

Practice: 378 - Pond

Scenario: #1 - Excavated or Embankment Pond, No Pipe

Scenario Description:

A low-hazard water impoundment structure on agricultural lands to provide water for livestock, or fish and wildlife. For an excavated pond, the structure 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, and an earthen spillway is constructed as needed. For an embankment pond, an earthen embankment will be constructed with an earthen auxiliary spillway. 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. Failure of the embankment 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 embankment pond is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 2500 cubic yards to create an embankment for an embankment pond or, in the case of an excavated pit pond, excavating 2500 cubic yards and spreading the spoil outside the pool area using a dozer or similar excavation equipment. In the case of an embankment pond, the product of the storage times the effective height of the dam is less than 3,000 and the effective height of the dam is 35 feet or less. The earthen auxiliary spillway will be constructed as designed. No principal spillway pipe will be used. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 533, 614, 587, 396.

Scenario Feature Measure: Embankment or Excavated Volume

Scenario Unit: Cubic Yard

Scenario Typical Size: 2,500

Scenario Cost: \$6,078.66

Scenario Cost/Unit: \$2.43

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acre	\$267.70	1	\$267.70
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$105.78	41.7	\$4,411.03
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$23.61	41.7	\$984.54
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	\$415.40	1	\$415.40

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Scenario: #2 - Embankment, Pipe Material 1000 Diameter Inch Foot or Smaller

Scenario Description:

A low-hazard water impoundment structure on agricultural land to provide water for livestock, or fish and wildlife. An earthen embankment will be constructed with less than or equal to 1000 Diameter Inch Foot of principal spillway pipe material and an 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.

Before Situation:

Area exists where water could naturally pool or run off to create a pond. Failure of the embankment 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 the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 3000 cubic yards to create an embankment. The typical principal spillway pipe is 100' long and 8" in diameter (800 Dia-In-Ft) with 3 - 5'x5' anti-seep collars. 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 principal spillway is installed using an approved conduit material. The earthen auxiliary spillway will be constructed as designed. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A-D, 533, 614, 587, 396.

Scenario Feature Measure: Volume of Embankment

Scenario Unit: Cubic Yard

Scenario Typical Size: 3,000

Scenario Cost: \$9,202.57

Scenario Cost/Unit: \$3.07

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$105.78	50	\$5,289.00
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$47.65	2	\$95.30
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acre	\$267.70	1	\$267.70
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$23.61	52	\$1,227.72
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	16	\$289.76
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$24.25	0.3	\$7.28
Trash Guard, metal	1608	Trash Guard, fabricated-steel, includes materials, equipment, and labor to transport and place Conical shaped trash guard for drop inlet spillway. Typically fabricated of CMP and steel. Includes materials, equipment, and labor to fabricate and transport.	Pound	\$2.27	225.7	\$512.34
Pipe, CMP, 8", 16 Gauge	1267	8" Corrugated Metal Pipe, Galvanized, Uncoated, 16 gage. Material cost only.	Foot	\$7.13	100	\$713.00
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$23.93	7	\$167.51
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$217.57	1	\$217.57

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	\$415.40	1	\$415.40
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Scenario: #3 - Embankment, Pipe Material 1001-1500 Diameter Inch Foot

Scenario Description:

A low-hazard water impoundment structure on agricultural land to provide water for livestock, or fish and wildlife. An earthen embankment will be constructed with 1001 - 1500 Diameter Inch Foot of principal spillway pipe material and an 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.

Before Situation:

Area exists where water could naturally pool or run off to create a pond. Failure of the embankment 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 the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 3000 cubic yards to create an embankment. The typical principal spillway barrel is 110' long and 12" in diameter (1320 Dia-In-Ft) with 3 - 5'x5' anti-seep collars. 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 principal spillway is installed using an approved conduit material. The earthen auxiliary spillway will be constructed as designed. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A-D, 533, 614, 587, 396.

Scenario Feature Measure: Volume of Embankment

Scenario Unit: Cubic Yard

Scenario Typical Size: 3,000

Scenario Cost: \$9,809.57

Scenario Cost/Unit: \$3.27

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acre	\$267.70	1	\$267.70
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$47.65	2	\$95.30
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$105.78	50	\$5,289.00
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$23.61	52	\$1,227.72
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	16	\$289.76
Materials						
Trash Guard, metal	1608	Trash Guard, fabricated-steel, includes materials, equipment, and labor to transport and place Conical shaped trash guard for drop inlet spillway. Typically fabricated of CMP and steel. Includes materials, equipment, and labor to fabricate and transport.	Pound	\$2.27	225.7	\$512.34
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$23.93	7	\$167.51
Pipe, CMP, 18-16 gauge, weight priced	1322	18 & 16 gauge galvanized helical corrugated metal pipe priced by the weight of the pipe materials. Materials only.	Pound	\$1.20	1100	\$1,320.00
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$24.25	0.3	\$7.28
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$217.57	1	\$217.57

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	\$415.40	1	\$415.40
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Scenario: #4 - Embankment, Pipe Material 1501-2500 Diameter Inch Foot

Scenario Description:

A low-hazard water impoundment structure on agricultural land to provide water for livestock, or fish and wildlife. An earthen embankment will be constructed with 1501 - 2500 Diameter Inch Foot of principal spillway pipe material and an 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.

