter, feeding and diversifying the microbiome, building better soil aggregation and increasing soil health.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard 528 - Prescribed Grazing

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 528 - Prescribed Grazing

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $3,351.68

**Scenario Cost/Unit:** $167.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 20 | $513.60 |
| Tractor, agricultural, 120 HP | 962 | Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included. | Hours | $65.82 | 20 | $1,316.40 |
| Trailer, flatbed, small | 1505 | Small flatbed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $10.48 | 20 | $209.60 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 40 | $1,176.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 1 | $15.73 |

**Practice:** E528Q - Use of body condition scoring for livestock on a monthly basis to keep track of herd health

**Scenario** #9 - Use of body condition scoring for livestock on a monthly basis to keep track of herd health

**Scenario Description:**

Body condition scoring (BCS) serves as a useful management tool to monitor livestock performance with respect to current and recent feeding or grazing programs. Body condition scoring is a numeric scoring system, producers can use to consistently evaluate animals' estimated body energy reserves through degree of fatness. This information can be used to adjust nutritional strategies to reach optimal BCS. Since body condition is closely associated with reproductive performance as well as feed efficiency, monitoring body condition can help producers reach production goals and increase the operation's bottom line. Knowledge and understanding of BCS will assist producers to adjust a supplemental feeding program to maintain animal health and nutrition on a-monthly-basis.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard 528 - Prescribed Grazing

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 528 - Prescribed Grazing

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $178.28

**Scenario Cost/Unit:** $1.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 1 | $19.28 |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 1 | $50.67 |

**Practice:** E528R - Management Intensive Rotational Grazing

**Scenario** #9 - Management Intensive Rotational Grazing

**Scenario Description:**
Management intensive, multi-paddock grazing system where livestock are regularly and systematically moved to fresh forage to optimize quantity and quality of forage growth, improve manure distribution, improve wildlife cover, and improve soil health.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard 528 - Prescribed Grazing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 528 - Prescribed Grazing

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $4,281.05

**Scenario Cost/Unit:** $42.81

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 10 | $192.80 |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 1 | $50.67 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 15 | $337.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 6 | $717.30 |
| **Materials** | | | | | | |
| Wire, Polywire | 8 | Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only. | Each | $58.54 | 2 | $117.08 |
| Electric, Ground Rods | 20 | Electric, Ground Rod for electric fence. Includes materials and shipping only. | Each | $14.39 | 3 | $43.17 |
| Electric, Ground Rod Clamps | 21 | Electric, Ground Rod Clamps for electric fence. Includes materials and shipping only. | Each | $2.58 | 3 | $7.74 |
| Electric, Tester | 26 | Electric, Tester for electric fence. Includes materials and shipping only. | Each | $45.74 | 1 | $45.74 |
| Electric, Energizer, Solar | 27 | Electric, Energizer, Solar for electric fence. Includes materials and shipping only. | Each | $413.78 | 1 | $413.78 |
| Tank, Polyethylene, 300 gallon | 291 | Portable heavy duty rubber stock tank. | Each | $325.13 | 2 | $650.26 |
| Pipe, PE, 1 1/4 in., DR 9 | 998 | Materials: - 1 1/4 inch - PE - 160 psi - ASTM D3035 DR 9 | Feet | $1.45 | 1000 | $1,450.00 |

**Practice:** E528S - Soil Health Improvements on Pasture

**Scenario** #9 - Soil health improvements on pasture

**Scenario Description:**

Use of soil health assessment to evaluate impact of current grazing system in addressing soil organic matter depletion, soil aggregate instability and soil organism habitat loss or degradation (primary assessment made in Year 1). Modifications to the grazing system will be made after the laboratory analysis. Modifications can be improvements to the grazing plan or changes to the forage composition. During year 4, a follow-up assessment will be completed to allow time for the modifications to show improvements to the soil health resource concerns. The follow-up sample will be taken in the same soil type, closely matched to time of year and with similar amounts of regrowth since previous grazing.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (PCS) 528 - Prescribed Grazing

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,162.72

**Scenario Cost/Unit:** $11.63

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 1 | $50.67 |
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 12 | $375.48 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 6 | $286.86 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 1 | $119.55 |
| **Materials** | | | | | | |
| Test, Soil Health, Basic Package | 2734 | Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling. | Number | $131.91 | 1 | $131.91 |

**Practice:** E528T - Grazing to Reduce Wildfire Risk on Forests

**Scenario** #9 - Improved grazing management for reduction of wildfire risks on Western forests

**Scenario Description:**
Managing the harvest of vegetation with grazing and/or browsing animals for the purpose of balancing forage with maintaining/improving ecological site condition and while reducing the risk of wildfire hazard on forested ecological sites.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level with the addition of CPS 528 - Prescribed Grazing

**Feature Measure:** acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $108.61

**Scenario Cost/Unit:** $1.09

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 1 | $47.81 |

**Practice:** E533A - Advanced Pumping Plant Automation

**Scenario** #9 - Advanced Pumping Plant Automation

**Scenario Description:**
This enhancement consists of installing a control device to a pump station that allows the user to remotely monitor and operate the pump station based on field measured data. Pumping stations may have either a combustible or electric power unit that are compatible with the control device or sensor. These devices/sensors collect field-measured data and provide this data in real time to the landowner to make irrigation decisions and adjustments to the pump operation.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard 533 - Pumping Plant.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 533 - Pumping Plant.

**Feature Measure:** Number

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,301.40

**Scenario Cost/Unit:** $8,301.40

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 0.1 | $79.47 |
| Switches and Controls, temp sensors | 1192 | Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $697.95 | 1 | $697.95 |
| Switches and Controls, programmable controller | 1193 | Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems | Each | $528.75 | 1 | $528.75 |
| Switches and Controls, Wi-Fi system and software | 1194 | Software with built-in cellular or Wi-Fi communication commonly used to control pumps and irrigation systems | Each | $828.75 | 1 | $828.75 |
| Switches and Controls, radio system | 1195 | Output radio, field transmitter, and receiver commonly used to control pumps and irrigation systems | Each | $486.32 | 1 | $486.32 |
| Data Logger with Telemetry System | 1454 | Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only. | Each | $1,660.98 | 1 | $1,660.98 |
| Safety Camera on Automated Pump | 2474 | Waterproof outdoor wireless IP Network security camera with housing. Includes materials only. | Each | $227.16 | 1 | $227.16 |
| Engine/Fuel Tank Sensor | 2487 | Transducer and sensors to monitor the oil pressure, oil and water temperatures, fuel flow meter with digital pulse output and fuel levels in a tank. Includes the conduit and cabling. | Each | $35.78 | 1 | $35.78 |

**Practice:** E533B - Complete pumping plant evaluation for energy savings

**Scenario** #1 - Complete pumping plant evaluation for energy savings

**Scenario Description:**

The performance of pump tests and evaluations of all pumping plants to determine the potential to rehabilitate/replace/reconfigure pump performance to reduce energy use. Evaluate to determine if a Variable Frequency Drive motor controller(s) will reduce energy use and is feasible. Develop and provide a written report with list of adjustments and calculations of the reduction of energy use based on before and after conditions.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 533 - Pumping Plant

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 533 - Pumping Plant

**Feature Measure:** Each pump evaluated

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $4,140.97

**Scenario Cost/Unit:** $4,140.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 32 | $3,825.60 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** E533C - Install VFDs on pumping plants

**Scenario** #8 - Install variable frequency drive on pump

**Scenario Description:**
Install Variable Frequency Drive(s) (VFD) on Pumping Plant with the correct sensors, on all pumps as indicated in the evaluation.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 533 – Pumping Plant.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in the Conservation Practice Standard, (CPS) 533 – Pumping Plant.

