

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Engineering General
Practice Code/Name	410 - Grade Stabilization Structure
Scenario ID	4
Scenario Name	Rock Gabion Structure, remote site
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. Practice is located off the Alaskan road system. 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 gabion wall structure with a drop of 3ft and weir length of 8ft (48 square feet). The unit of payment measurement is defined as weir length times drop in "feet". The drop (feet) is defined as the structure inlet crest elevation minus the control outlet elevation (ie: outlet apron elevation). Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.
Before Practice 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 Practice 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.
Scenario Feature Measure	Feet of Weir length times Drop Height
Scenario Unit	Cubic Yard
Scenario Typical Size	24

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$5,204.16	\$216.84
Equipment/Installation	\$186.62	\$7.78
Labor	\$1,620.56	\$67.52
Mobilization	\$5,353.64	\$223.07
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$12,364.98	\$515.21

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1378	Gabion basket or mat	Gabion baskets or mats installed and filled on grade, includes materials, transport, equipment, and labor, does not include geotextile fabric.	Cubic Yard	\$216.84	24	\$5,204.16
Equipment/Installation	42	Geotextile, woven	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$3.10	27	\$83.70
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.72	12	\$32.64
Equipment/Installation	49	Earthfill, Roller Compacted	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$5.02	14	\$70.28
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	8	\$478.88
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$47.57	24	\$1,141.68
Mobilization	1043	Mobilization, Material, distance > 50 miles	Mobilization cost or 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.	Dollar	\$1.00	0	\$0.00
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	11.3	\$2,990.77
Mobilization	1141	Mobilization, Skilled labor	Mobilization of skilled labor: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$46.24	51.1	\$2,362.86

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Engineering General
Practice Code/Name	410 - Grade Stabilization Structure
Scenario ID	3
Scenario Name	Rock Gabion Structure
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 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 gabion wall structure with a drop of 3ft and weir length of 8ft (48 square feet). The unit of payment measurement is defined as weir length times drop in "feet". The drop (feet) is defined as the structure inlet crest elevation minus the control outlet elevation (ie: outlet apron elevation). Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.
Before Practice 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 Practice 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.
Scenario Feature Measure	Feet of Weir length times Drop Height
Scenario Unit	Cubic Yard
Scenario Typical Size	24

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$5,204.16	\$216.84
Equipment/Installation	\$186.62	\$7.78
Labor	\$478.88	\$19.95
Mobilization	\$1,588.02	\$66.17
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$7,457.68	\$310.74

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1378	Gabion basket or mat	Gabion baskets or mats installed and filled on grade, includes materials, transport, equipment, and labor, does not include geotextile fabric.	Cubic Yard	\$216.84	24	\$5,204.16
Equipment/Installation	42	Geotextile, woven	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$3.10	27	\$83.70
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.72	12	\$32.64
Equipment/Installation	49	Earthfill, Roller Compacted	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$5.02	14	\$70.28
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	8	\$478.88
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	6	\$1,588.02

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Engineering General
Practice Code/Name	410 - Grade Stabilization Structure
Scenario ID	2
Scenario Name	Weir Drop Structure, remote site
Scenario Description	A Straight, semicircular, or Box Drop structure composed of metal or reinforced concrete 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. Practice is located off the Alaskan road system. 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 rectangular concrete toe wall structure with a drop of 3ft and weir length of 30ft (90 square feet). The unit of payment measurement is defined as weir length times drop in "feet". The drop (feet) is defined as the structure inlet crest elevation minus the control outlet elevation (ie: outlet apron elevation). Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.
Before Practice 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 Practice 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.
Scenario Feature Measure	Feet of Weir length times Drop Height
Scenario Unit	Square Foot
Scenario Typical Size	90

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$844.66	\$9.39
Equipment/Installation	\$5,295.39	\$58.84
Labor	\$1,141.68	\$12.69
Mobilization	\$6,744.32	\$74.94
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$14,026.05	\$155.84

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$35.22	5	\$176.10
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$83.57	8	\$668.56
Equipment/Installation	38	Concrete, CIP, formed reinforced	Steel reinforced concrete formed and cast-in-place 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 yard	\$592.03	7	\$4,144.21
Equipment/Installation	42	Geotextile, woven	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$3.10	9	\$27.90
Equipment/Installation	931	Hydraulic Excavator, 1 CY	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$106.68	8	\$853.44
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.72	40	\$108.80
Equipment/Installation	50	Earthfill, Manually Compacted	Earthfill, manually compacted, includes equipment and labor	Cubic yard	\$6.71	24	\$161.04
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$47.57	24	\$1,141.68
Mobilization	1043	Mobilization, Material, distance > 50 miles	Included in 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.	Dollar	\$1.00	332	\$332.00
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	15.3	\$4,049.45
Mobilization	1141	Mobilization, Skilled labor	Mobilization of skilled labor: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$46.24	51.1	\$2,362.86

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Engineering General
Practice Code/Name	410 - Grade Stabilization Structure
Scenario ID	1
Scenario Name	Weir Drop Structure
Scenario Description	A Straight, semicircular, or Box Drop structure composed of metal or reinforced concrete 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 rectangular concrete toe wall structure with a drop of 3ft and weir length of 30ft (90 square feet). The unit of payment measurement is defined as weir length times drop in "feet". The drop (feet) is defined as the structure inlet crest elevation minus the control outlet elevation (ie: outlet apron elevation). Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.
Before Practice 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 Practice 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.
Scenario Feature Measure	Feet of Weir length times Drop Height
Scenario Unit	Square Foot
Scenario Typical Size	90

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$844.66	\$9.39
Equipment/Installation	\$5,295.39	\$58.84
Labor	\$761.12	\$8.46
Mobilization	\$1,588.02	\$17.64
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$8,489.19	\$94.32

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	46	Aggregate, Gravel, Graded	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$35.22	5	\$176.10
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$83.57	8	\$668.56
Equipment/Installation	38	Concrete, CIP, formed reinforced	Steel reinforced concrete formed and cast-in-place 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 yard	\$592.03	7	\$4,144.21
Equipment/Installation	42	Geotextile, woven	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$3.10	9	\$27.90
Equipment/Installation	931	Hydraulic Excavator, 1 CY	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$106.68	8	\$853.44
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$2.72	40	\$108.80
Equipment/Installation	50	Earthfill, Manually Compacted	Earthfill, manually compacted, includes equipment and labor	Cubic yard	\$6.71	24	\$161.04
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$47.57	16	\$761.12
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	6	\$1,588.02

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Agricultural Engineering
Practice Code/Name	412 - Grassed Waterway
Scenario ID	1
Scenario Name	Waterway
Scenario Description	Typical practice is 300' long, 12' bottom, 8:1 side slopes, 1.5' depth. Typically, the waterway is excavated when the gully has just begun to form and because of this the lessened excavation is negligible. 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 area is 20% greater than waterway area to account for disturbed areas. Costs include excavation and associated work to construct the overall shape and grade of the waterway.
Before Practice 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 Practice Situation	The practice is installed using a dozer. 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 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	0.25 (300' long by 36' wide)

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$648.00	\$2,592.00
Labor	\$304.74	\$1,218.96
Mobilization	\$529.34	\$2,117.36
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,482.08	\$5,928.32

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	1222	Excavation, common earth, large equipment, 50 ft	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	\$1.62	400	\$648.00
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	1	\$59.86
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	8	\$244.88
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	430 - Irrigation Pipeline
Scenario ID	6
Scenario Name	HDPE pipe ≤2" dia, LF, remote
Scenario Description	<p>Description: Scenario applies to practices installed off the Alaska road system. 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 1.5-inch. This scenario only applies to irrigation pipelines 2" in diameter and smaller. Construct 1/4 mile (1,320 feet) of 1.5-inch, SDR-11 (PE3408 or PE4710) HDPE pipeline with appurtenances, installed below ground with a minimum of 30" of ground cover. The unit is laying length of pipe, in feet. 1,320 feet of 1.5-inch SDR 11 HDPE weighs 0.399 lb/ft, or a total of 527 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.</p> <p>Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use.</p> <p>Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface &</p>
Before Practice Situation	Pipeline needed to replace or supplement inefficient irrigation conveyance systems.
After Practice 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.
Scenario Feature Measure	Laying length of pipeline
Scenario Unit	Linear Foot
Scenario Typical Size	1,320

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,823.85	\$1.38
Equipment/Installation	\$2,201.36	\$1.67
Labor	\$122.44	\$0.09
Mobilization	\$1,276.90	\$0.97
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$5,424.55	\$4.11

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1379	Pipe, HDPE, smooth wall, weight priced	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	\$3.15	579	\$1,823.85
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34
Mobilization	1137	Mobilization, very small equipment	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	\$73.29	10.2	\$747.56
Equipment/Installation	1383	Fuser for HDPE Pipe	Fusing machine for 1" to 12" diameter HDPE pipe joints. Equipment costs only. Does not include labor.	Hour	\$22.34	4	\$89.36
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.60	1320	\$2,112.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	4	\$122.44

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	430 - Irrigation Pipeline
Scenario ID	5
Scenario Name	HDPE pipe ≤2" dia, LF
Scenario Description	<p>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 1.5-inch. This scenario only applies to irrigation pipelines 2" in diameter and smaller. Construct 1/4 mile (1,320 feet) of 1.5-inch, SDR-11 (PE3408 or PE4710) HDPE pipeline with appurtenances, installed below ground with a minimum of 30" of ground cover. The unit is laying length of pipe, in feet. 1,320 feet of 1.5-inch SDR 11 HDPE weighs 0.399 lb/ft, or a total of 527 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.</p> <p>Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use.</p> <p>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.</p>
Before Practice Situation	Pipeline needed to replace or supplement inefficient irrigation conveyance systems.
After Practice 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.
Scenario Feature Measure	Laying length of pipeline
Scenario Unit	Linear Foot
Scenario Typical Size	1,320

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,823.85	\$1.38
Equipment/Installation	\$2,201.36	\$1.67
Labor	\$122.44	\$0.09
Mobilization	\$529.34	\$0.40
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$4,676.99	\$3.54

