

**Practice: 521D - Pond Sealing or Lining, Compacted Clay Treatment**

**Scenario: #1 - Material haul < 1 mile**

**Scenario Description:**

A compacted soil liner treated with compacted clay is constructed to reduce seepage from ponds or waste storage impoundment structures. Material is hauled from less than 1 mile away from site. 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.

Associated practices: Pond (378), Waste Storage Facility (313), and other waste impoundments

**Before Situation:**

Soils on-site exhibit seepage rates in excess of acceptable limits. An adequate supply of soil suitable for constructing a clay liner without amendments is available at an economical haul distance within 1 mile of the site.

**After Situation:**

A 12" thick compacted clay liner with 6" thick of soil cover is installed over 1 acre. Water conservation and environmental protection are provided by limiting seepage losses from ponds or waste storage impoundments.

**Scenario Feature Measure:** Volume of Liner Material (including volume of soil cover, as needed)

**Scenario Unit:** Cubic Yard

**Scenario Typical Size:** 2,420

**Scenario Cost:** \$32,504.44

**Scenario Cost/Unit:** \$13.43

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
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 Yard	\$3.65	2420	\$8,833.00
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 Yard	\$6.53	1613	\$10,532.89
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$4.39	2420	\$10,623.80
<b>Labor</b>						
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.	Hour	\$96.17	8	\$769.36
<b>Mobilization</b>						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$495.32	3	\$1,485.96
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$259.43	1	\$259.43

**Practice: 521D - Pond Sealing or Lining, Compacted Clay Treatment**

**Scenario: #2 - Material haul > 1 mile**

**Scenario Description:**

A compacted soil liner treated with compacted clay is constructed to reduce seepage from ponds or waste storage impoundment structures. Material is hauled from over 1 mile away from site. 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.

Associated practices: Pond (378), Waste Storage Facility (313), and other waste impoundments

**Before Situation:**

Soils on-site exhibit seepage rates in excess of acceptable limits. An adequate supply of soil suitable for constructing a clay liner without amendments is available at an economical haul distance over 1 mile from the site.

**After Situation:**

A 12" thick compacted clay liner with 6" thick of soil cover is installed over 1 acre. Water conservation and environmental protection are provided by limiting seepage losses from ponds or waste storage impoundments. The typical haul distance is 3.3 miles.

**Scenario Feature Measure: Volume of Liner Material (including volume of soil cover, as needed)**

**Scenario Unit:** Cubic Yard

**Scenario Typical Size:** 2,420

**Scenario Cost:** \$34,521.87

**Scenario Cost/Unit:** \$14.27

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
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	\$0.33	8065	\$2,661.45
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 Yard	\$3.65	2420	\$8,833.00
Excavation, clay, large equipment, 50 ft	1218	Bulk excavation of clay with dozer >100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.59	1613	\$4,177.67
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$4.39	2420	\$10,623.80
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 yard	\$2.36	2420	\$5,711.20
<b>Labor</b>						
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.	Hour	\$96.17	8	\$769.36
<b>Mobilization</b>						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$495.32	3	\$1,485.96
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$259.43	1	\$259.43