Before Situation:

Area exists where water could naturally pool or run off to create a pond. Failure of the embankment 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 the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 3000 cubic yards to create an embankment. The typical principal spillway barrel is 120' long and 18" in diameter (2160 Dia-In-Ft) with 3 - 5'x5' anti-seep collars. 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 principal spillway is installed using an approved conduit material. The earthen auxiliary spillway will be constructed as designed. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A-D, 533, 614, 587, 396.

Scenario Feature Measure: Volume of Embankment

Scenario Unit: Cubic Yard

Scenario Typical Size: 3,000

Scenario Cost: \$10,995.70

Scenario Cost/Unit: \$3.67

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acre	\$267.70	1.5	\$401.55
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$47.65	2	\$95.30
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$105.78	50	\$5,289.00
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.	Hour	\$18.11	20	\$362.20
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$23.61	52	\$1,227.72
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$23.93	7	\$167.51
Pipe, CMP, 18-16 gauge, weight priced	1322	18 & 16 gauge galvanized helical corrugated metal pipe priced by the weight of the pipe materials. Materials only.	Pound	\$1.20	1800	\$2,160.00
Trash Guard, metal	1608	Trash Guard, fabricated-steel, includes materials, equipment, and labor to transport and place Conical shaped trash guard for drop inlet spillway. Typically fabricated of CMP and steel. Includes materials, equipment, and labor to fabricate and transport.	Pound	\$2.27	287.3	\$652.17
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$24.25	0.3	\$7.28
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$217.57	1	\$217.57

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	\$415.40	1	\$415.40
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Scenario: #5 - Embankment, Pipe Material 2501-3500 Diameter Inch Foot

Scenario Description:

A low-hazard water impoundment structure on agricultural land to provide water for livestock, or fish and wildlife. An earthen embankment will be constructed with 2501 - 3500 Diameter Inch Foot of principal spillway pipe material and an 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.

Before Situation:

Area exists where water could naturally pool or run off to create a pond. Failure of the embankment 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 small low hazard pond is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 3000 cubic yards to create an embankment. The typical principal spillway pipe is 130' long and 24" in diameter (3120 Dia-in-ft) with 3 - 6'x6' anti-seep collars. 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 principal spillway is installed using an approved conduit material. The earthen auxiliary spillway will be constructed as designed. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A-D, 533, 614, 587, 396.

Scenario Feature Measure: Volume of Embankment

Scenario Unit: Cubic Yard

Scenario Typical Size: 3,000

Scenario Cost: \$11,979.17

Scenario Cost/Unit: \$3.99

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$105.78	50	\$5,289.00
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$47.65	2	\$95.30
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acre	\$267.70	1.5	\$401.55
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	20	\$362.20
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$23.61	52	\$1,227.72
Materials						
Pipe, CMP, 18-16 gauge, weight priced	1322	18 & 16 gauge galvanized helical corrugated metal pipe priced by the weight of the pipe materials. Materials only.	Pound	\$1.20	2470	\$2,964.00
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$24.25	0.3	\$7.28
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$23.93	14.5	\$346.99
Trash Guard, metal	1608	Trash Guard, fabricated-steel, includes materials, equipment, and labor to transport and place Conical shaped trash guard for drop inlet spillway. Typically fabricated of CMP and steel. Includes materials, equipment, and labor to fabricate and transport.	Pound	\$2.27	287.3	\$652.17
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$217.57	1	\$217.57

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	\$415.40	1	\$415.40
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Scenario: #6 - Embankment, Pipe Material 3501-5000 Diameter Inch Foot

Scenario Description:

A low-hazard water impoundment structure on agricultural land to provide water for livestock, or fish and wildlife. An earthen embankment will be constructed with 3501 - 5000 Diameter Inch Foot of principal spillway pipe material and an 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.

Before Situation:

Area exists where water could naturally pool or run off to create a pond. Failure of the embankment 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 small low hazard pond is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 3000 cubic yards to create an embankment. The typical principal spillway has a barrel with 3 - 6.5'x6.5' anti-seep collars that is 130' long and 30" in diameter and a riser that is 4.5' long and 60" in diameter (4170 Dia-In-Ft total). 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 principal spillway is installed using an approved conduit material. The earthen auxiliary spillway will be constructed as designed. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A-D, 533, 614, 587, 396.