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1379	Pipe, HDPE, smooth wall, weight priced	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	\$3.15	579	\$1,823.85
Equipment/Installation	1383	Fuser for HDPE Pipe	Fusing machine for 1" to 12" diameter HDPE pipe joints. Equipment costs only. Does not include labor.	Hour	\$22.34	4	\$89.36
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.60	1320	\$2,112.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	4	\$122.44
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	430 - Irrigation Pipeline
Scenario ID	8
Scenario Name	HDPE pipe >2" dia, lbs, remote
Scenario Description	Description: Scenario applies to practices installed off the Alaska road system. 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. This scenario applies to irrigation pipelines larger than 2" in diameter. Construct 1/4 mile (1,320 feet) of 6-inch, SDR-11 (PE3408 or PE4710) HDPE pipeline with appurtenances, installed below ground with a minimum of 30" of ground cover. The unit is weight of pipe material in pounds. 1,320 feet of 6-inch SDR 11 HDPE weighs 4.841 lb/ft, or a total of 6,390 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 &
Before Practice Situation	Pipeline needed to replace or supplement inefficient irrigation conveyance systems.
After Practice 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.
Scenario Feature Measure	Weight of Pipe, calculated from pipe laying length
Scenario Unit	Pound
Scenario Typical Size	6,390

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$22,141.35	\$3.47
Equipment/Installation	\$2,469.44	\$0.39
Labor	\$122.44	\$0.02
Mobilization	\$1,513.08	\$0.24
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$26,246.31	\$4.11

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1379	Pipe, HDPE, smooth wall, weight priced	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	\$3.15	7029	\$22,141.35
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	4	\$1,058.68
Mobilization	1137	Mobilization, very small equipment	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	\$73.29	6.2	\$454.40
Equipment/Installation	1383	Fuser for HDPE Pipe	Fusing machine for 1" to 12" diameter HDPE pipe joints. Equipment costs only. Does not include labor.	Hour	\$22.34	16	\$357.44
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.60	1320	\$2,112.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	4	\$122.44

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	430 - Irrigation Pipeline
Scenario ID	7
Scenario Name	HDPE pipe >2" dia, lbs
Scenario Description	<p>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. This scenario applies to irrigation pipelines larger than 2" in diameter. Construct 1/4 mile (1,320 feet) of 6-inch, SDR-11 (PE3408 or PE4710) HDPE pipeline with appurtenances, installed below ground with a minimum of 30" of ground cover. The unit is weight of pipe material in pounds. 1,320 feet of 6-inch SDR 11 HDPE weighs 4.841 lb/ft, or a total of 6,390 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.</p> <p>Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use.</p> <p>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.</p>
Before Practice Situation	Pipeline needed to replace or supplement inefficient irrigation conveyance systems.
After Practice 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.
Scenario Feature Measure	Weight of Pipe, calculated from pipe laying length
Scenario Unit	Pound
Scenario Typical Size	6,390

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$22,141.35	\$3.47
Equipment/Installation	\$2,469.44	\$0.39
Labor	\$122.44	\$0.02
Mobilization	\$1,058.68	\$0.17
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$25,791.91	\$4.04

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1379	Pipe, HDPE, smooth wall, weight priced	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	\$3.15	7029	\$22,141.35
Equipment/Installation	1383	Fuser for HDPE Pipe	Fusing machine for 1" to 12" diameter HDPE pipe joints. Equipment costs only. Does not include labor.	Hour	\$22.34	16	\$357.44
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.60	1320	\$2,112.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	4	\$122.44
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	4	\$1,058.68

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	430 - Irrigation Pipeline
Scenario ID	2
Scenario Name	PVC pipe <2" dia, LF, remote
Scenario Description	<p>Description: Scenario applies to practices installed off the Alaska road system. 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 1-inch to 8-inch; and typical scenario size is 1.5-inch. This scenario only applies to irrigation pipelines 2" in diameter and smaller. Construct 1/4 mile (1,320 feet) of 1.5-inch, Class 200 (SDR-21), PVC pipeline with appurtenances, installed below ground with a minimum of 30" of ground cover. The unit is laying length of pipe, in feet. 1,320 feet of 1.5-inch, Class 200 (SDR-21) PVC pipe weighs 0.327 lb/ft, or a total of 432 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 for fittings/appurtenances, as they are quite expensive compared to pipe). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements.</p> <p>Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use.</p> <p>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.</p>
Before Practice Situation	Pipeline needed to replace or supplement inefficient irrigation conveyance systems.
After Practice 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.
Scenario Feature Measure	Laying length of pipeline
Scenario Unit	Linear Foot
Scenario Typical Size	1,320

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$855.00	\$0.65
Equipment/Installation	\$2,112.00	\$1.60
Labor	\$489.76	\$0.37
Mobilization	\$1,533.41	\$1.16
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$4,990.17	\$3.78

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1323	Pipe, PVC, dia. < 18", weight priced	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only.	Pound	\$1.80	475	\$855.00
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34
Mobilization	1137	Mobilization, very small equipment	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	\$73.29	13.7	\$1,004.07
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.60	1320	\$2,112.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	16	\$489.76

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	430 - Irrigation Pipeline
Scenario ID	1
Scenario Name	PVC pipe <2" dia, LF
Scenario Description	Description: Below ground installation of PVC (Iron Pipe Size) pipeline. PVC (IPS) is manufactured in sizes (nominal diameter) from 1/2-inch to 36-inch; typical practice sizes range from 1-inch to 8-inch; and typical scenario size is 1.5-inch. This scenario only applies to irrigation pipelines 2" in diameter and smaller. Construct 1/4 mile (1,320 feet) of 1.5-inch, Class 200 (SDR-21), PVC pipeline with appurtenances, installed below ground with a minimum of 30" of ground cover. The unit is laying length of pipe, in feet. 1,320 feet of 1.5-inch, Class 200 (SDR-21) PVC pipe weighs 0.327 lb/ft, or a total of 432 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 for fittings/appurtenances, as they are quite expensive compared to pipe). 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 &
Before Practice Situation	Pipeline needed to replace or supplement inefficient irrigation conveyance systems.
After Practice 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.
Scenario Feature Measure	Laying length of pipeline
Scenario Unit	Linear Foot
Scenario Typical Size	1,320

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$855.00	\$0.65
Equipment/Installation	\$2,112.00	\$1.60
Labor	\$489.76	\$0.37
Mobilization	\$529.34	\$0.40
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$3,986.10	\$3.02

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1323	Pipe, PVC, dia. < 18", weight priced	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only.	Pound	\$1.80	475	\$855.00
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.60	1320	\$2,112.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	16	\$489.76
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	430 - Irrigation Pipeline
Scenario ID	4
Scenario Name	PVC pipe >2" dia, lbs, remote
Scenario Description	<p>Description: Scenario applies to practices installed off the Alaska road system. 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 1-inch to 8-inch; and typical scenario size is 6-inch. This scenario applies to irrigation pipelines larger than 2" in diameter. Construct 1/4 mile (1,320 feet) of 6-inch, Class 125 (SDR-32.5), PVC pipeline with appurtenances, installed below ground with a minimum of 30" of ground cover. The unit is weight of pipe material in pounds. 1,320 feet of 6-inch, Class 125 (SDR-32.5) PVC pipe weighs 2.596 lb/ft, or a total of 3,427 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 for fittings/appurtenances, as they are quite expensive compared to pipe). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements.</p> <p>Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use.</p> <p>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.</p>
Before Practice Situation	Pipeline needed to replace or supplement inefficient irrigation conveyance systems.
After Practice 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.
Scenario Feature Measure	Weight of Pipe, calculated from pipe laying length
Scenario Unit	Pound
Scenario Typical Size	3,427

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$6,784.20	\$1.98
Equipment/Installation	\$2,112.00	\$0.62
Labor	\$1,285.62	\$0.38
Mobilization	\$778.53	\$0.23
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$10,960.35	\$3.20

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1323	Pipe, PVC, dia. < 18", weight priced	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only.	Pound	\$1.80	3769	\$6,784.20
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34
Mobilization	1137	Mobilization, very small equipment	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	\$73.29	3.4	\$249.19
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.60	1320	\$2,112.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	42	\$1,285.62

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	430 - Irrigation Pipeline
Scenario ID	3
Scenario Name	PVC pipe >2" dia, lbs
Scenario Description	<p>Description: Below ground installation of PVC (Iron Pipe Size) pipeline. PVC (IPS) is manufactured in sizes (nominal diameter) from 1/2-inch to 36-inch; typical practice sizes range from 1-inch to 8-inch; and typical scenario size is 6-inch. This scenario applies to irrigation pipelines larger than 2" in diameter. Construct 1/4 mile (1,320 feet) of 6-inch, Class 125 (SDR-32.5), PVC pipeline with appurtenances, installed below ground with a minimum of 30" of ground cover. The unit is weight of pipe material in pounds. 1,320 feet of 6-inch, Class 125 (SDR-32.5) PVC pipe weighs 2.596 lb/ft, or a total of 3,427 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 for fittings/appurtenances, as they are quite expensive compared to pipe). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements.</p> <p>Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use.</p> <p>Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface &</p>
Before Practice Situation	Pipeline needed to replace or supplement inefficient irrigation conveyance systems.
After Practice 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.
Scenario Feature Measure	Weight of Pipe, calculated from pipe laying length
Scenario Unit	Pound
Scenario Typical Size	3,427

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$6,784.20	\$1.98
Equipment/Installation	\$2,112.00	\$0.62
Labor	\$1,285.62	\$0.38
Mobilization	\$529.34	\$0.15
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$10,711.16	\$3.13

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1323	Pipe, PVC, dia. < 18", weight priced	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only.	Pound	\$1.80	3769	\$6,784.20
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.60	1320	\$2,112.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	42	\$1,285.62
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	430 - Irrigation Pipeline
Scenario ID	10
Scenario Name	Steel pipe, lbs, remote
Scenario Description	<p>Description: Scenario applies to practices installed off the Alaska road system. Below ground installation of Steel (Iron Pipe Size) pipeline. Steel (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 2-inch to 18-inch; and typical scenario size is 6-inch. Construct 1/4 mile (1,320 feet) of 6-inch, Schedule 10, Galvanized Steel Pipe with appurtenances, installed below ground with a minimum of 30" of ground cover. The unit is the weight of pipe material in pounds. 1,320 feet of 6-inch, Schedule 10, Galvanized Steel Pipe weighs 9.289 lb/ft, for a total of 12,261 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). Typical installation applies to soils with no special bedding requirements.</p> <p>A scenario was also investigated to determine the cost of laying 2" steel pipe on the surface, for instances where bedrock exists that prevents burial. The per pound price was similar to this scenario. Therefore, no separate scenario was developed for small steel surface pipelines.</p> <p>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 &</p>
Before Practice Situation	Pipeline needed to replace or supplement inefficient irrigation conveyance systems.
After Practice 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.
Scenario Feature Measure	Weight of Pipe, calculated from pipe laying length
Scenario Unit	Pound
Scenario Typical Size	12,261

