

Practice: 412 - Grassed Waterway**Scenario: #1 - Waterway, over 0.2 acres, includes seeding****Scenario Description:**

Typical practice is 1244' long by 35' wide by 1.2' deep parabolic channel. The 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. Establishment of vegetation is included. 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. Costs include excavation and associated work to construct the overall shape and grade of the waterway.

Associated Practices: Diversion (362), Critical Area Seeding (342), Mulching (484), Underground Outlet (620), Structure for Water Control (587), Subsurface Drainage (606), Water and Sediment Control Basin (638).

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 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 convey runoff from concentrated flows, terraces, diversions, or water control structures or similar practices to a suitable, stable outlet.

After Situation:

Installed grassed waterway is 1244' long by 35' wide by 1.2' deep parabolic earthen channel. The practice is installed using a dozer. Topsoil stripped and replaced. Included is seed bed preparation, seeding, lime, fertilizer etc. for establishment of 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 according 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).

Scenario Feature Measure: Acre of Waterway**Scenario Unit: Acre****Scenario Typical Size: 1****Scenario Cost: \$5,117.23****Scenario Cost/Unit: \$5,117.23****Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$12.02	1	\$12.02
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$7.35	1	\$7.35
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$23.05	1	\$23.05
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$9.15	1	\$9.15
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yard	\$0.97	806	\$781.82
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	\$1.73	1739	\$3,008.47
Foregone Income						
Fl, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	\$248.86	0.25	\$62.22
Fl, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	\$334.10	0.5	\$167.05
Fl, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	\$343.51	0.25	\$85.88
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.	Hour	\$41.91	2	\$83.82
General Labor	231	Labor performed using basic tools 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	\$20.77	4	\$83.08

Materials

Materials

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	\$0.92	60	\$55.20
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.51	60	\$30.60
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$133.79	2	\$267.58
Three Species Mix, Cool Season, Introduced Perennial Grass	2315	Cool season, introduced grass mix. Includes material and shipping only.	Acre	\$46.58	1	\$46.58
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	\$0.71	30	\$21.30

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$291.56	1	\$291.56
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	\$80.51	1	\$80.51

Practice: 412 - Grassed Waterway**Scenario: #2 - Waterway, 0.2 Acres or less, includes seeding****Scenario Description:**

Typical practice is 200' long by 35' wide by 1.2' deep parabolic channel. The 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. Establishment of vegetation is included. 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. Costs include excavation and associated work to construct the overall shape and grade of the waterway.

Associated Practices: Diversion (362), Critical Area Seeding (342), Mulching (484), Underground Outlet (620), Structure for Water Control (587), Subsurface Drainage (606), Water and Sediment Control Basin (638).

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 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 convey runoff from concentrated flows, terraces, diversions, or water control structures or similar practices to a suitable, stable outlet.

After Situation:

Installed grassed waterway is 200' long by 35' wide by 1.2' deep parabolic earthen channel. The practice is installed using a dozer. Topsoil stripped and replaced. Included is seed bed preparation, seeding, lime, fertilizer etc. for establishment of 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 according 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).

Scenario Feature Measure: Area of Waterway**Scenario Unit: Square Foot****Scenario Typical Size: 6,970****Scenario Cost: \$1,170.58****Scenario Cost/Unit: \$0.17****Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$7.35	0.16	\$1.18
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yard	\$0.97	130	\$126.10
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	\$1.73	280	\$484.40
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$23.05	0.16	\$3.69
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$12.02	0.16	\$1.92

Foregone Income

Fl, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	\$248.86	0.04	\$9.95
Fl, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	\$343.51	0.04	\$13.74
Fl, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	\$334.10	0.08	\$26.73

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.	Hour	\$41.91	1	\$41.91
General Labor	231	Labor performed using basic tools 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	\$20.77	1	\$20.77

Materials

Materials

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	\$0.92	10	\$9.20
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.51	10	\$5.10
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$133.79	0.32	\$42.81
Three Species Mix, Cool Season, Introduced Perennial Grass	2315	Cool season, introduced grass mix. Includes material and shipping only.	Acre	\$46.58	0.16	\$7.45
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	\$0.71	5	\$3.55

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	\$80.51	1	\$80.51
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$291.56	1	\$291.56