**Feature Measure:** Each pump modified

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $7,033.62

**Scenario Cost/Unit:** $7,033.62

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 12 | $364.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Variable Speed Drive, 50 HP | 1288 | Variable speed drive for 50 Horsepower electric motor. Does not include motor. Materials only. | Horsepower | $126.54 | 50 | $6,327.00 |

**Practice:** E533D - Switch fuel source for pumps

**Scenario** #8 - Switch fuel source for pumps

**Scenario Description:**
Switch the fuel source for pump motor(s) to an on-farm renewable source (wind, solar, geothermal, etc.)

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 533 – Pumping Plant.

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in the Conservation Practice Standard, (CPS) 533 – Pumping Plant.

**Feature Measure:** Each pump modified

**Scenario Unit:** Number

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $11,043.80

**Scenario Cost/Unit:** $11,043.80

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 4 | $102.72 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 12 | $364.80 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Pump, <= 5 HP, pump and motor, fixed cost portion | 1009 | Fixed cost portion of a pump less than or equal to 5 HP pump and motor. This portion is the base cost and is not dependent on horsepower. The total cost of any pump will include this fixed cost plus a variable cost portion. Includes the motor and controls for materials and shipping only. | Each | $1,309.33 | 1 | $1,309.33 |
| Pump, <= 5 HP, pump and motor, variable cost portion | 1010 | Variable cost portion of a pump less than or equal to 5 HP pump and motor. This portion is dependent on the total horsepower for the pump. The total cost of any pump will include this variable cost plus the fixed cost portion. Includes the motor and controls for materials and shipping only. | Horsepower | $418.15 | 5 | $2,090.75 |
| Solar Panels, fixed cost portion | 1031 | Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment. | Each | $2,963.80 | 1 | $2,963.80 |
| Solar Panels, variable cost portion | 1135 | Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drop, etc.). Includes materials only. | Kilowatt | $794.66 | 5 | $3,973.30 |

**Practice:** E550A - Range planting for increasing/maintaining organic matter

**Scenario** #1 - Range planting for increasing/maintaining organic matter

**Scenario Description:**
Establishment of adapted perennial or self-sustaining vegetation such as grasses, forbs, legumes, shrubs and trees for the purpose of increasing or maintaining organic matter levels in the soil.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 550 - Range Planting

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 550 - Range Planting

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $4,620.52

**Scenario Cost/Unit:** $46.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Foregone Income** | | | | | | |
| FI, Grazing AUMs | 2079 | Grazing is the Primary Land Use | Animal Unit Month | $31.29 | 15 | $469.35 |
| **Labor** | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 2 | $95.62 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Legumes and/or Forbs, Medium Density | 2754 | A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping. | Acres | $270.37 | 15 | $4,055.55 |

**Practice:** E550B - Range planting for improving forage, browse, or cover for wildlife

**Scenario** #1 - Range planting for improving forage, browse, or cover for wildlife

**Scenario Description:**

Establishment of adapted perennial or self-sustaining vegetation such as grasses, forbs, legumes, shrubs and trees for the purpose of improving forage, browse, or cover for wildlife on areas that have been degraded beyond recovery via ecological principles, or old crop fields and pastures devoid of desirable, native rangeland species that fit within an ecological site description steady state.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 550 - Range Planting

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 550 - Range Planting

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $2,005.40

**Scenario Cost/Unit:** $20.05

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Native Perennial Grasses, Legumes and/or Forbs, Low Density | 2753 | A mix of native perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Species typically easy to purchase. Includes material and shipping. | Acres | $176.63 | 10 | $1,766.30 |

**Practice:** E578A - Stream crossing elimination

**Scenario** #1 - Stream crossing elimination

**Scenario Description:**
Existing stream crossings on an operation are consolidated into fewer crossings in order to reduce impacts to stream habitat.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 578 - Stream Crossing

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 578 - Stream Crossing

**Feature Measure:** Typical feature is 0.09 acres

**Scenario Unit:** Each

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $8,655.99

**Scenario Cost/Unit:** $8,655.99

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Dozer, 80 HP | 929 | Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included. | Hours | $76.38 | 16 | $1,222.08 |
| Hydraulic Excavator, 1 CY | 931 | Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included. | Hours | $130.02 | 8 | $1,040.16 |
| Seeding Operation, Broadcast, Ground | 959 | Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs. | Acres | $12.75 | 0.1 | $1.28 |
| Truck, dump, 12 CY | 1215 | Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only. | Hours | $109.42 | 16 | $1,750.72 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 32 | $719.36 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 32 | $941.44 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 16 | $764.96 |
| **Materials** | | | | | | |
| Erosion Control Blanket, biodegradable | 1213 | Biodegradable erosion control blanket, typically a composite of natural fibers with reinforcing polymer netting. Materials and shipping only. | Square Yard | $1.70 | 300 | $510.00 |
| Tree & Shrub, Woody, Cuttings, Medium | 1308 | Woody cuttings, live stakes or whips typically 1/4 to 1 inch diameter and 24 to 48 inches long. Includes materials and shipping only. | Each | $1.67 | 300 | $501.00 |
| Aggregate, river rock | 1834 | Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery within 20 miles of quarry or pit. Placement costs are not included. | Ton | $18.04 | 42 | $757.68 |
| Annual Grasses | 2730 | Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping. | Acres | $36.68 | 0.1 | $3.67 |
| Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density | 2748 | Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Includes material and shipping. | Acres | $64.94 | 0.1 | $6.49 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 1 | $261.36 |

**Practice:** E580A - Stream corridor bank stability improvement

**Scenario** #1 - Stream corridor bank stability improvement

**Scenario Description:**
Stream corridor bank vegetation components are established to provide additional streambank stability.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 580 - Streambank and Shoreline Protection

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 580 - Streambank and Shoreline Protection

**Feature Measure:** Area planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $4,506.29

**Scenario Cost/Unit:** $2,253.15

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 8 | $205.44 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 8 | $154.24 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 8 | $109.36 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 8 | $102.48 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 48 | $1,079.04 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Shrub, Potted, Small | 1524 | Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $6.82 | 65 | $443.30 |
| Tree, Hardwood, Potted, Small | 1529 | Potted hardwood seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $8.88 | 65 | $577.20 |
| Tree, Conifer, Potted, Small | 1534 | Potted conifer seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $7.01 | 65 | $455.65 |
| Tree shelter, mesh tree tube, 48 in. | 1556 | 48 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only. | Each | $1.26 | 65 | $81.90 |
| Tree shelter, solid tube type, 4 in. x 24 in. | 1563 | 4 inch x 24 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $2.49 | 65 | $161.85 |
| Tree shelter, solid tube type, 4 in. x 48 in. | 1566 | 4 inch x 48 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $4.60 | 65 | $299.00 |
| Stakes, wood, 1 in. x 1 in. x 48 in. | 1578 | 1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.33 | 195 | $454.35 |

**Practice:** E580B - Stream corridor bank vegetation improvement

**Scenario** #1 - Stream corridor bank vegetation improvement

**Scenario Description:**
Stream corridor bank vegetation components are established to improve ecosystem functioning and stability.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 580 - Streambank and Shoreline Protection