Scenario Feature Measure: Volume of Embankment

Scenario Unit: Cubic Yard

Scenario Typical Size: 3,000

Scenario Cost: \$13,345.63

Scenario Cost/Unit: \$4.45

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acre	\$267.70	1.5	\$401.55
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$99.18	3	\$297.54
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$47.65	2	\$95.30
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$105.78	50	\$5,289.00
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$23.61	52	\$1,227.72
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	30	\$543.30
Materials						
Pipe, CMP, 14-12 gauge, weight priced	1589	14 and 12 gauge galvanized helical corrugated metal pipe priced by the weight of the pipe materials. Materials only.	Pound	\$0.76	364.5	\$277.02
Pipe, CMP, 18-16 gauge, weight priced	1322	18 & 16 gauge galvanized helical corrugated metal pipe priced by the weight of the pipe materials. Materials only.	Pound	\$1.20	3120	\$3,744.00
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$24.25	0.3	\$7.28
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$23.93	19.6	\$469.03

Materials

Trash Guard, metal	1608	Trash Guard, fabricated-steel, includes materials, equipment, and labor to transport and place Conical shaped trash guard for drop inlet spillway. Typically fabricated of CMP and steel. Includes materials, equipment, and labor to fabricate and transport.	Pound	\$2.27	159	\$360.93
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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	\$415.40	1	\$415.40
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$217.57	1	\$217.57

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Scenario: #7 - Embankment, Pipe Material 5001-7000 Diameter Inch Foot

Scenario Description:

A low-hazard water impoundment structure on agricultural land to provide water for livestock, or fish and wildlife. An earthen embankment will be constructed with 5001 - 7000 Diameter Inch Foot of principal spillway pipe material and an 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.

Before Situation:

Area exists where water could naturally pool or run off to create a pond. Failure of the embankment 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 small low hazard pond is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 3000 cubic yards to create an embankment. The typical principal spillway has a barrel with 3 - 7.5'x7.5' anti-seep collars that is 130' long and 42" in diameter and a riser that is 5.5' long and 84" in diameter (5922 Dia-In-Ft total). 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 principal spillway is installed using an approved conduit material. The earthen auxiliary spillway will be constructed as designed. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A-D, 533, 614, 587, 396.

Scenario Feature Measure: Volume of Embankment

Scenario Unit: Cubic Yard

Scenario Typical Size: 3,000

Scenario Cost: \$16,988.79

Scenario Cost/Unit: \$5.66

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$105.78	50	\$5,289.00
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$47.65	2	\$95.30
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$99.18	7	\$694.26
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acre	\$267.70	2	\$535.40
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.	Hour	\$18.11	36	\$651.96
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$23.61	52	\$1,227.72
Materials						
Trash Guard, metal	1608	Trash Guard, fabricated-steel, includes materials, equipment, and labor to transport and place Conical shaped trash guard for drop inlet spillway. Typically fabricated of CMP and steel. Includes materials, equipment, and labor to fabricate and transport.	Pound	\$2.27	256	\$581.12
Pipe, CMP, 14-12 gauge, weight priced	1589	14 and 12 gauge galvanized helical corrugated metal pipe priced by the weight of the pipe materials. Materials only.	Pound	\$0.76	517	\$392.92
Pipe, CMP, 18-16 gauge, weight priced	1322	18 & 16 gauge galvanized helical corrugated metal pipe priced by the weight of the pipe materials. Materials only.	Pound	\$1.20	5070	\$6,084.00

Materials

Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$24.25	0.3	\$7.28
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$23.93	33.3	\$796.87

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	\$415.40	1	\$415.40
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$217.57	1	\$217.57

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Scenario: #8 - Embankment, Pipe Material 7001 Diameter Inch Foot or Larger

Scenario Description:

A low-hazard water impoundment structure on agricultural land to provide water for livestock, or fish and wildlife. An earthen embankment will be constructed with greater than or equal to 7001 Diameter Inch Foot of principle spillway pipe material and an 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.

Before Situation:

Area exists where water could naturally pool or run off to create a pond. Failure of the embankment 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 small low hazard pond is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 3000 cubic yards to create an embankment. The typical principal spillway has a barrel with 3 - 8.5'x8.5' anti-seep collars that is 130' long and 54" in diameter and a riser that is 6.5' long and 108" in diameter (7722 Dia-In-Ft total). 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 principal spillway is installed using an approved conduit material. The earthen auxiliary spillway will be constructed as designed. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A-D, 533, 614, 587, 396.

Scenario Feature Measure: Volume of Embankment

Scenario Unit: Cubic Yard

Scenario Typical Size: 3,000

Scenario Cost: \$18,778.12

Scenario Cost/Unit: \$6.26

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
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.	Hour	\$47.65	2	\$95.30
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$105.78	50	\$5,289.00
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$99.18	13.6	\$1,348.85
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acre	\$267.70	2.5	\$669.25
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$23.61	52	\$1,227.72
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	40	\$724.40
Materials						
Trash Guard, metal	1608	Trash Guard, fabricated-steel, includes materials, equipment, and labor to transport and place Conical shaped trash guard for drop inlet spillway. Typically fabricated of CMP and steel. Includes materials, equipment, and labor to fabricate and transport.	Pound	\$2.27	292	\$662.84
Pipe, CMP, 14-12 gauge, weight priced	1589	14 and 12 gauge galvanized helical corrugated metal pipe priced by the weight of the pipe materials. Materials only.	Pound	\$0.76	9002.5	\$6,841.90
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$23.93	53.3	\$1,275.47

Materials

Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$24.25	0.43	\$10.43
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Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$217.57	1	\$217.57
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$415.40	1	\$415.40