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$26,031.84	\$2.12
Equipment/Installation	\$2,112.00	\$0.17
Labor	\$2,203.92	\$0.18
Mobilization	\$1,284.23	\$0.10
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$31,631.99	\$2.58

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1381	Pipe, steel, smooth wall, galvanized, weight priced	Steel manufactured into galvanized smooth wall pipe	Pound	\$1.93	13488	\$26,031.84
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34
Mobilization	1137	Mobilization, very small equipment	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	\$73.29	10.3	\$754.89
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.60	1320	\$2,112.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	72	\$2,203.92

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	430 - Irrigation Pipeline
Scenario ID	9
Scenario Name	Steel pipe, lbs
Scenario Description	<p>Description: Below ground installation of Steel (Iron Pipe Size) pipeline. Steel (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 2-inch to 18-inch; and typical scenario size is 6-inch. Construct 1/4 mile (1,320 feet) of 6-inch, Schedule 10, Galvanized Steel Pipe with appurtenances, installed below ground with a minimum of 30" of ground cover. The unit is the weight of pipe material in pounds. 1,320 feet of 6-inch, Schedule 10, Galvanized Steel Pipe weighs 9.289 lb/ft, for a total of 12,261 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). Typical installation applies to soils with no special bedding requirements.</p> <p>A scenario was also investigated to determine the cost of laying 2" steel pipe on the surface, for instances where bedrock exists that prevents burial. The per pound price was similar to this scenario. Therefore, no separate scenario was developed for small steel surface pipelines.</p> <p>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 &</p>
Before Practice Situation	Pipeline needed to replace or supplement inefficient irrigation conveyance systems.
After Practice 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.
Scenario Feature Measure	Weight of Pipe, calculated from pipe laying length
Scenario Unit	Pound
Scenario Typical Size	12,261

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$26,031.84	\$2.12
Equipment/Installation	\$2,112.00	\$0.17
Labor	\$2,203.92	\$0.18
Mobilization	\$529.34	\$0.04
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$30,877.10	\$2.52

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1381	Pipe, steel, smooth wall, galvanized, weight priced	Steel manufactured into galvanized smooth wall pipe	Pound	\$1.93	13488	\$26,031.84
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.60	1320	\$2,112.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	72	\$2,203.92
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	436 - Irrigation Reservoir
Scenario ID	2
Scenario Name	Embankment Reservoir
Scenario Description	The reservoir, created by an embankment built across a natural depression. It will be built with approximately 850 cubic yards of material from off the site approximately 10 miles away. Resource concern: Insufficient Water - Inefficient use of irrigation water. Associated Practices: 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; 447 - Irrigation System, Tailwater Recovery; 378 - Pond; 484 - Mulching; and 342 - Critical Area Planting.
Before Practice Situation	Current system relies on an intermittent or low-flow rate water source. This results in untimely and/or inefficient water application.
After Practice 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.
Scenario Feature Measure	Volume of Compacted Earthfill
Scenario Unit	Cubic Yards
Scenario Typical Size	850

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$4,267.00	\$5.02
Labor	\$598.60	\$0.70
Mobilization	\$1,058.68	\$1.25
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$5,924.28	\$6.97

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	49	Earthfill, Roller Compacted	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$5.02	850	\$4,267.00
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	10	\$598.60
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	4	\$1,058.68

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	436 - Irrigation Reservoir
Scenario ID	1
Scenario Name	Excavated Pit
Scenario Description	The reservoir, created solely by excavation. Excavated material is spoiled, not placed in a designated embankment. Earthen spillway is created as needed. 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 Practice 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 Practice Situation	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.
Scenario Feature Measure	Excavated Volume
Scenario Unit	Cubic Yards
Scenario Typical Size	3,000

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$12,510.00	\$4.17
Labor	\$542.82	\$0.18
Mobilization	\$2,970.30	\$0.99
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$16,023.12	\$5.34

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	1221	Excavation, common earth, large equipment, 1500 ft	Bulk excavation of common earth including sand and gravel with scrapers with average haul distance of 1500 feet. Includes equipment and labor.	Cubic Yard	\$4.17	3000	\$12,510.00
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	6	\$359.16
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	6	\$183.66
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$495.05	6	\$2,970.30

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	436 - Irrigation Reservoir
Scenario ID	4
Scenario Name	Tank (Off-Road)
Scenario Description	A 1,000 Gallon, above-ground, High Density Polyethylene plastic enclosed tank, is installed on 6" of well-compacted sand to store water from a reliable source for irrigation. The scenario also assumes a 96" diameter sand base 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 Practice Situation	Insufficient volume of water to complete an irrigation cycle at the required flow rate.
After Practice 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.
Scenario Feature Measure	Volume of Tank Storage
Scenario Unit	Gallons
Scenario Typical Size	1,000

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$793.89	\$0.79
Equipment/Installation	\$180.44	\$0.18
Labor	\$37.68	\$0.04
Mobilization	\$867.30	\$0.87
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,879.31	\$1.88

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	45	Aggregate, Sand, Graded, Washed	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$33.89	1	\$33.89
Materials	1075	Tank, Poly Enclosed Storage, >1,000	Includes materials	Gallon	\$0.76	1000	\$760.00
Equipment/Installation	1915	Plate compactor	Manually guided vibratroy plate compactor. Equipment only.	Hour	\$5.04	4	\$20.16
Equipment/Installation	933	Skidsteer, 80 HP	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$40.07	4	\$160.28
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.68	1	\$37.68
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	3	\$794.01
Mobilization	1137	Mobilization, very small equipment	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	\$73.29	1	\$73.29

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	436 - Irrigation Reservoir
Scenario ID	3
Scenario Name	Tank (On-Road)
Scenario Description	A 1,000 Gallon, above-ground, High Density Polyethylene plastic enclosed tank, is installed on 6" of well-compacted sand to store water from a reliable source for irrigation. The scenario also assumes a 96" diameter sand base 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 Practice Situation	Insufficient volume of water to complete an irrigation cycle at the required flow rate.
After Practice 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.
Scenario Feature Measure	Volume of Tank Storage
Scenario Unit	Gallons
Scenario Typical Size	1,000

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$793.89	\$0.79
Equipment/Installation	\$180.44	\$0.18
Labor	\$37.68	\$0.04
Mobilization	\$337.96	\$0.34
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,349.97	\$1.35

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	45	Aggregate, Sand, Graded, Washed	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$33.89	1	\$33.89
Materials	1075	Tank, Poly Enclosed Storage, >1,000	Includes materials	Gallon	\$0.76	1000	\$760.00
Equipment/Installation	1915	Plate compactor	Manually guided vibratroy plate compactor. Equipment only.	Hour	\$5.04	4	\$20.16
Equipment/Installation	933	Skidsteer, 80 HP	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$40.07	4	\$160.28
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.68	1	\$37.68
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	1	\$264.67
Mobilization	1137	Mobilization, very small equipment	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	\$73.29	1	\$73.29

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	441 - Irrigation System, Microirrigation
Scenario ID	3
Scenario Name	High Tunnel Surface Drip
Scenario Description	<p>A T-tape microirrigation system, irrigating vegetables in a high tunnel system on 2100 square feet (30' x 70'). Tubing layout with one 30' subheader and one 30' flush line. Part of an irrigation water management system. Does not include Pump, Power source, Water source (well or reservoir), or flow meter.</p> <p>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.</p> <p>Associated Practices: 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.</p>
Before Practice Situation	A high tunnel has an inefficient irrigation system causing poor crop production and irrigation water loss that impacts water quality and water quantity.
After Practice Situation	A microirrigation system is utilized to provide highly efficient irrigation to a high tunnel. Crop production is improved, water applications are reduced and runoff eliminated. Offsite water quality is improved.
Scenario Feature Measure	Square Feet Irrigated
Scenario Unit	Square Foot
Scenario Typical Size	2100

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$500.37	\$0.24
Equipment/Installation	\$69.60	\$0.03
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$569.97	\$0.27

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1323	Pipe, PVC, dia. < 18", weight priced	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only.	Pound	\$1.80	14.4	\$25.92
Materials	1488	Micro Irrigation, surface drip tubing or tape	Tubing or Tape is installed above ground for surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tubing has emitters built in.	Foot	\$0.34	840	\$285.60
Materials	1617	Micro Irrigation, screen filter, < 100 gpm	Screen filter for Micro Irrigation used in small systems. Includes filter. No controls are included or needed.	Each	\$39.85	1	\$39.85
Materials	1193	Switches and Controls, programmable controller	Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	\$149.00	1	\$149.00
Equipment/Installation	1096	Trenching, Pipeline Plowing	Includes equipment and labor for plowing small diameter lines in common earth (< 3")	Foot	\$1.16	60	\$69.60
Mobilization	1138	Mobilization, small equipment	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	\$180.64	0	\$0.00

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	441 - Irrigation System, Microirrigation
Scenario ID	1
Scenario Name	Subsurface Drip
Scenario Description	<p>A subsurface 1-tape microirrigation system, irrigating vegetables on approximately 9.55 acres (660'x630'). Utilizes a disk filter, pressure regulator, 1" dia. submain, and 220 rows of tubing @ 3' spacings, each 630' long. Part of an irrigation water management system. 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, 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. 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. A flow meter is installed under 433 - Irrigation Flow Measurement or 587 - Structure for Water Control, and is not included in this payment schedule.</p> <p>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.</p> <p>Associated Practices: 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, 587 - Structure for Water Control, and 590 Nutrient Management.</p>
Before Practice 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 Practice Situation	A typical practice would be the installation of a subsurface drip irrigation system (SDI) on a 10 acre cropland or hayland field. Actual irrigated area is 660'x630', or 9.55 acres. 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.
Scenario Feature Measure	Acres in System
Scenario Unit	Acre
Scenario Typical Size	9.55