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 580 - Streambank and Shoreline Protection

**Feature Measure:** Area planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 2.00

**Scenario Total Cost:** $4,506.29

**Scenario Cost/Unit:** $2,253.15

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 8 | $205.44 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 8 | $154.24 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 8 | $109.36 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 8 | $102.48 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 48 | $1,079.04 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 8 | $382.48 |
| **Materials** | | | | | | |
| Shrub, Potted, Small | 1524 | Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $6.82 | 65 | $443.30 |
| Tree, Hardwood, Potted, Small | 1529 | Potted hardwood seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $8.88 | 65 | $577.20 |
| Tree, Conifer, Potted, Small | 1534 | Potted conifer seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $7.01 | 65 | $455.65 |
| Tree shelter, mesh tree tube, 48 in. | 1556 | 48 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only. | Each | $1.26 | 65 | $81.90 |
| Tree shelter, solid tube type, 4 in. x 24 in. | 1563 | 4 inch x 24 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $2.49 | 65 | $161.85 |
| Tree shelter, solid tube type, 4 in. x 48 in. | 1566 | 4 inch x 48 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $4.60 | 65 | $299.00 |
| Stakes, wood, 1 in. x 1 in. x 48 in. | 1578 | 1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.33 | 195 | $454.35 |

**Practice:** E590A - Improving nutrient uptake efficiency and reducing risk of nutrient losses

**Scenario** #1 - Improving nutrient uptake efficiency and reducing risk of nutrient losses

**Scenario Description:**

Nutrient management encompasses managing the amount, source, placement, and timing of the application of plant nutrients and soil amendments. Nutrients are currently being applied on the farm based on the 4R nutrient stewardship principles. Enhanced nutrient use efficiency strategies or technologies are utilized to improve nutrient use efficiency and reduce risk of nutrient losses to surface and groundwater and reduce risks to air quality by reducing emissions of greenhouse gases (GHGs).

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 590 - Nutrient Management

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 590 - Nutrient Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,337.90

**Scenario Cost/Unit:** $13.38

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Nitrogen-Urease inhibitor | 260 | Nitrogen-Urease inhibitor | Acres | $10.47 | 100 | $1,047.00 |
| Test, Soil Nitrogen Testing | 311 | Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only. | Each | $10.36 | 5 | $51.80 |

**Practice:** E590B - Reduce risks of nutrient loss to surface water by utilizing precision agriculture technologies

**Scenario** #1 - Reduce risks of nutrient loss to surface water by utilizing precision agriculture technologies

**Scenario Description:**
Precision application technology and techniques are utilized to plan and apply nutrients to improve nutrient use efficiency and reduce risk of nutrient losses.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 590 - Nutrient Management

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 590 - Nutrient Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,716.65

**Scenario Cost/Unit:** $17.17

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Fertilizer, precision application | 952 | Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.27 | 100 | $927.00 |
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 35 | $550.55 |

**Practice:** E590C - Improving nutrient uptake efficiency and reducing risk of nutrient losses on pasture

**Scenario** #9 - Improving nutrient uptake efficiency and reducing risk of nutrient losses on pasture

**Scenario Description:**

Nutrient management encompasses managing the amount, source, placement, and timing of the application of plant nutrients and soil amendments. Nutrients are currently being applied on the farm based on the 4R nutrient stewardship principles. Enhanced nutrient use efficiency strategies or technologies are utilized to improve nutrient use efficiency and reduce risk of nutrient losses on pasture.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard 590 - Nutrient Management

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 590 - Nutrient Management

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $2,034.40

**Scenario Cost/Unit:** $20.34

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Fertilizer, precision application | 952 | Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.27 | 100 | $927.00 |
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 40 | $629.20 |

**Practice:** E590D - Reduce nutrient loss by increasing setback awareness via precision technology for water quality

**Scenario** #9 - Reduce risks of nutrient losses to surface and groundwater by increasing setback awareness via precision technology

**Scenario Description:**

Precision technology and techniques are used to increase Soil/Groundwater Setbacks & Associated Application Rate Restrictions (SGS&AARR) implementation during nutrient application by providing precise, real-time location information (geo-located) in the field to the equipment operator. While operating nutrient application equipment, the operator's location is continually updated and displayed on an add-on GPS-enabled device visible to the operator at all times to reduce the risk of nutrient application in setback and/or sensitive areas. Resource concerns addressed are Water Quality, Field sediment, nutrient and pathogen loss: Nutrients transported to groundwater and surface water and Pathogens and chemicals from manure, biosolids or compost applications transported to groundwater and surface water.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 590 - Nutrient Management.

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 590 - Nutrient Management.

**Feature Measure:** Acres with setback for nutrient app

**Scenario Unit:** Acres

**Scenario Typical Size:** 300.00

**Scenario Total Cost:** $4,198.01

**Scenario Cost/Unit:** $13.99

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 2 | $216.66 |
| **Equipment Installation** | | | | | | |
| Fertilizer, precision application | 952 | Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.27 | 300 | $2,781.00 |
| Aerial Imagery | 966 | Aerial imagery. RBG (color), infrared or NDVI single image. | Acres | $1.85 | 260 | $481.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |

**Practice:** E595A - Reduce risk of pesticides in surface water by utilizing precision pesticide application techniques

**Scenario** #1 - Reduce risk of pesticides in surface water by utilizing precision pesticide application techniques

**Scenario Description:**
Utilize precision application techniques to reduce risk of pesticides in surface water by reducing total amount of chemical applied and reducing the potential for delivery of chemicals into water bodies.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 595 - Integrated Pest Management

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 595 - Integrated Pest Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,326.65

**Scenario Cost/Unit:** $13.27

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chemical, precision application | 949 | Chemical application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs. | Acres | $9.68 | 100 | $968.00 |
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |

**Practice:** E595B - Reduce risk of pesticides in water and air by utilizing IPM PAMS techniques

**Scenario** #1 - Reduce risk of pesticides in water and air by utilizing IPM PAMS techniques

**Scenario Description:**
Utilize integrated pest management (IPM) prevent, avoidance, monitoring, and suppression (PAMS) techniques to reduce risk of pesticides in water and air. Reduce the potential for delivery of chemicals into water or ozone precursor emissions .

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 595 - Integrated Pest Management

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 595 - Integrated Pest Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $662.65

**Scenario Cost/Unit:** $6.63

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 10 | $304.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 3 | $358.65 |

**Practice:** E595D - Increase the size requirement of refuges planted to slow pest resistance to Bt crops

**Scenario** #1 - Increase the size requirement of refuges planted to slow pest resistance to Bt crops

**Scenario Description:**

Bacillus thuringiensis (Bt) plant incorporated protectants are plants that have been genetically altered to produce proteins that are harmful to certain insect pests. Widespread implementation of Bt crops has decreased insecticide use and increased crop yields, but it must be used as part of an integrated pest management (IPM) approach to protect the crop from pest species that are not susceptible to the Bt toxin and to manage pest resistance. Crop rotation, scouting and resistance management strategies, such as planting and creating refuges of non-Bt crops, are essential when farming Bt crops. Insects have developed resistance to Bt proteins. To mitigate the development of further resistance, growers are required to plant refuges of non-transgenic crops. These refuges produce numbers of susceptible insects that will help sustain populations of non-resistant insects. The size of Refuge requirement depends on the environment, pest and strain of the crop. Size of refuge is determined by resistance risk. Most Bt corn requires that 20% of the total Bt crop planted be non-Bt. Cotton can require 50% of the crop be planted to non-Bt. A recent study published in the Journal of Integrated Pest Management revealed, compliance has been a challenge. Nearly 40% of growers surveyed did not plant the required refuge (Reisig 2017). They credit non-compliance, in part, to lack of understanding by small-scale farmers about the need for refuges.

