

Practice: 412 - Grassed Waterway

Scenario #1 - Base Waterway

Scenario Description:

A grassed waterway 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. A typical practice is 1200' long, 12' bottom, 8:1 side slopes, 1.5' depth, half excavation. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. The waterway construction area includes the excavated width plus the theoretical width for two berms (one on each side) that are calculated based on the excavated area and are 1 foot tall with 5:1 side slopes. The seeding area varies, but is typically less than waterway construction area. Costs include excavation and associated work to construct the overall shape and grade of the waterway. Costs also include vegetation materials, associated vegetation planting work, and foregone income.

Before Situation:

The field has a small gully which is cutting deeper into the field as time goes on, so it needs to be stopped or controlled. Excessive sedimentation and soil erosion is occurring as a result of ephemeral or classic gully erosion. The gully has formed in field as a result of excessive runoff and poor cropping techniques. A grassed waterway is also commonly installed to convey runoff from concentrated flows, terraces, diversions, or water control structures or similar practices to a suitable, stable outlet.

After Situation:

The installed grassed waterway is 1200' long, 12' bottom, 8:1 side slopes, 1.5' depth. The practice is installed using a dozer. Grassed waterway vegetation is planted according to Critical Area Planting (342) for establishment. If erosion control blankets or mulching for seedbed establishment/protection are needed, use conservation practice Mulching (484). Subsurface Drains (606) or Underground Outlets (620) may be needed to avoid saturated conditions.

Feature Measure: Acres of Waterway Construction Ar

Scenario Unit:: Acre

Scenario Typical Size: 1

Total Scenario Cost: \$1,860.41

Scenario Cost/Unit: \$1,860.41

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.	Acre	\$9.21	1	\$9.21
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.68	1	\$5.68
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$6.94	1	\$6.94
Ground sprigging	1101	Includes costs for equipment, power unit and labor.	Acre	\$60.70	1	\$60.70
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 Yard	\$1.32	800	\$1,056.00
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	\$149.65	0.66	\$98.77
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	\$119.92	0.33	\$39.57
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	\$0.54	20	\$10.80
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	\$0.54	20	\$10.80
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.46	20	\$9.20
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$84.95	1	\$84.95
One Species, Warm Season, Introduced Perennial Grass (seed or sprigs)	2323	Introduced, warm season perennial grass seed or sprig. Includes material and shipping only.	Acre	\$64.09	1	\$64.09
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	\$403.70	1	\$403.70

Practice: 412 - Grassed Waterway

Scenario #2 - Base Waterway with Gypsum

Scenario Description:

A grassed waterway with gypsum is a shaped or graded channel treated with gypsum to control internal erosion and established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. A typical practice is 1200' long, 12' bottom, 8:1 side slopes, 1.5' depth, with a 3 inch thick soil and gypsum liner. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. The waterway construction area includes the excavated width plus the theoretical width for two berms (one on each side) that are calculated based on the excavated area and are 1 foot tall with 5:1 side slopes. The seeding area varies, but is typically less than waterway construction area. Costs include excavation, gypsum, and associated work to construct the overall shape and grade of the waterway. Costs also include vegetation materials, associated vegetation planting work, and foregone income.

Before Situation:

The field has dispersive clay soils and a small gully which is cutting deeper into the field as time goes on, so it needs to be stopped or controlled. Excessive sedimentation and soil erosion is occurring as a result of ephemeral or classic gully erosion. The gully has formed in field as a result of excessive runoff, dispersive clay soils, and poor cropping techniques. A grassed waterway with gypsum is also commonly installed to convey runoff from concentrated flows, terraces, diversions, or water control structures or similar practices to a suitable, stable outlet.

After Situation:

The installed grassed waterway is 1200' long, 12' bottom, 8:1 side slopes, 1.5' depth with a 3 inch thick soil and gypsum liner. The practice is installed using a dozer. Grassed waterway vegetation is planted according to Critical Area Planting (342) for establishment. If erosion control blankets or mulching for seedbed establishment/protection are needed, use conservation practice Mulching (484). Subsurface Drains (606) or Underground Outlets (620) may be needed to avoid saturated conditions.

Feature Measure: Acres of Waterway Construction Ar

Scenario Unit:: Acre

Scenario Typical Size: 1

Total Scenario Cost: \$3,712.22

Scenario Cost/Unit: \$3,712.22

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.	Acre	\$9.21	1	\$9.21
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.68	1	\$5.68
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hour	\$47.69	8	\$381.52
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$6.94	1	\$6.94
Ground sprigging	1101	Includes costs for equipment, power unit and labor.	Acre	\$60.70	1	\$60.70
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 Yard	\$1.32	800	\$1,056.00
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	\$149.65	0.66	\$98.77
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	\$119.92	0.33	\$39.57
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$21.53	8	\$172.24
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	\$0.54	20	\$10.80
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	\$0.54	20	\$10.80
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.46	20	\$9.20
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$84.95	1	\$84.95

Gypsum, Ground Ag Grade, Bulk	1224 Agricultural grade quarry ground gypsum (CaCO4) for dispersive soil treatment. Materials and delivery only.	Ton	\$33.26	32.67	\$1,086.60
One Species, Warm Season, Introduced Perennial Grass (seed or sprigs)	2323 Introduced, warm season perennial grass seed or sprig. Includes material and shipping only.	Acre	\$64.09	1	\$64.09
Mobilization					
Mobilization, medium equipment	1139 Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$211.44	1	\$211.44
Mobilization, large equipment	1140 Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$403.70	1	\$403.70