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$15,582.48	\$1,631.67
Equipment/Installation	\$3,274.24	\$342.85
Labor	\$0.00	\$0.00
Mobilization	\$361.28	\$37.83
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$19,218.00	\$2,012.36

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1323	Pipe, PVC, dia. < 18", weight priced	Polyvinyl chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only.	Pound	\$1.80	315.4	\$567.72
Materials	1483	Micro Irrigation, disk filter	Disk filter for Micro irrigation system. Includes filters, plumbing, connections and automatic controller. Unit is complete and installed.	Each	\$2,290.66	1	\$2,290.66
Materials	1485	Micro Irrigation, control valves and timers	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	\$2,537.00	1	\$2,537.00
Materials	1487	Micro Irrigation, buried drip tubing	Tubing that is installed underground for Sub-surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tubing has emitters built in. Includes labor.	Foot	\$0.07	145530	\$10,187.10
Equipment/Installation	1987	Micro Irrigation, chemical injection equipment	Chemical Injector Pump, plus chemigation check valve, injector ports, and appurtenances, Installation included.	Each	\$1,750.00	1	\$1,750.00
Equipment/Installation	1096	Trenching, Pipeline Plowing	Includes equipment and labor for plowing small diameter lines in common earth (< 3") Equipment <70 HP but can't be transported by a pick-up truck or with typical weights	Foot	\$1.16	1314	\$1,524.24
Mobilization	1138	Mobilization, small equipment	between 3,500 to 14,000 pounds.	Each	\$180.64	2	\$361.28

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	441 - Irrigation System, Microirrigation
Scenario ID	2
Scenario Name	Surface Drip
Scenario Description	<p>A micro-irrigation system, utilizing surface PE tubing (can be placed on trellis or above ground) with emitters to provide irrigation for an orchard, vinyard, or other specialty crop grown in a grid pattern. The typical system is 5-acres on the ground surface or raised beds, measuring 330'x660'. The row spacings are 10 feet, and the tubing is snaked throughout the row, requiring 25% extra per row. This system utilizes emitters at each tree or plant as the water application device. This system typically includes a filter system, PE tubing laterals, PVC manifolds, and submains, valves, fittings, 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), or flow meter.</p> <p>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.</p> <p>Associated Practices: 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.</p>
Before Practice Situation	A vegetable growing operation has an inefficient surface flood irrigation system causing irrigation water loss that impacts water quality and water quantity.
After Practice Situation	A surface placed microirrigation system is utilized to provide highly efficient irrigation to a vegetable operation. Water applications are reduced and runoff eliminated. Offsite water quality is improved, and on site water use is reduced.
Scenario Feature Measure	Acres in System
Scenario Unit	Acre
Scenario Typical Size	5

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$5,437.29	\$1,087.46
Equipment/Installation	\$758.64	\$151.73
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$6,195.93	\$1,239.19

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1323	Pipe, PVC, dia. < 18", weight priced	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only.	Pound	\$1.80	157	\$282.60
Materials	1489	Micro Irrigation, emitters or sprays and tubing	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.	Foot	\$0.19	26136	\$4,965.84
Materials	1617	Micro Irrigation, screen filter, < 100 gpm	Screen filter for Micro Irrigation used in small systems. Includes filter. No controls are included or needed.	Each	\$39.85	1	\$39.85
Materials	1193	Switches and Controls, programmable controller	Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	\$149.00	1	\$149.00
Equipment/Installation	1096	Trenching, Pipeline Plowing	Includes equipment and labor for plowing small diameter lines in common earth (< 3")	Foot	\$1.16	654	\$758.64
Mobilization	1138	Mobilization, small equipment	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	\$180.64		\$0.00

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	442 - Irrigation System, Sprinkler
Scenario ID	1
Scenario Name	Center Pivot
Scenario Description	Installation of a low pressure center pivot system. Scenario applies to both on-road and off-road installations. Component prices assume Anchorage delivery. However, as a center pivot would likely be shipped via barge to Anchorage, they could likely be barged as cheaply, or cheaper, to other coastal off-road sites. While increased costs would be incurred for mobilization of a boom truck and workers to an off-road site, those costs did not significantly affect the overall per unit costs. As such, no separate off-road scenario was developed. An irrigation system of this size would be barged directly to the nearest coastal location directly from Seattle, rather than from Anchorage. Shipping costs to a coastal alternate other than Anchorage were assumed equal. Also, inland remote village installations would be highly unlikely. 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 Practice 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 Practice 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 on drops. 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. This center pivot scenario includes all hardware from the pivot point, including the concrete pad the pivot is placed on.
Scenario Feature Measure	Length of Center Pivot Lateral
Scenario Unit	Linear Foot
Scenario Typical Size	1,300

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$80,262.00	\$61.74
Equipment/Installation	\$0.00	\$0.00
Labor	\$0.00	\$0.00
Mobilization	\$2,793.28	\$2.15
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$83,055.28	\$63.89

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	317	Irrigation, Center pivot system with appurtenances, fixed cost portion	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	\$0.00	1	\$0.00
Materials	318	Irrigation, Center pivot system with appurtenances, variable cost portion	Variable cost portion of the center pivot system with appurtenances. This portion includes the following items: pivot point, pipe, towers, pad, controls, sprinklers, installation.	Foot	\$61.74	1300	\$80,262.00
Mobilization	1137	Mobilization, very small equipment	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	\$73.29	2	\$146.58
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	10	\$2,646.70

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	442 - Irrigation System, Sprinkler
Scenario ID	3
Scenario Name	Sprinkler Renovation
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 conservation. A typical scenario assumes a 1300 LF span, including end booms renozzled with low-pressure nozzles. 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 Practice Situation	A center pivot or lateral move system has high pressure sprinklers. 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 Practice Situation	A Center Pivot or Linear Move sprinkler system with a span of 1300 linear feet is re-nozzled with low-pressure nozzles. 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.
Scenario Feature Measure	Length of Lateral Retrofitted
Scenario Unit	Linear Foot
Scenario Typical Size	1300

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$6,630.00	\$5.10
Equipment/Installation	\$0.00	\$0.00
Labor	\$0.00	\$0.00
Mobilization	\$675.92	\$0.52
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$7,305.92	\$5.62

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1480	Irrigation, Sprinkler Package, Renozzle or Retrofit, with drops and pressure regulators	Sprinkler Package - Renovation including sprinkler nozzle addition, and/or replacement, including new pressure regulators and drops.	Foot	\$5.10	1300	\$6,630.00
Mobilization	1137	Mobilization, very small equipment	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	\$73.29	2	\$146.58
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	442 - Irrigation System, Sprinkler
Scenario ID	2
Scenario Name	Wheel Line
Scenario Description	A 1,280 foot wheel line (also called side roll, wheelmove, or lateral-roll) with 5 foot diameter wheels and five inch diameter supply pipeline. A wheel line consists of the mover, lateral pipe, wheels, sprinklers, couplers, and connectors to the mainline supply. Scenario applies to both on-road and off-road installations. Component prices assume Anchorage delivery. However, as a wheel line would likely be shipped via barge to Anchorage, they could likely be barged as cheaply, or cheaper, to other coastal off-road sites. While increased costs would be incurred for mobilization to an off-road site, those costs did not significantly affect the overall per unit costs. As such, no separate off-road scenario was developed. An irrigation system of this size would be barged directly to the nearest coastal location directly from Seattle, rather than from Anchorage. Shipping costs to a coastal alternate other than Anchorage were assumed equal. Also, inland remote village installations would be highly unlikely. 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
Before Practice Situation	Cropland that is flood irrigated and has poor irrigation efficiency and distribution uniformity. The slope and irregular shape of the field limit the potential for improved management to improve the irrigation efficiency or the distribution uniformity. Irrigation water moves both within the field and off it, resulting in wet areas, runoff and deep percolation. Parts of the field are over-irrigated, and other sections are under-irrigated. Runoff from the field flows into streams, water courses, and other water bodies. Excess applied irrigation water infiltrates into ground water causing degradation to the receiving waters.
After Practice Situation	A 1,280 foot wheel line with 7 foot diameter wheels and five inch diameter supply pipeline. Sprinklers are spaced along the wheel line at 40-foot intervals and risers are spaced at 60-foot increments along the mainline. The wheel line irrigates 40 acres of cropland. The wheel line improves distribution uniformity. Irrigation application efficiency improves to 75%. Water application rates meet the consumptive use of the crop and matches soil intake rates in order to prevent irrigation induced erosion, runoff, and deep percolation.
Scenario Feature Measure	Length of Wheel Line Lateral
Scenario Unit	Linear Foot
Scenario Typical Size	1,280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$14,791.50	\$11.56
Equipment/Installation	\$0.00	\$0.00
Labor	\$0.00	\$0.00
Mobilization	\$1,588.02	\$1.24
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$16,379.52	\$12.80

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	326	Irrigation, Wheel line with appurtenances, variable price portion.	Variable cost portion of the wheel line system with appurtenances. This portion includes the following items: pipe, sprinklers, wheels, installation. Does not include a mover.	Foot	\$8.36	1280	\$10,700.80
Materials	325	Irrigation, Wheel line with appurtenances, fixed price portion.	Fixed cost portion of the wheel line system with appurtenances. This portion includes the following items: mover, pipe, sprinklers, wheels, installation.	Each	\$4,090.70	1	\$4,090.70
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	6	\$1,588.02

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	449 - Irrigation Water Management
Scenario ID	5
Scenario Name	High Tunnel IWM - initial year
Scenario Description	<p>A low Intensity irrigation water management system for producers using the direct measurement of soil moisture conditions prior to irrigation. For a typical scenario, soil moisture is determined by the feel method or using a basic economy moisture meter, and volumes of irrigation water are based on pump run times or tank volumes. Records are kept on paper copies, and calculations are made by hand.</p> <p>Scenario cost is per installation, rather than per square foot. Typical producer may raise six different crops in the high tunnel, regardless of the tunnel size. A 1,000 square foot tunnel would merely have smaller beds than a 2,000 square foot tunnel. Each system would take essentially equal amounts of time to monitor for soil moisture and crop conditions, so actual IWM implementation costs would not vary appreciably with high tunnel size.</p> <p>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.</p>
Before Practice Situation	<p>Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water</p> <p>The farmer decides when to irrigate based on general crop or soil appearance or soil moisture monitoring. System run times are based on past apparent success. The typical irrigated area is 26'x48', or 1,248 square feet, using a drip irrigation system.</p>
After Practice Situation	<p>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, 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.</p>
Scenario Feature Measure	Number of IWM Plans
Scenario Unit	Each
Scenario Typical Size	1