**Before Situation:**

Minimal or no refuges were planted as required for Bt crops.

**After Situation:**

Optimum sized and located refuges are planted for Bt crops.

**Feature Measure:** Ac

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $543.10

**Scenario Cost/Unit:** $13.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 10 | $304.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |

**Practice:** E595E - Eliminate use of chemical treatments to control pests and to increase the presence of dung beetles

**Scenario** #1 - Eliminate use of chemical treatments to control pests and to increase the presence of dung beetles

**Scenario Description:**

Pests and parasites can have a significant impact on the economic viability of livestock operations, by affecting the performance and health of animals. The use of broad-spectrum insecticides, pour-ons and avermectins have been shown to have a detrimental effect on dung beetle populations. Having a healthy population of dung beetles facilitates the recycling of nutrients and promotes soil and grassland health. By eliminating the application of broad-spectrum insecticides, pour-ons, and avermectins, including injectable avermectins, for pest control in and on livestock along with rotational grazing and higher stock densities has shown to increase the dung beetle population. Use of natural or alternative methods of pest control over multiple years is encouraged.

**Before Situation:**

Pests and parasites can have a significant impact on the economic viability of livestock operations, by affecting the performance and health of animals. The use of broad-spectrum insecticides, pour-ons and avermectins have been shown to have a detrimental

**After Situation:**

Having a healthy population of dung beetles facilitates the recycling of nutrients and promotes soil and grassland health. By eliminating the application of broad-spectrum insecticides, pour-ons, and avermectins, including injectable avermectins, for pest

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 500.00

**Scenario Total Cost:** $3,101.78

**Scenario Cost/Unit:** $6.20

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 26 | $501.28 |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 1 | $50.67 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 10 | $304.00 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 10 | $478.10 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 12 | $1,434.60 |

**Practice:** E595F - Improving Soil Organism Habitat on Agricultural Land

**Scenario** #9 - Improving soil organism habitat on agricultural land

**Scenario Description:**

To reduce or eliminate the use of seed treatments in corn and soybean cropping systems to promote beneficial organism populations and pest control. Beneficial organisms such as the Carabidae beetle are very important in the population control of common agricultural pests like the grey garden slug. Slugs are a common pest in no-till and heavily cover cropped fields. Slugs are mollusks and can ingest some treatments with no adverse effects. Beneficial organism populations can be negatively impacted when they consume slugs exposed to seed treatments. The reduction or elimination of routine seed treatments in these cash crop systems may increase beneficial insect populations.

**Before Situation:**

Seed treatments are used on crops.

**After Situation:**

Producers effectively reduce or eliminate seed treatment use in their cropping rotations either by eliminating seed treatments on corn-soybean rotations or eliminating seed treatments on corn.

**Feature Measure:** Acres Planted

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $597.75

**Scenario Cost/Unit:** $11.96

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |

**Practice:** E595G - Reduced resistance risk by utilizing PAMS techniques

**Scenario** #9 - Reduced resistance risk by utilizing PAMS techniques

**Scenario Description:**

Design and implementation of an integrated pest management plan that will Utilize integrated pest management (IPM) prevention, avoidance, monitoring, and suppression (PAMS) techniques to reduce pesticide resistance and address plant pest pressure. Increased resistance leads to increased use of more toxic pesticides and increased risk of delivery of chemicals to water or ozone precursor emissions.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 595 – Pest Management Conservation Systems

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level described in Conservation practice Standard (CPS) 595 Pest Management Conservation System.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,557.89

**Scenario Cost/Unit:** $15.58

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Acquisition of Technical Knowledge** | | | | | | |
| Training, Workshops | 294 | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | $108.33 | 1 | $108.33 |
| **Equipment Installation** | | | | | | |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 4 | $77.12 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 4 | $191.24 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 8 | $956.40 |

**Practice:** E612B - Planting for high carbon sequestration rate

**Scenario** #10 - Planting for high carbon storage rate

**Scenario Description:**
Plant tree species and use stocking levels for higher growth to increase the rate of carbon sequestration (capture). Use species with a longer life span as well as relatively fast growth, and species suitable for durable manufactured products. Increase stocking levels in forests that are not fully stocked. Implement afforestation on appropriate open lands.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 5.00

**Scenario Total Cost:** $3,837.93

**Scenario Cost/Unit:** $767.59

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 7 | $179.76 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 5 | $31.45 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 5 | $342.00 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 35 | $448.35 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 35 | $786.80 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hours | $47.81 | 7 | $334.67 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 5 | $83.40 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 5 | $77.85 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 5 | $11.20 |
| Tree, Hardwood, Seedling, Small | 1509 | Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only. | Each | $0.99 | 1075 | $1,064.25 |

**Practice:** E612C - Establishing tree/shrub species to restore native plant communities

**Scenario** #1 - Establishing tree/shrub species to restore native plant communities

**Scenario Description:**

Establish trees and/or shrubs to restore elements of plant diversity that have been lost through past diseases or improper management. For example, disease-resistant varieties of elm and chestnut can be established to restore the ecological functions of American elm and American chestnut. At the stand level, past forest management may have eliminated certain native tree species. Restoring stand-level diversity and function addresses a wide array of resource concerns and strengthens ongoing management activities. This enhancement improves a forest that is already in good condition by increasing plant diversity, and improving health and vigor through adding plants with resistance to disease, pests, or other local hazards. Additional benefits include contributing to carbon storage, and providing diversity in wildlife habitat and food sources.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 5.00

**Scenario Total Cost:** $4,866.04

**Scenario Cost/Unit:** $973.21

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 12 | $153.72 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 12 | $269.76 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Shrub, Potted, Small | 1524 | Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only. | Each | $6.82 | 50 | $341.00 |
| Tree, Hardwood, Potted, Medium | 1532 | Potted hardwood seedling, 2 gallons or larger. Includes materials and shipping only. | Each | $14.29 | 100 | $1,429.00 |
| Tree, Conifer, Potted, Medium | 1537 | Potted conifer seedling, 2 gallons or larger. Includes materials and shipping only. | Each | $12.97 | 100 | $1,297.00 |
| Tree shelter, solid tube type, 4 in. x 60 in. | 1567 | 4 inch x 60 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $5.64 | 150 | $846.00 |

**Practice:** E612D - Adding food-producing trees and shrubs to existing plantings

**Scenario** #1 - Adding food-producing trees and shrubs to existing plantings

**Scenario Description:**
Plant food-producing trees and shrubs for wildlife or human consumption within windbreaks, alley cropping, multi-story cropping, silvopasture systems, and/or riparian forest buffers.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $2,284.12

**Scenario Cost/Unit:** $228.41

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 10 | $192.80 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 10 | $128.10 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.41 | $120.31 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.36 | $88.51 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.23 | $39.37 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 1 | $15.57 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1 | $2.24 |
| Shrub, Seedling, Medium | 1507 | Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.69 | 341 | $576.29 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 340 | $646.00 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** E612E - Cultural plantings

**Scenario** #1 - Cultural plantings

**Scenario Description:**
Plant trees and shrubs that are of cultural significance, such as those species utilized by Tribes in traditional practices, medicinal plants, species used in basket-making, etc. (e.g., paper birch, slippery elm, witch hazel).

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,162.93

**Scenario Cost/Unit:** $2,162.93

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 10 | $128.10 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.41 | $120.31 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.36 | $88.51 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.23 | $39.37 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 1 | $15.57 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1 | $2.24 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 681 | $1,293.90 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** E612F - Sugarbush management

**Scenario** #1 - Sugarbush management

**Scenario Description:**

Establish or maintain species diversity in a sugarbush to enhance pollinator and wildlife needs. Maintain at least 20% of basal area in species other than sugar maple (Acer saccharum) to provide species diversity. Half of the trees that are not sugar maples (10%) will be mast producing species (hard or soft mass). Use maple tree tapping guidelines that minimize tree damage.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $843.96

**Scenario Cost/Unit:** $843.96

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 2 | $13.84 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 1 | $68.40 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 2 | $25.62 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 0.5 | $8.34 |
| Tree, Hardwood, Potted, Medium | 1532 | Potted hardwood seedling, 2 gallons or larger. Includes materials and shipping only. | Each | $14.29 | 20 | $285.80 |
| Tree shelter, solid tube type, 4 in. x 60 in. | 1567 | 4 inch x 60 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $5.64 | 20 | $112.80 |
| Cable ties, plastic | 1575 | Plastic cable ties (typ. 8-12 in.) to assist in securing items. Materials only. | Each | $0.07 | 60 | $4.20 |
| Stakes, wood, 3/4 in. x 3/4 in. x 60 in. | 1583 | 3/4 in. x 3/4 in. x 60 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.44 | 20 | $48.80 |

**Practice:** E612G - Tree/shrub planting for wildlife food

**Scenario** #1 - Tree/shrub planting for wildlife food

**Scenario Description:**
Tree or shrub planting to enhance habitat for native wildlife. A minimum of five tree or shrub species will be used; they will be species that provide food and/or cover for identified wildlife species.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $2,165.18

**Scenario Cost/Unit:** $2,165.18

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Chemical, ground application | 948 | Chemical application performed by ground equipment. Includes equipment, power unit and labor costs. | Acres | $6.29 | 1 | $6.29 |
| Hand tools, tree planting | 1590 | Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included. | Hours | $12.81 | 11 | $140.91 |
| **Foregone Income** | | | | | | |
| FI, Corn Dryland | 1959 | Dryland Corn is Primary Crop | Acres | $293.45 | 0.41 | $120.31 |
| FI, Soybeans Dryland | 1961 | Dryland Soybeans is Primary Crop | Acres | $245.86 | 0.36 | $88.51 |
| FI, Wheat Dryland | 1963 | Dryland Wheat is Primary Crop | Acres | $171.19 | 0.23 | $39.37 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 11 | $247.28 |
| **Materials** | | | | | | |
| Herbicide, Glyphosate | 334 | A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $16.68 | 1 | $16.68 |
| Herbicide, Sulfometuron & metsulfuron | 344 | A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $15.57 | 1 | $15.57 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1 | $2.24 |
| Shrub, Seedling, Medium | 1507 | Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.69 | 605 | $1,022.45 |
| Tree, Hardwood, Seedling, Medium | 1510 | Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only. | Each | $1.90 | 218 | $414.20 |

**Practice:** E643B - Restoration and management of rare or declining habitat

**Scenario** #1 - Restoration and management of rare or declining habitat

**Scenario Description:**
Provide protection from adverse environmental conditions to create refugia for documented occurrences of sensitive plant communities.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 643 - Restoration and Management of Rare and Declining Habitats

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 643 - Restoration and Management of Rare and Declining Habitats

**Feature Measure:** Feet of Fence

**Scenario Unit:** Feet

**Scenario Typical Size:** 440.00

**Scenario Total Cost:** $4,245.22

**Scenario Cost/Unit:** $9.65

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Auger, Post driver attachment | 934 | Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included. | Hours | $9.99 | 8 | $79.92 |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 2 | $13.84 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 8 | $205.44 |
| Tractor, agricultural, 60 HP | 963 | Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included. | Hours | $28.15 | 8 | $225.20 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 2 | $239.10 |
| **Materials** | | | | | | |
| Wire, Woven, Galvanized, 12.5 Gauge, 48 inch | 4 | Galvanized 12.5 gauge, 48 in. - 330' roll. Includes materials and shipping only. | Each | $344.21 | 3 | $1,032.63 |
| Post, Wood, CCA treated, 6 in. x 12-14 ft. | 13 | Wood Post, Line/End 6 inch dia. X 12-14 ft., CCA Treated. Includes materials and shipping only. | Each | $37.02 | 38 | $1,406.76 |
| Fence, Wire Assembly, Woven Wire | 35 | Brace pins, twist sticks, staples. Includes materials and shipping only. | Feet | $0.15 | 1648 | $247.20 |
| Gate, Game, 8 ft. High X 4 ft. Wide | 1082 | 4 Foot wide game gate (8 feet tall). Includes materials and shipping only. | Each | $259.66 | 1 | $259.66 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** E644A - Managing Flood-Irrigated Landscapes for Wildlife

**Scenario** #1 - Managing Flood-Irrigated Landscapes for Wildlife

**Scenario Description:**
Developing and implementing a conservation plan that supports maintenance of flood-irrigation in key landscapes to provide important foraging habitat for local breeding and migratory waterfowl and waterbirds.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 644 – Wetland Wildlife Habitat Management

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 644 – Wetland Wildlife Habitat Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $1,323.43

**Scenario Cost/Unit:** $26.47

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 9 | $231.12 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 22 | $494.56 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 5 | $597.75 |

**Practice:** E645A - Reduction of attractants to human-subsidized predators in sensitive wildlife species habitat

**Scenario** #1 - Reduction of attractants to human-subsidized predators in sensitive wildlife species habitat

**Scenario Description:**

Reduction of artificial perching sites, nest sites, food, and water available to subsidized predators in areas where human-subsidized predators are a threat to sensitive wildlife species. Human-subsidized predators may include ravens, crows, magpies, coyotes, foxes, skunks, raccoons, and other species. Activities under this enhancement may include removal of non- native or invasive trees; removal of unused power poles, corrals, windmills, buildings, and other vertical structures; and/or removal or management of watering facilities, dead livestock, road kill, garbage, animal feed, dumps, and other non-natural food sources.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 645 - Upland Wildlife Habitat Management

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 645 - Upland Wildlife Habitat Management

**Feature Measure:** Acre

**Scenario Unit:** Number

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $2,023.44

**Scenario Cost/Unit:** $50.59

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 24 | $616.32 |
| Trailer, enclosed, small | 1503 | Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included. | Hours | $13.67 | 24 | $328.08 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 48 | $1,079.04 |

**Practice:** E645B - Manage existing shrub thickets to provide adequate shelter for wildlife

**Scenario** #9 - Manage existing shrub thickets to provide adequate shelter for wildlife

**Scenario Description:**

Existing shrub thickets provide an instant and important cover for wildlife. Various wildlife species may use shrubs as winter/thermal cover, summer shade, roosting, or as escape cover from predators. Proper management ensures that these shrubs will continue to provide the desired benefits for the local wildlife. A combination of herbicide treatments, cutting and trimming branches, and removal of other competing vegetation will occur. An eligible existing shrub thicket needs to have a canopy cover of 750 square feet, with an end goal of expanding to 1500 square feet. Any existing shrub thicket (not hand planted within the last 5 years) are eligible for this enhancement. Shrub thickets found within fence rows may now be very wide, but still meet the 750 square feet, are eligible.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard 645 - Upland Wildlife Habitat Management