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$467.90	\$467.90
Equipment/Installation	\$0.00	\$0.00
Labor	\$1,496.50	\$1,496.50
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,964.40	\$1,964.40

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1456	Soil Moisture Sensor	Soil moisture resistance sensor W/10' cables. Equipment only.	Each	\$44.80	3	\$134.40
Materials	1455	Soil Moisture Meter	Soil Moisture Sensor Reader. Equipment only.	Each	\$333.50	1	\$333.50
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	25	\$1,496.50

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	449 - Irrigation Water Management
Scenario ID	6
Scenario Name	High Tunnel IWM - subsequent years
Scenario Description	<p>A low Intensity irrigation water management system for producers using the direct measurement of soil moisture conditions prior to irrigation. For a typical scenario, soil moisture is determined by the feel method or using a basic economy moisture meter, and volumes of irrigation water are based on pump run times or tank volumes. Records are kept on paper copies, and calculations are made by hand.</p> <p>Scenario cost is per installation, rather than per square foot. Typical producer may raise six different crops in the high tunnel, regardless of the tunnel size. A 1,000 square foot tunnel would merely have smaller beds than a 2,000 square foot tunnel. Each system would take essentially equal amounts of time to monitor for soil moisture and crop conditions, so actual IWM implementation costs would not vary appreciably with high tunnel size.</p> <p>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.</p>
Before Practice Situation	<p>Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water</p> <p>The farmer decides when to irrigate based on general crop or soil appearance or soil moisture monitoring. System run times are based on past apparent success. The typical irrigated area is 26'x48', or 1,248 square feet, using a drip irrigation system.</p>
After Practice Situation	<p>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, 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.</p>
Scenario Feature Measure	Number of IWM Plans
Scenario Unit	Each
Scenario Typical Size	1

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$0.00	\$0.00
Labor	\$1,257.06	\$1,257.06
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,257.06	\$1,257.06

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	21	\$1,257.06

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	449 - Irrigation Water Management
Scenario ID	3
Scenario Name	Large Scale IWM > 20 acres, first year
Scenario Description	<p>A medium 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 in field moisture sensors with manual downloads. Irrigation amounts are recorded from a flow meter near the pump. Records are input manually into an irrigation scheduling computer program.</p> <p>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.</p> <p>Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433- Irrigation Flow Measurement.</p>
Before Practice Situation	The farmer decides when to irrigate based on general crop or soil appearance or soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 120 acre field with a surface/sprinkler irrigation system.
After Practice 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.
Scenario Feature Measure	Irrigated Area Managed
Scenario Unit	Acre
Scenario Typical Size	100

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,005.50	\$10.06
Equipment/Installation	\$0.00	\$0.00
Labor	\$2,068.57	\$20.69
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$3,074.07	\$30.74

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1455	Soil Moisture Meter	Soil Moisture Sensor Reader. Equipment only.	Each	\$333.50	1	\$333.50
Materials	1456	Soil Moisture Sensor	Soil moisture resistance sensor W/10' cables. Equipment only.	Each	\$44.80	15	\$672.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	5	\$153.05
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	32	\$1,915.52

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	449 - Irrigation Water Management
Scenario ID	4
Scenario Name	Large Scale IWM > 20 acres, subsequent years
Scenario Description	<p>A medium 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 in field moisture sensors with manual downloads. Irrigation amounts are recorded from a flow meter near the pump. Records are input manually into an irrigation scheduling computer program.</p> <p>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.</p> <p>Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433- Irrigation Flow Measurement.</p>
Before Practice Situation	The farmer decides when to irrigate based on general crop or soil appearance or soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 120 acre field with a surface/sprinkler irrigation system.
After Practice 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.
Scenario Feature Measure	Irrigated Area Managed
Scenario Unit	Acre
Scenario Typical Size	100

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$0.00	\$0.00
Labor	\$1,888.99	\$18.89
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,888.99	\$18.89

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	29	\$1,735.94
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	5	\$153.05

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	449 - Irrigation Water Management
Scenario ID	1
Scenario Name	Small Acreage IWM ≤ 20 acres, first year
Scenario Description	<p>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 in field moisture sensors with manual downloads. Volumes of irrigation water are based on energy or water district bills, records are kept on paper copies, and calculations are made by hand.</p> <p>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.</p> <p>Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement.</p>
Before Practice 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 10 acre field with a surface irrigation system.
After Practice 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.
Scenario Feature Measure	Irrigated Area Managed
Scenario Unit	Acre
Scenario Typical Size	10

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$736.70	\$73.67
Equipment/Installation	\$0.00	\$0.00
Labor	\$1,436.64	\$143.66
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$2,173.34	\$217.33

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1455	Soil Moisture Meter	Soil Moisture Sensor Reader. Equipment only.	Each	\$333.50	1	\$333.50
Materials	1456	Soil Moisture Sensor	Soil moisture resistance sensor W/10' cables. Equipment only.	Each	\$44.80	9	\$403.20
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	24	\$1,436.64

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Water Management Engineering
Practice Code/Name	449 - Irrigation Water Management
Scenario ID	2
Scenario Name	Small Acreage IWM ≤ 20 acres, subsequent years
Scenario Description	<p>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 in field moisture sensors with manual downloads. Volumes of irrigation water are based on energy or water district bills, records are kept on paper copies, and calculations are made by hand.</p> <p>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.</p> <p>Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement.</p>
Before Practice 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 10 acre field with a surface irrigation system.
After Practice 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.
Scenario Feature Measure	Irrigated Area Managed
Scenario Unit	Acre
Scenario Typical Size	10

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$0.00	\$0.00
Labor	\$1,436.64	\$143.66
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,436.64	\$143.66

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	24	\$1,436.64

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Agricultural Engineering
Practice Code/Name	468 - Lined Waterway or Outlet
Scenario ID	1
Scenario Name	Rock Lined - 12"
Scenario Description	Install 200' long, 12' bottom width, 3' deep, 2:1 side slope trapezoidal shaped waterway lined with 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.
Before Practice 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 Practice Situation	Rock lined waterway is 200' long, 12' bottom width, 3' deep, 2:1 side slope. 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).
Scenario Feature Measure	Square Foot of Waterway
Scenario Unit	Square Feet
Scenario Typical Size	4800 (200*(12+6+6))

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$14,875.46	\$3.10
Equipment/Installation	\$5,321.11	\$1.11
Labor	\$2,060.20	\$0.43
Mobilization	\$529.34	\$0.11
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$22,786.11	\$4.75

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$83.57	178	\$14,875.46
Equipment/Installation	1215	Truck, dump, 12 CY	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hour	\$83.31	45	\$3,748.95
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Cubic yard	\$2.72	578	\$1,572.16
Labor	231	General Labor	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$30.61	8	\$244.88
Labor	234	Supervisor or Manager		Hour	\$59.86	2	\$119.72
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.68	45	\$1,695.60
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Agricultural Engineering
Practice Code/Name	468 - Lined Waterway or Outlet
Scenario ID	2
Scenario Name	Rock Lined - 24"
Scenario Description	Install 200' long, 12' bottom width, 3' deep, 2:1 side slope trapezoidal shaped waterway lined with 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.
Before Practice 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 Practice Situation	Rock lined waterway 200' long, 12' bottom width, 3' deep, 2:1 side slope. 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).
Scenario Feature Measure	Square Foot of Waterway
Scenario Unit	Square Feet
Scenario Typical Size	4800 (200*(12+6+6))

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$29,667.35	\$6.18
Equipment/Installation	\$9,551.50	\$1.99
Labor	\$3,755.80	\$0.78
Mobilization	\$529.34	\$0.11
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$43,503.99	\$9.06

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$83.57	355	\$29,667.35
Equipment/Installation	1215	Truck, dump, 12 CY	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hour	\$83.31	90	\$7,497.90
Equipment/Installation	48	Excavation, Common Earth, side cast, small equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Cubic yard	\$2.72	755	\$2,053.60
Labor	231	General Labor	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$30.61	8	\$244.88
Labor	234	Supervisor or Manager		Hour	\$59.86	2	\$119.72
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.68	90	\$3,391.20
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	472 - Access Control
Scenario ID	5
Scenario Name	Animal exclusion from small sensitive and attractive areas
Scenario Description	Excluding animals from an area in order to address identified resource concerns. Typically for temporary protection of a sensitive area less than 1 acre in size. This is for facilitating exclusion of animals to protect or enhance natural resource values. Control will be by temporary electric fencing may have up to 3 strands based on need. 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 Practice 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 Practice Situation	Sensitive areas are protected from the adverse actions of domestic and/or wild animals by excluding them from the area.
Scenario Feature Measure	Length of fence
Scenario Unit	Feet
Scenario Typical Size	1000

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$951.07	\$0.95
Equipment/Installation	\$120.28	\$0.12
Labor	\$122.44	\$0.12
Mobilization	\$611.39	\$0.61
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,805.18	\$1.81