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 645 - Upland Wildlife Habitat Management

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $294.53

**Scenario Cost/Unit:** $294.53

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 2 | $13.84 |
| Pruning tools, hand tools | 1318 | Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included. | Hours | $2.35 | 2 | $4.70 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 2 | $60.80 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| **Materials** | | | | | | |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 1 | $50.86 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 1 | $2.24 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** E645C - Edge feathering for wildlife cover

**Scenario** #9 - Edge feathering for wildlife cover

**Scenario Description:**

Selected trees are cut and brush clipped along the border between a wooded area and a grassland, cropland, or idle land, creating a dense woody cover of interlocking branches at ground level. The feathered edge will be an average of 30 feet wide and a minimum of 50 feet long, resulting in an area of 1500 square feet. The width of the strip will vary to follow topographic features and to create a wavy border; the design will also consider aesthetics. Vegetative composition and cover will vary within the edge, ranging from areas with no trees and shrubs to areas with scattered trees and extensive shrub cover. The variation in vegetation structure along with variable width of the edge will create feathering. The edge may include shrub plantings for wildlife food and aesthetics.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard 645 - Upland Wildlife Habitat Management

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 645 - Upland Wildlife Habitat Management

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 1.00

**Scenario Total Cost:** $771.55

**Scenario Cost/Unit:** $771.55

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 8 | $55.36 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 2 | $136.80 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 8 | $243.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 2 | $44.96 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| **Materials** | | | | | | |
| Herbicide, Triclopyor | 338 | Refer to WIN-PST for product names and active ingredients. Materials and shipping | Acres | $39.22 | 1 | $39.22 |
| **Mobilization** | | | | | | |
| Mobilization, very small equipment | 1137 | 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 | $72.17 | 1 | $72.17 |

**Practice:** E645D - Wildlife Habitat Management Plan for Upland Landscapes

**Scenario** #13 - Wildlife Habitat Management Plan for Upland Landscapes

**Scenario Description:**

Develop and implement a wildlife habitat management plan that removes or significantly reduces the impact of existing land management activities occurring within agricultural landscapes (on any land use) causing chronic disturbance to wildlife during breeding, rearing, migration and over- wintering periods. Site monitoring may be necessary to identify and document sources of disturbance to wildlife. Examples of adjustments to existing management activities that can reduce disturbance to a tolerable level include: use of integrated pest management; capping of open vertical pipes; provision of wildlife-friendly water access and egress; and reduction of noise or movement within key migratory, nesting, rearing, loafing or hiding locations.

**Before Situation:**

The inadequate terrestrial wildlife habitat concern has been addressed under Conservation Practice Standard 645 and minimum planning criteria for the terrestrial wildlife habitat resource concern has been met. However, disturbance related impacts tied to the agricultural operation are negatively impacting wildlife.

**After Situation:**

Land management activities occurring within the agricultural landscape (on any land use) have been adjusted to avoid causing chronic disturbance to wildlife during breeding, rearing, migration and over- wintering periods has been addressed. Planning criteria for the terrestrial wildlife habitat resource concern exceeds minimum planning criteria.

**Feature Measure:** Acres of Improved Habitat

**Scenario Unit:** Acres

**Scenario Typical Size:** 40.00

**Scenario Total Cost:** $352.51

**Scenario Cost/Unit:** $8.81

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 3 | $77.04 |
| Rangeland/grassland field monitoring kit | 967 | Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only. | Each | $50.67 | 1 | $50.67 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 10 | $224.80 |

**Practice:** E647A - Manipulate vegetation on fields with captured rainfall for waterfowl & wading bird winter habitat

**Scenario** #1 - Manipulate vegetation on fields with captured rainfall for waterfowl & wading bird winter habitat

**Scenario Description:**

Harvested and idled agricultural lands, notably those occurring within rice rotations, contain high densities of residual (i.e., waste) grain and natural seeds following harvest. Seed densities in harvested rice fields may rival those documented in intensively managed moist-soil units, especially in the Gulf Coast and Central Valley of California. When flooded to shallow depths during fall and winter, these agricultural fields provide ideal foraging habitat for myriad species of waterfowl and wading birds. In addition, flooded conditions promote establishment of aquatic invertebrate populations, thus providing protein-rich food sources for shorebirds as well as waterfowl and wading birds. In many cases, light manipulation of dense vegetation is needed to improve the accessibility of food resources to waterfowl, wading birds, and shorebirds.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $1,284.64

**Scenario Cost/Unit:** $25.69

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Tractor, agricultural, 120 HP | 962 | Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included. | Hours | $65.82 | 8 | $526.56 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 8 | $235.36 |
| **Mobilization** | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | $261.36 | 2 | $522.72 |

**Practice:** E647C - Maintain most soil vegetation on cropland edges to enhance waterfowl and shorebird habitat

**Scenario** #1 - Maintain most soil vegetation on cropland edges to enhance waterfowl and shorebird habitat

**Scenario Description:**

The wetter or more water saturated portions of cropland fields such as areas adjacent to field drains, have the potential to produce a significant amount of moist soil plants which are a tremendously valuable source of forage and cover for many waterfowl, shorebird and wading bird species, especially during a period of time when such plants may be limited. Under normal cropland production, the native vegetation is restricted on these sites through mechanical and/or chemical control. These maintained moist soil plants also will provide filtering and improve water quality.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $535.30

**Scenario Cost/Unit:** $10.71

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 3 | $95.46 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 3 | $88.26 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** E647D - Establish and maintain early successional habitat in ditches and bank borders

**Scenario** #1 - Establish and maintain early successional habitat in ditches and bank borders

**Scenario Description:**

This enhancement is to encourage the establishment of early successional, naturally occurring vegetation in ditches, side slope and bank borders to provide cover, critical nesting and brood rearing habitat as well as filtering overland flow and improving water quality. Ditches perform the critical function of removing water from agricultural lands. Allowing naturally occurring vegetation to develop along ditches, including side slopes, banks and borders, will help provide food and cover for wildlife while enhancing aquatic habitat and improving water quality. Ditches and ditch borders provide a foundation that supports a diverse wildlife community including Northern Bobwhite (Colinus virginianus) and other birds preferring early successional cover. Rabbits, furbearers, amphibians and many other species that inhabit agriculture areas will use this vegetative cover. These areas can also provide critical nesting habitat for the Mottled Duck (Anas fulvigula).