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	33	Fence, Wire Assembly, High Tensile, Electric, 2 Strand	Brace pins, springs, strainers, battens, clips, crimp sleeves, staples, insulators, wrap around sleeves	Foot	\$0.07	1000	\$70.00
Materials	293	Property/Safety Signs	Plastic Fence safety or property sign - Printed on both sides 6 pre-drilled holes for hanging or nailing. 7.5" x 4.75"	Each	\$1.39	4	\$5.56
Materials	18	Post, Fiberglass, 3/4" X 6'	Fiberglass line post, 3/4" diameter X 6' length	Each	\$9.24	25	\$231.00
Materials	20	Electric, Ground Rods	Electric, Ground Rod for electric fence	Each	\$12.84	2	\$25.68
Materials	7	Wire, Polytape	Wire, Polytape for electric fence. Rolls of 655' to 825'.	Each	\$114.64	3	\$343.92
Materials	10	Post, Wood, CCA treated, 4" x 8'	Wood Post, Line 4" X 8', CCA Treated	Each	\$10.69	4	\$42.76
Materials	21	Electric, Ground Rod Clamps	Electric, Ground Rod Clamps for electric fence	Each	\$2.39	1	\$2.39
Materials	26	Electric, Tester	Electric, Tester for electric fence	Each	\$34.60	1	\$34.60
Materials	28	Electric, Energizer, 3-4 joule	Electric, Energizer, 3-4 joule for electric fence	Each	\$195.16	1	\$195.16
Equipment/Installation	939	Truck, Pickup	Equipment and power unit costs. Labor not included.	Hour	\$30.07	4	\$120.28
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	4	\$122.44
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$30.75	1	\$30.75
Mobilization	1138	Mobilization, small equipment	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	\$180.64	1	\$180.64
Mobilization	1043	Mobilization, Material, distance > 50 miles	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.	Dollar	\$1.00	400	\$400.00

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	472 - Access Control
Scenario ID	4
Scenario Name	Animal exclusion from sensitive areas
Scenario Description	Excluding 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. Control will be by 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 Practice 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 Practice Situation	Sensitive areas are protected from the adverse actions of domestic and/or wild animals by excluding them from the area.
Scenario Feature Measure	Length of fence
Scenario Unit	Feet
Scenario Typical Size	3600

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$4,301.10	\$1.19
Equipment/Installation	\$120.28	\$0.03
Labor	\$122.44	\$0.03
Mobilization	\$811.39	\$0.23
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$5,355.21	\$1.49

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	33	Fence, Wire Assembly, High Tensile, Electric, 2 Strand	Brace pins, springs, strainers, battens, clips, crimp sleeves, staples, insulators, wrap around sleeves	Foot	\$0.07	3600	\$252.00
Materials	293	Property/Safety Signs	Plastic Fence safety or property sign - Printed on both sides 6 pre-drilled holes for hanging or nailing. 7.5" x 4.75"	Each	\$1.39	35	\$48.65
Materials	18	Post, Fiberglass, 3/4" X 6'	Fiberglass line post, 3/4" diameter X 6' length	Each	\$9.24	200	\$1,848.00
Materials	20	Electric, Ground Rods	Electric, Ground Rod for electric fence	Each	\$12.84	3	\$38.52
Materials	7	Wire, Polytape	Wire, Polytape for electric fence. Rolls of 655' to 825'.	Each	\$114.64	16	\$1,834.24
Materials	10	Post, Wood, CCA treated, 4" x 8'	Wood Post, Line 4" X 8', CCA Treated	Each	\$10.69	4	\$42.76
Materials	21	Electric, Ground Rod Clamps	Electric, Ground Rod Clamps for electric fence	Each	\$2.39	3	\$7.17
Materials	26	Electric, Tester	Electric, Tester for electric fence	Each	\$34.60	1	\$34.60
Materials	28	Electric, Energizer, 3-4 joule	Electric, Energizer, 3-4 joule for electric fence	Each	\$195.16	1	\$195.16
Equipment/Installation	939	Truck, Pickup	Equipment and power unit costs. Labor not included.	Hour	\$30.07	4	\$120.28
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	4	\$122.44
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$30.75	1	\$30.75
Mobilization	1138	Mobilization, small equipment	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	\$180.64	1	\$180.64
Mobilization	1043	Mobilization, Material, distance > 50 miles	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.	Dollar	\$1.00	600	\$600.00

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	472 - Access Control
Scenario ID	2
Scenario Name	Trails/Roads Access Control Berm and Dip
Scenario Description	Restricting access to the use of forest/farm roads and trails by the use of an excavate dip and or placement of a berm. Typical installation is on forest roads where soils and road materials have sufficient material to construct a berm and dip. Resource concerns include Undesirable plant productivity and health, Concentrated flow erosion, Soil compaction, Excessive sediment in surface waters, petroleum, heavy metals and other pollutants transported to receiving waters and Wildlife habitat degradation.
Before Practice Situation	Roads are damaged or misused, illegal activities occur and/or forest resources are at risk. Extensive amount of fencing (other than that needed to restrict access at the site of ingress) is not included in this scenario, but instead will be planned and installed with the Fence practice (382).
After Practice Situation	Roads are protected, illegal activities are stopped and/or forest resources are secure.
Scenario Feature Measure	Number
Scenario Unit	Each
Scenario Typical Size	1

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$292.40	\$292.40
Equipment/Installation	\$486.86	\$486.86
Labor	\$150.72	\$150.72
Mobilization	\$769.71	\$769.71
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,699.69	\$1,699.69

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	2259	Sign, 3' x 2'	.125 aluminum, single-sided, with nonreflective, EG reflective or HIP reflective face copy, Posts, 2" x 8' galvanized perforated square steel tube signpost, Anchor, 2.5" x 30" galv. Non-perforated square steel tube anchor for post, and Windbeam Bolt Assembly	Each	\$292.40	1	\$292.40
Equipment/Installation	931	Hydraulic Excavator, 1 CY	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$106.68	4	\$426.72
Equipment/Installation	939	Truck, Pickup	Equipment and power unit costs. Labor not included.	Hour	\$30.07	2	\$60.14
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.68	4	\$150.72
Mobilization	1043	Mobilization, Material, distance > 50 miles	Mobilization cost of materials or 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.	Dollar	\$1.00	200	\$200.00
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$495.05	1	\$495.05
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.33	2	\$74.66

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	472 - Access Control
Scenario ID	3
Scenario Name	Trails/Roads Access Control Blockade
Scenario Description	Restricting access to the use of forest/farm roads and trails by the use one to a few very large difficult to move objects typically boulders but could be another approved object. Typical installation is on forest roads where soils and road materials have sufficient material to construct a berm and dip. Resource concerns include Undesirable plant productivity and health, Concentrated flow erosion, Soil compaction, Excessive sediment in surface waters, petroleum, heavy metals and other pollutants transported to receiving waters and Wildlife habitat degradation.
Before Practice Situation	Roads are damaged or misused, illegal activities occur and/or forest resources are at risk. Extensive amount of fencing (other than that needed to restrict access at the site of ingress) is not included in this scenario, but instead will be planned and installed with the Fence practice (382).
After Practice Situation	Roads are protected, illegal activities are stopped and/or forest resources are secure.
Scenario Feature Measure	Number
Scenario Unit	Each
Scenario Typical Size	1

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$585.52	\$585.52
Equipment/Installation	\$273.50	\$273.50
Labor	\$75.36	\$75.36
Mobilization	\$669.71	\$669.71
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,604.09	\$1,604.09

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1761	Boulder	Rock boulders. Includes materials and local delivery (less than 50 miles) only.	Ton	\$36.64	8	\$293.12
Materials	2259	Sign, 3' x 2'	.125 aluminum, single-sided, with nonreflective, EG reflective or HIP reflective face copy, Posts, 2" x 8' galvanized perforated square steel tube signpost, Anchor, 2.5" x 30" galv. Non-perforated square steel tube anchor for post, and Windbeam Bolt Assembly	Each	\$292.40	1	\$292.40
Equipment/Installation	931	Hydraulic Excavator, 1 CY	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$106.68	2	\$213.36
Equipment/Installation	939	Truck, Pickup	Equipment and power unit costs. Labor not included.	Hour	\$30.07	2	\$60.14
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.68	2	\$75.36
Mobilization	1043	Mobilization, Material, distance > 50 miles	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.	Dollar	\$1.00	100	\$100.00
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$495.05	1	\$495.05
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.33	2	\$74.66

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	472 - Access Control
Scenario ID	1
Scenario Name	Trails/Roads Access Control Gate
Scenario Description	Restricting access to the use of forest/farm roads and trails by the use of a gate and limited fencing. Typical installation is on forest roads where soils are shallow and excavation depth is limited and road spans and bottom prism widths are wide. Resource concerns include Undesirable plant productivity and health, Concentrated flow erosion, Soil compaction, Excessive sediment in surface waters, petroleum, heavy metals and other pollutants transported to receiving waters and Wildlife habitat degradation.
Before Practice Situation	Roads are damaged or misused, illegal activities occur and/or forest resources are at risk. Extensive amount of fencing (other than that needed to restrict access at the site of ingress) is not included in this scenario, but instead will be planned and installed with the Fence practice (382).
After Practice Situation	Roads are protected, illegal activities are stopped and/or forest resources are secure.
Scenario Feature Measure	Number
Scenario Unit	Each
Scenario Typical Size	1

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$4,919.97	\$4,919.97
Equipment/Installation	\$226.96	\$226.96
Labor	\$282.56	\$282.56
Mobilization	\$793.88	\$793.88
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$6,223.37	\$6,223.37

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	2150	Gate, swing arm	Steel swing arm type gate with steel post anchor. Materials and shipping only.	Each	\$4,627.57	1	\$4,627.57
Materials	2259	Sign, 3' x 2'	.125 aluminum, single-sided, with nonreflective, EG reflective or HIP reflective face copy, Posts, 2" x 8' galvanized perforated square steel tube signpost, Anchor, 2.5" x 30" galv. Non-perforated square steel tube anchor for post, and Windbeam Bolt Assembly	Each	\$292.40	1	\$292.40
Equipment/Installation	931	Hydraulic Excavator, 1 CY	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$106.68	1	\$106.68
Equipment/Installation	939	Truck, Pickup	Equipment and power unit costs. Labor not included.	Hour	\$30.07	4	\$120.28
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	8	\$244.88
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.68	1	\$37.68
Mobilization	1043	Mobilization, Material, distance > 50 miles	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.	Dollar	\$1.00	200	\$200.00
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$495.05	1	\$495.05
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$30.75	2	\$61.50
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.33	1	\$37.33

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Agronomy
Practice Code/Name	484 - Mulching
Scenario ID	4
Scenario Name	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, straw and is typically covered on both sides with polypropylene netting. Used to help control erosion and establish vegetative cover.
Before Practice Situation	There are areas of concentrated flow and a grassed waterway is being installed. Soil erosion is a concern and there is little to no vegetation.
After Practice Situation	The erosion control blanket is placed on concentrated flow areas and secured with ground stables. Soil erosion is minimized and vegetative cover is established.
Scenario Feature Measure	Area Covered by Mulch
Scenario Unit	Square Foot
Scenario Typical Size	5000