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $535.30

**Scenario Cost/Unit:** $10.71

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mower, Bush Hog | 940 | Equipment and power unit costs. Labor not included. | Hours | $31.82 | 3 | $95.46 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 3 | $88.26 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 2 | $351.58 |

**Practice:** E666A - Maintaining and improving forest soil quality

**Scenario** #1 - Maintaining and improving forest soil quality

**Scenario Description:**

Adopts guidelines for maintaining and improving soil quality on sites where forest management activities are practiced. These guidelines will increase soil organic matter content, improve nutrient cycling, and increase infiltration and retention of precipitation. Avoiding soil compaction will allow for greater root development and tree growth, limit windthrow, and reduce drought stress. Increasing carbon storage on site will maintain the soil microbial community and provide wildlife benefits.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 50.00

**Scenario Total Cost:** $2,296.07

**Scenario Cost/Unit:** $45.92

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 4 | $27.68 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 4 | $77.12 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 13 | $1,554.15 |
| **Materials** | | | | | | |
| Test, Soil Test, Standard | 299 | Includes materials, shiping, labor, and equipment costs. | Each | $15.73 | 10 | $157.30 |
| Tree Marking Paint | 313 | Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only. | Acres | $10.43 | 5 | $52.15 |
| Certified Organic, Annual Grasses, Legumes and/or Forbs | 2343 | Annual grasses, mostly introduced but may be native. Used for temporary cover or cover crops. Certified organic. Includes material and shipping only. | Acres | $65.49 | 3 | $196.47 |

**Practice:** E666D - Forest management to enhance understory vegetation

**Scenario** #1 - Forest management to enhance understory vegetation

**Scenario Description:**

This enhancement provides for management of the understory vegetation in a forested area by mechanical, chemical, and/or manual methods to improve the plant species mix and the health of the residual vegetation. Managing the understory vegetation increases available water to the plants, minimizes runoff and erosion, and improves water quality. An adequately stocked forest provides inputs of leaves, needles, and woody twigs and stems to the forest floor, adding to soil organic matter and contributing to forest soil health. Desirable tree species and understory vegetation, with spacing that allows ground cover to develop, will allow moisture to infiltrate and be stored in the soil, releasing moisture over longer periods of time.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $5,788.52

**Scenario Cost/Unit:** $289.43

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 16 | $1,715.36 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 16 | $1,094.40 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 16 | $470.72 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 11 | $1,315.05 |
| **Materials** | | | | | | |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 20 | $1,017.20 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** E666E - Reduce height of the forest understory to limit wildfire risk

**Scenario** #1 - Reduce height of the forest understory to limit wildfire risk

**Scenario Description:**

Forest stand improvement that manages forest structure to reduce the risk of wildfire, and creates conditions that facilitate prescribed burning. The fire risk reduction is accomplished by reducing the height of the woody understory and midstory, creating space between the ground cover and the tree canopy. This enhancement provides for management of the understory vegetation in a forested area, using mechanical, chemical or manual methods to improve the plant species mix and the health of the residual vegetation, and reduce the risk of wildfire. In appropriate stands, the treatment creates conditions that favor prescribed burning. Forest stand improvement (FSI) activities are used to remove trees of undesirable species, form, quality, condition, or growth rate. The quantity and quality of forest for wildlife and/or timber production will be increased by manipulating stand density and structure. These treatments can also reduce wildfire hazards, improve forest health, restore natural plant communities, and achieve or maintain a desired native understory plant community for soil health, wildlife, grazing, and/or browsing.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $5,788.52

**Scenario Cost/Unit:** $289.43

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 16 | $1,715.36 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 16 | $1,094.40 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 16 | $470.72 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 11 | $1,315.05 |
| **Materials** | | | | | | |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 20 | $1,017.20 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** E666F - Reduce forest stand density to create open stand structure

**Scenario** #1 - Reduce forest stand density to create open stand structure

**Scenario Description:**

Reducing forest stand density creates open forest conditions with a low basal area which promotes the health and vigor of the residual trees. The open stand structure allows a significant amount of sunlight to reach the forest floor and stimulates the growth of understory vegetation. Understory vegetation management, along with the wide spacing between trees or clumps of trees, provides visual appeal, lowers the risk of wildfire, and provides habitat for many at-risk and listed wildlife species. The enhancement creates conditions that facilitate a follow-up treatment with prescribed burning.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 20.00

**Scenario Total Cost:** $6,608.64

**Scenario Cost/Unit:** $330.43

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 20 | $2,144.20 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 20 | $1,368.00 |
| **Labor** | | | | | | |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 20 | $588.40 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 11 | $1,315.05 |
| **Materials** | | | | | | |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 20 | $1,017.20 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** E666G - Reduce forest density and manage understory along roads to limit wildfire risk and improve habitat

**Scenario** #1 - Reduce forest density and manage understory along roads to limit wildfire risk and improve habitat

**Scenario Description:**

Opening the tree canopy along roads ("daylighting"), and providing space between ground vegetation and tree crowns minimizes the spread of wildfires that often start along roads, and improves wildlife habitat and food sources for many species. Some trees near a forest road are removed through harvesting, cutting, mulching, or another option available at the site, with the objective of creating a partially open forest canopy bordering the road. A semi-open canopy allows more sunlight to reach the forest floor to promote herbaceous understory plants, and reduces maintenance needs by allowing moisture to evaporate from roads. The reduced canopy and herbaceous understory limit woodland fuel buildup and reduce fire intensity.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $3,340.44

**Scenario Cost/Unit:** $334.04

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 8 | $55.36 |
| Mechanical cutter, chopper | 943 | Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included. | Hours | $107.21 | 8 | $857.68 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 8 | $547.20 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 8 | $179.84 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hours | $29.42 | 8 | $235.36 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 8 | $956.40 |
| **Materials** | | | | | | |
| Herbicide, Imazapyr | 336 | Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $50.86 | 10 | $508.60 |

**Practice:** E666H - Increase on-site carbon storage

**Scenario** #1 - Increase on-site carbon storage

**Scenario Description:**
Use forest management techniques to maintain and increase on-site carbon storage. These include, but are not limited to, applying uneven-aged management, using longer rotations, retaining cavity/den trees, snags, and down woody debris, and protecting or increasing soil organic material.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 100.00

**Scenario Total Cost:** $1,554.15

**Scenario Cost/Unit:** $15.54

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Labor** | | | | | | |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 13 | $1,554.15 |

**Practice:** E666I - Crop tree management for mast production

**Scenario** #1 - Crop tree management for mast production

**Scenario Description:**
Forest stand improvement using crop tree management techniques to increase mast production

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $3,890.78

**Scenario Cost/Unit:** $389.08

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 25 | $173.00 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 6 | $154.08 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 25 | $1,710.00 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 25 | $562.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 8 | $956.40 |
| **Materials** | | | | | | |
| Tree Marking Paint | 313 | Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only. | Acres | $10.43 | 10 | $104.30 |
| Herbicide, Picloram | 337 | Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $23.10 | 10 | $231.00 |

**Practice:** E666J - Facilitating oak forest regeneration

**Scenario** #1 - Facilitating oak forest regeneration

**Scenario Description:**

Facilitate oak regeneration following a forest stand improvement treatment for natural oak regeneration (i.e., a regeneration cut). After a regeneration cut, oaks in the seedling and sapling stages are often out-competed by invasive brush and undesirable tree and shrub species. This enhancement will release seedling and sapling oaks from competing invasive plants and other undesirable species, and thin stump sprouts. A forester will monitor site conditions, treat competition, protect seedlings, and recommend additional follow-up treatments as needed. The enhancement protects investments in oak regeneration by providing for follow-up activities that require the expertise of a professional forester.

**Before Situation:**

Naturally regenerated oak seedlings and/or saplings are threatened by competition from undesirable vegetation.

**After Situation:**

Oaks in the forest stand are free from competition and have adequate space and light to allow them to grow into the forest canopy.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 25.00

**Scenario Total Cost:** $15,339.33

**Scenario Cost/Unit:** $613.57

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 6 | $41.52 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 16 | $410.88 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 10 | $684.00 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 6 | $182.40 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 56 | $1,258.88 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 34 | $4,064.70 |
| **Materials** | | | | | | |
| Tree Marking Paint | 313 | Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only. | Acres | $10.43 | 5 | $52.15 |
| Herbicide, Triclopyor | 338 | Refer to WIN-PST for product names and active ingredients. Materials and shipping | Acres | $39.22 | 5 | $196.10 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 5 | $11.20 |
| Tree shelter, solid tube type, 4 in. x 48 in. | 1566 | 4 inch x 48 inch tree tube for protection from animal damage. Materials and shipping only. | Each | $4.60 | 1250 | $5,750.00 |
| Cable ties, plastic | 1575 | Plastic cable ties (typ. 8-12 in.) to assist in securing items. Materials only. | Each | $0.07 | 2500 | $175.00 |
| Stakes, wood, 3/4 in. x 3/4 in. x 48 in. | 1582 | 3/4 in. x 3/4 in. x 48 in. wood stakes to fasten items in place. Includes materials only. | Each | $2.01 | 1250 | $2,512.50 |

**Practice:** E666K - Creating structural diversity with patch openings

**Scenario** #1 - Creating structural diversity with patch openings

**Scenario Description:**

Forest stand improvement that creates patch openings. Size, shape, and arrangement of patches will be based on natural features, and emulate patches that would result from natural disturbance regimes of wind or fire, varying geographically and by forest type, and by tree species desired from natural regeneration. The treatment will create diversity in stand composition and structure, increase pest resistance, and enhance wildlife food availability. Openings may provide regeneration sites and restore natural plant communities, and achieve or maintain a desired understory plant community for wildlife habitat.

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 15.00

**Scenario Total Cost:** $8,381.70

**Scenario Cost/Unit:** $558.78

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 150 | $1,038.00 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 15 | $385.20 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 150 | $3,372.00 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 30 | $3,586.50 |

**Practice:** E666L - Forest Stand Improvement to rehabilitate degraded hardwood stands

**Scenario** #1 - Forest Stand Improvement to rehabilitate degraded hardwood stands

**Scenario Description:**

Hardwood forestland has been subject to poor logging practices ("high-grading") for decades. Without professional forestry assistance the best species and individual trees are removed, often before maturity ("diameter-limit cutting"), leaving the poorest species and individual trees to regenerate the stand. Reversing this process requires cutting or killing poor quality trees while retaining any desirable species that might still be present. A combination of 3 silvicultural methods are applied: crop tree release, group selection (all trees removed from an area 0.25 to 1.0 acre in size) and small clear-cuts (all trees removed from an area 1-3 acres in size).

**Before Situation:**

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**After Situation:**

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**Feature Measure:** Acres treated

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $5,713.63

**Scenario Cost/Unit:** $571.36

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 16 | $110.72 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 2 | $51.36 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 40 | $2,736.00 |
| All terrain vehicles, ATV | 965 | Includes equipment, power unit and labor costs. | Hours | $19.28 | 16 | $308.48 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 16 | $359.68 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 8 | $956.40 |
| **Materials** | | | | | | |
| Tree Marking Paint | 313 | Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only. | Acres | $10.43 | 10 | $104.30 |
| Herbicide, Triazine | 1321 | Broad spectrum herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $91.09 | 10 | $910.90 |
| **Mobilization** | | | | | | |
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | $175.79 | 1 | $175.79 |

**Practice:** E666O - Snags, den trees, and coarse woody debris for wildlife habitat

**Scenario** #1 - Snags, den trees, and coarse woody debris for wildlife habitat

**Scenario Description:**
Improve wildlife habitat through creation and retention of snags, den trees, forest stand structural diversity, and coarse woody debris on the forest floor, to provide cover/shelter for native wildlife species.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $515.22

**Scenario Cost/Unit:** $51.52

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 7 | $48.44 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 1 | $25.68 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 3 | $205.20 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 7 | $212.80 |
| **Materials** | | | | | | |
| Herbicide, Picloram | 337 | Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $23.10 | 1 | $23.10 |

**Practice:** E666P - Summer roosting habitat for native forest-dwelling bat species

**Scenario** #1 - Summer roosting habitat for native forest-dwelling bat species

**Scenario Description:**
Create new potential roost trees within upland and riparian forests to achieve desired summer habitat for forest-dwelling bat species.

**Before Situation:**
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**After Situation:**
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

**Feature Measure:** Acre

**Scenario Unit:** Acres

**Scenario Typical Size:** 10.00

**Scenario Total Cost:** $2,238.98

**Scenario Cost/Unit:** $223.90

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 13 | $89.96 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 6 | $154.08 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 13 | $889.20 |
| **Labor** | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 13 | $292.24 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 4 | $478.20 |
| **Materials** | | | | | | |
| Tree Marking Paint | 313 | Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only. | Acres | $10.43 | 10 | $104.30 |
| Herbicide, Picloram | 337 | Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $23.10 | 10 | $231.00 |

**Practice:** E666R - Forest songbird habitat maintenance

**Scenario** #1 - Forest songbird habitat maintenance

**Scenario Description:**

Adopts guidelines and methods developed by the Forest Bird Initiative of the Vermont Audubon Society, to preserve habitat features following a forest stand improvement treatment designed to create habitat for a suite of forest-dwelling neotropical migratory songbirds. It includes developing or updating a forest management plan, inspecting and tending forest habitat, and monitoring bird populations. It protects investments in habitat creation by providing for follow-up activities that require the expertise of a professional forester or biologist. This enhancement is appropriate for states in the Atlantic Flyway and the Upper Midwest.

**Before Situation:**

The bird habitat of a forest stand is threatened by undesirable vegetation, including noxious and invasive plants, and tree regeneration of species not favorable to birds. Harmful insects and tree diseases may also be present, and storms may have damaged

**After Situation:**

The forest stand has retained its habitat features and is utilized by a diversity of neotropical migratory songbirds.

**Feature Measure:** Acres

**Scenario Unit:** Acres

**Scenario Typical Size:** 25.00

**Scenario Total Cost:** $5,499.20

**Scenario Cost/Unit:** $219.97

Cost Details:

| Component Name | ID | Description | Unit | Cost | QTY | Total |
|---|---|---|---|---|---|---|
| **Equipment Installation** | | | | | | |
| Chainsaw | 937 | Equipment and power unit costs. Labor not included. | Hours | $6.92 | 4 | $27.68 |
| Truck, Pickup | 939 | Equipment and power unit costs. Labor not included. | Hours | $25.68 | 10 | $256.80 |
| Chemical, spot treatment, single stem application | 964 | Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included. | Hours | $68.40 | 4 | $273.60 |
| **Labor** | | | | | | |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hours | $30.40 | 4 | $121.60 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hours | $22.48 | 4 | $89.92 |
| Specialist Labor | 235 | Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services. | Hours | $119.55 | 38 | $4,542.90 |
| **Materials** | | | | | | |
| Tree Marking Paint | 313 | Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only. | Acres | $10.43 | 2 | $20.86 |
| Herbicide, Triclopyor | 338 | Refer to WIN-PST for product names and active ingredients. Materials and shipping | Acres | $39.22 | 4 | $156.88 |
| Herbicide, Surfactant | 1095 | Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only. | Acres | $2.24 | 4 | $8.96 |