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$811.76	\$0.16
Equipment/Installation	\$0.00	\$0.00
Labor	\$244.88	\$0.05
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,056.64	\$0.21

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1213	Erosion Control Blanket, biodegradable	Biodegradable erosion control blanket, typically a composite of natural fibers with reinforcing polymer netting. Materials only.	Square Yard	\$1.46	556	\$811.76
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	8	\$244.88

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Agronomy
Practice Code/Name	484 - Mulching
Scenario ID	2
Scenario Name	Natural Material - Full Coverage
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. Assumes 125 bales/acre (3 bales/1000 sq ft)
Before Practice Situation	Typical scenario ranges from a 0.1 to 1.0 acre 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 Practice 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.
Scenario Feature Measure	Area Covered by Mulch
Scenario Unit	Acre
Scenario Typical Size	1

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$300.00	\$300.00
Equipment/Installation	\$197.40	\$197.40
Labor	\$1,224.40	\$1,224.40
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,721.80	\$1,721.80

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1237	Straw	Small grain straw (non organic and certified organic). Materials and shipping only.	Ton	\$120.00	2.5	\$300.00
Equipment/Installation	963	Tractor, agricultural, 60 HP	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$19.28	4	\$77.12
Equipment/Installation	939	Truck, Pickup	Equipment and power unit costs. Labor not included.	Hour	\$30.07	4	\$120.28
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	40	\$1,224.40

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Agronomy
Practice Code/Name	484 - Mulching
Scenario ID	1
Scenario Name	Natural Material - Partial Coverage
Scenario Description	Application of straw mulch or other other state approved natural material (such as wood chips, compost, or hay) to reduce erosion, moderate soil temperature and suppress weeds. Typically used to provide partial coverage (either in-row or between rows) to suppress weeds. Payment based on total acres mulched, assuming 3-5 ft. swatch and 10-12 ft. row spacing.
Before Practice Situation	Site conditions vary. Typically scenarios include new tree and shrub plantings, irrigated orchards or vineyards, or annual and perennial specialty crops. Water quantity and soil moisture is a concern.
After Practice Situation	Straw or other natural mulch is applied in rows by hand or by mechanized means. Soil moisture is conserved, energy use associated with irrigation is decreased, and weed growth is suppressed.
Scenario Feature Measure	Total Acres Mulched
Scenario Unit	Acre
Scenario Typical Size	1

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$300.00	\$300.00
Equipment/Installation	\$96.40	\$96.40
Labor	\$1,366.55	\$1,366.55
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,762.95	\$1,762.95

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1237	Straw	Small grain straw (non organic and certified organic). Materials and shipping only.	Ton	\$120.00	2.5	\$300.00
Equipment/Installation	963	Tractor, agricultural, 60 HP	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$19.28	5	\$96.40
Labor	232	Equipment Operators, Light	Includes: SKID STEER Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$28.43	5	\$142.15
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	40	\$1,224.40

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Agronomy
Practice Code/Name	484 - Mulching
Scenario ID	3
Scenario Name	Synthetic Material
Scenario Description	Installation of geotextile, biodegradable plastic, polyethylene plastic, or other state approved synthetic mulch to conserve soil moisture, moderate soil temperature, suppress weed growth and provide erosion control. Payment based on actual area covered by mulching material.
Before Practice Situation	Site conditions vary. Typically scenarios include new tree and shrub plantings, irrigated orchards or vineyards, or annual and perennial specialty crops. Water quantity and soil moisture is a concern.
After Practice Situation	Synthetic mulch is applied in rows with a mulch layer or by other mechanized means. Soil moisture is conserved, energy use associated with irrigation is decreased, and weed growth is suppressed.
Scenario Feature Measure	Area Covered by Mulch
Scenario Unit	Acre
Scenario Typical Size	1

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$15,004.00	\$15,004.00
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$15,004.00	\$15,004.00

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	42	Geotextile, woven	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$3.10	4840	\$15,004.00

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Agronomy
Practice Code/Name	484 - Mulching
Scenario ID	5
Scenario Name	Tree and Shrub
Scenario Description	Weed barrier fabric or other suitable natural or synthetic mulch is installed with a new tree and shrub planting. Typically used to prevent weed competition during the installation of conservation practices. Rate is per tree/shrub and assumes 1 square yard of weed barrier fabric and 5 staples/tree.
Before Practice Situation	Site conditions vary. Typical scenario is an installation of 100 native trees and shrubs to enhance wildlife habitat. Sites are often remote and trees may not be planted in rows, requiring each tree to be mulched individually
After Practice Situation	Weed barrier fabric squares are installed with 5 sod staples each, around individual trees and shrubs to control weed competition. Weeds are controlled and tree/shrub growth is minimally influenced by weed competition.
Scenario Feature Measure	Number of Trees Mulched
Scenario Unit	Each
Scenario Typical Size	100

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$310.00	\$3.10
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$310.00	\$3.10

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	42	Geotextile, woven	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$3.10	100	\$310.00

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	490 - Tree & Shrub Site Preparation
Scenario ID	7
Scenario Name	Chemical - Ground Application
Scenario Description	This practice involves the use of various herbicides applied using ground-based machinery (and some hack-n-squirt treatment of select trees) in order to remove undesirable vegetation and improve site conditions for establishing trees and/or shrubs. Typical sites include abandoned fields, pastures, rangelands, agricultural fields or forestland that was recently harvested. For use on remote site that would not have equipment available or where the cost of purchasing of the equipment would be much higher due to the delivery cost that would include barging to site or work unit. Typically this would include remote islands or village a not on the road system. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition.
Before Practice Situation	Undesirable vegetation is present on the site including herbaceous plants and woody vegetation. 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.
After Practice 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 of the practice is 40 acres.
Scenario Feature Measure	Area of Treatment
Scenario Unit	Acre
Scenario Typical Size	40

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,095.30	\$27.38
Equipment/Installation	\$5,677.40	\$141.94
Labor	\$1,197.20	\$29.93
Mobilization	\$1,609.26	\$40.23
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$9,579.16	\$239.48

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	334	Herbicide, Glyphosate	A broad-spectrum, non-selective systemic herbicide. Product is typically used in these practices 340, 645, 314, 666, and 512. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$11.04	40	\$441.60
Materials	338	Herbicide, Triclopyr	Triclopyr butoxyethyl ester (BEE) is a selective foliar and root absorbed, translocated herbicide used for control of woody and broadleaf plants. Product is typically used in these practices 595, 314, 645 and 666. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$61.01	10	\$610.10
Materials	1095	Herbicide, Surfactant	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. Materials only.	Acre	\$1.09	40	\$43.60
Equipment/Installation	964	Chemical, spot treatment, single stem application	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	\$55.87	20	\$1,117.40
Equipment/Installation	1313	Chemical, ground application, wildland	Chemical application performed by ground equipment. Includes forestry application methods that include heavy equipment such as skidders. Includes equipment, power unit and labor costs.	Acre	\$114.00	40	\$4,560.00
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	20	\$1,197.20
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	3.4	\$899.88
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$30.75	6	\$184.50
Mobilization	1143	Mobilization, Light Equipment Operator	Mobilization of light equipment operators: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$28.17	6	\$169.02
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	\$59.31	6	\$355.86

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	490 - Tree & Shrub Site Preparation
Scenario ID	7
Scenario Name	Chemical - Ground Application
Scenario Description	This practice involves the use of various herbicides applied using ground-based machinery (and some hack-n-squirt treatment of select trees) in order to remove undesirable vegetation and improve site conditions for establishing trees and/or shrubs. Typical sites include abandoned fields, pastures, rangelands, agricultural fields or forestland that was recently harvested. For use on remote site that would not have equipment available or where the cost of purchasing of the equipment would be much higher due to the delivery cost that would include barging to site or work unit. Typically this would include remote islands or village a not on the road system. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition.
Before Practice Situation	Undesirable vegetation is present on the site including herbaceous plants and woody vegetation. 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.
After Practice 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 of the practice is 40 acres.
Scenario Feature Measure	Area of Treatment
Scenario Unit	Acre
Scenario Typical Size	40

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,095.30	\$27.38
Equipment/Installation	\$5,677.40	\$141.94
Labor	\$1,197.20	\$29.93
Mobilization	\$974.05	\$24.35
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$8,943.95	\$223.60

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	334	Herbicide, Glyphosate	A broad-spectrum, non-selective systemic herbicide. Product is typically used in these practices 340, 645, 314, 666, and 512. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$11.04	40	\$441.60
Materials	338	Herbicide, Triclopyr	Triclopyr butoxyethyl ester (BEE) is a selective foliar and root absorbed, translocated herbicide used for control of woody and broadleaf plants. Product is typically used in these practices 595, 314, 645 and 666. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$61.01	10	\$610.10
Materials	1095	Herbicide, Surfactant	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. Materials only.	Acre	\$1.09	40	\$43.60
Equipment/Installation	964	Chemical, spot treatment, single stem application	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	\$55.87	20	\$1,117.40
Equipment/Installation	1313	Chemical, ground application, wildland	Chemical application performed by ground equipment. Includes forestry application methods that include heavy equipment such as skidders. Includes equipment, power unit and labor costs.	Acre	\$114.00	40	\$4,560.00
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	20	\$1,197.20
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	1	\$264.67
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$30.75	6	\$184.50
Mobilization	1143	Mobilization, Light Equipment Operator	Mobilization of light equipment operators: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$28.17	6	\$169.02
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	\$59.31	6	\$355.86

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	490 - Tree & Shrub Site Preparation
Scenario ID	8
Scenario Name	Chemical - Hand Application
Scenario Description	This practice involves the use of various herbicides applied using backpack sprayer or similar equipment, and hack-n-squirt for tree control, in order to remove undesirable vegetation and improve site conditions for establishing trees and/or shrubs. Typical sites include lands such as old fields, pastures, rangelands, agricultural fields, previous forestlands that have been abandoned and are now covered with a mixture of grasses, forbs, shrubs and some remnant trees. Resource concerns are: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition.
Before Practice Situation	Undesirable vegetation, including woody and herbaceous plants, occupy 100 % of the 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.
After Practice 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 of the practice is 40 acres.
Scenario Feature Measure	area of treatment
Scenario Unit	Acre
Scenario Typical Size	40

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$596.44	\$14.91
Equipment/Installation	\$2,234.80	\$55.87
Labor	\$1,197.20	\$29.93
Mobilization	\$483.24	\$12.08
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$4,511.68	\$112.79

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	331	Herbicide, 2,4-D + Dica	Product is typically used in this practice 595. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$5.89	40	\$235.60
Materials	336	Herbicide, Imazapyr	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Product is typically used in these practices 314, 595, 666 and 645. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$79.31	4	\$317.24
Materials	1095	Herbicide, Surfactant	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. Materials only.	Acre	\$1.09	40	\$43.60
Equipment/Installation	964	Chemical, spot treatment, single stem application	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	\$55.87	40	\$2,234.80
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	20	\$1,197.20
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$30.75	8	\$246.00
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	\$59.31	4	\$237.24

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	490 - Tree & Shrub Site Preparation
Scenario ID	9
Scenario Name	Hand site preparation
Scenario Description	This practice typically involves grubbing all vegetation from the area of ground prior to the establishment of trees and/or shrubs. Typical sites include land such as old fields, pastures, rangelands, agricultural fields, or abandoned forests that are mostly grass or weed covered. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure.
Before Practice Situation	The site contains undesirable vegetation including herbaceous and woody plants. 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. Soils are compacted as a result of recent timber harvesting activities or other land uses. If left untreated poor survival or reduced growth of trees/shrubs will occur and wildlife habitat conditions will not improve.
After Practice Situation	All undesirable vegetation has been grubbed out of a 3 ft by 3 ft area, leaving bare soil, at each planting spot. Tree seedlings and/or shrubs are planted at each spot. Adequate moisture, space and light is available allowing plants to grow properly. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size is 10 acres.
Scenario Feature Measure	Area of Treatment
Scenario Unit	Acre
Scenario Typical Size	10

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$0.00	\$0.00
Labor	\$2,182.16	\$218.22
Mobilization	\$483.24	\$48.32
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$2,665.40	\$266.54

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	40	\$1,224.40
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	16	\$957.76
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$30.75	8	\$246.00
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	\$59.31	4	\$237.24

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	490 - Tree & Shrub Site Preparation
Scenario ID	5
Scenario Name	Mechanical - Heavy
Scenario Description	This practice involves the use of heavy machinery to treat an area in order to improve site conditions for establishing trees and/or shrubs. Typical sites include trees and brush cover that is not appropriate to the site or providing the desired condition for the landowner. For use on remote site that would not have equipment available or where the cost of purchasing of the equipment would be much higher due to the delivery cost that would include barging to site or work unit. Typically this would include remote islands or village a not on the road system. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition and soil quality degradation - soil erosion - sheet and rill.
Before Practice Situation	The site is dominated by undesirable vegetation including herbaceous plants and significant amounts of woody vegetation (trees and brush) occupying the site. There is also a significant component of woody debris onsite. Noxious and invasive species may also be present on the site. Soils are compacted as a result of past heavy equipment activities or from other land uses. Sheet and rill erosion is occurring in areas where the soil was severely disturbed exposing bare soil. If left untreated, soil compaction and erosion issues will result in poor survival or reduced growth of trees/shrubs to be established on the site.
After Practice Situation	Undesirable vegetation has been removed using mechanical methods reducing competition for target trees and/or shrubs. Woody debris has been removed to facilitate tree/shrub planting operations. Soil compaction has been alleviated, allowing penetration of moisture and allowing roots to grow properly. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size is 40 acres.
Scenario Feature Measure	Area of Treatment
Scenario Unit	Acre
Scenario Typical Size	40

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$804.18	\$20.10
Equipment/Installation	\$12,354.98	\$308.87
Labor	\$5,018.50	\$125.46
Mobilization	\$4,495.82	\$112.40
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$22,673.48	\$566.84

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	334	Herbicide, Glyphosate	A broad-spectrum, non-selective systemic herbicide. Product is typically used in these practices 340, 645, 314, 666, and 512. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$11.04	16	\$176.64
Materials	338	Herbicide, Triclopyr	Triclopyr butoxyethyl ester (BEE) is a selective foliar and root absorbed, translocated herbicide used for control of woody and broadleaf plants. Product is typically used in these practices 595, 314, 645 and 666. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$61.01	10	\$610.10
Materials	1095	Herbicide, Surfactant	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. Materials only.	Acre	\$1.09	16	\$17.44
Equipment/Installation	939	Truck, Pickup	Equipment and power unit costs. Labor not included.	Hour	\$30.07	14	\$420.98
Equipment/Installation	943	Mechanical cutter, chopper	Masticator, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	\$135.63	60	\$8,137.80
Equipment/Installation	965	All terrain vehicles, ATV	Includes equipment, power unit and labor costs.	Hour	\$32.87	60	\$1,972.20
Equipment/Installation	1313	Chemical, ground application, wildland	Chemical application performed by ground equipment. Includes forestry application methods that include heavy equipment such as skidders. Includes equipment, power unit and labor costs.	Acre	\$114.00	16	\$1,824.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	30	\$918.30
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$28.43	60	\$1,705.80
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	40	\$2,394.40

Mobilization	1043	Mobilization, Material, distance > 50 miles	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.	Dollar	\$1.00	3000	\$3,000.00
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$30.75	16	\$492.00
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	\$59.31	8	\$474.48

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	490 - Tree & Shrub Site Preparation
Scenario ID	3
Scenario Name	Mechanical - Heavy
Scenario Description	This practice involves the use of heavy machinery to treat an area in order to improve site conditions for establishing trees and/or shrubs. Typical sites include trees and brush cover that is not appropriate to the site or providing the desired condition for the landowner. Application typically calls for mechanical treatment for wood shrubs followed by a chemical treatment of the herbaceous flush and shrub resprout usually within the same season. For use on remote site that would not have equipment available or where the cost of purchasing of the equipment would be much higher due to the delivery cost that would include barging to site or work unit. Typically this would include remote islands or a village not on the road system. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition and soil quality degradation - soil erosion - sheet and rill.
Before Practice Situation	The site is dominated by undesirable vegetation including herbaceous plants and significant amounts of woody vegetation (trees and brush) occupying the site. There is also a significant component of woody debris onsite. Noxious and invasive species may also be present on the site. Soils are compacted as a result of past heavy equipment activities or from other land uses. Sheet and rill erosion is occurring in areas where the soil was severely disturbed exposing bare soil. If left untreated, soil compaction and erosion issues will result in poor survival or reduced growth of trees/shrubs to be established on the site.
After Practice Situation	Undesirable vegetation has been removed using mechanical methods reducing competition for target trees and/or shrubs. Woody debris has been removed to facilitate tree/shrub planting operations. Soil compaction has been alleviated, allowing penetration of moisture and allowing roots to grow properly. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size is 40 acres.
Scenario Feature Measure	Area of Treatment
Scenario Unit	Acre
Scenario Typical Size	40

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$8,137.80	\$203.45
Labor	\$3,821.30	\$95.53
Mobilization	\$5,845.86	\$146.15
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$17,804.96	\$445.12

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	943	Mechanical cutter, chopper	Masticator, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	\$135.63	60	\$8,137.80
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	30	\$918.30
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$28.43	60	\$1,705.80
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	20	\$1,197.20
Mobilization	1043	Mobilization, Material, distance > 50 miles	Mobilization cost or 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.	Dollar	\$1.00	2500	\$2,500.00
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$495.05	4.7	\$2,326.74
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$30.75	8	\$246.00
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.33	8	\$298.64
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	\$59.31	8	\$474.48

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	490 - Tree & Shrub Site Preparation
Scenario ID	2
Scenario Name	Mechanical - Heavy
Scenario Description	This practice involves the use of heavy machinery to treat an area in order to improve site conditions for establishing trees and/or shrubs. Typical sites include trees and brush cover that is not appropriate to the site or providing the desired condition for the landowner. Application typically calls for mechanical treatment for wood shrubs followed by a chemical treatment of the herbaceous flush and shrub resprout usually within the same season. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition and soil quality degradation - soil erosion - sheet and rill.
Before Practice Situation	The site is dominated by undesirable vegetation including herbaceous plants and significant amounts of woody vegetation (trees and brush) occupying the site. There is also a significant component of woody debris onsite. Noxious and invasive species may also be present on the site. Soils are compacted as a result of past heavy equipment activities or from other land uses. Sheet and rill erosion is occurring in areas where the soil was severely disturbed exposing bare soil. If left untreated, soil compaction and erosion issues will result in poor survival or reduced growth of trees/shrubs to be established on the site.
After Practice Situation	Undesirable vegetation has been removed using mechanical methods reducing competition for target trees and/or shrubs. Woody debris has been removed to facilitate tree/shrub planting operations. Soil compaction has been alleviated, allowing penetration of moisture and allowing roots to grow properly. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size is 40 acres.
Scenario Feature Measure	Area of Treatment
Scenario Unit	Acre
Scenario Typical Size	40

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$8,137.80	\$203.45
Labor	\$3,821.30	\$95.53
Mobilization	\$3,259.22	\$81.48
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$15,218.32	\$380.46

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	943	Mechanical cutter, chopper	Masticator, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	\$135.63	60	\$8,137.80
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	30	\$918.30
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$28.43	60	\$1,705.80
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	20	\$1,197.20
Mobilization	1043	Mobilization, Material, distance > 50 miles	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.	Dollar	\$1.00	1250	\$1,250.00
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$495.05	2	\$990.10
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$30.75	8	\$246.00
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.33	8	\$298.64
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	\$59.31	8	\$474.48

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	490 - Tree & Shrub Site Preparation
Scenario ID	4
Scenario Name	Mechanical - Heavy
Scenario Description	This practice involves the use of heavy machinery to treat an area in order to improve site conditions for establishing trees and/or shrubs. Typical sites include trees and brush cover that is not appropriate to the site or providing the desired condition for the landowner. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition and soil quality degradation - soil erosion - sheet and rill.
Before Practice Situation	The site is dominated by undesirable vegetation including herbaceous plants and significant amounts of woody vegetation (trees and brush) occupying the site. There is also a significant component of woody debris onsite. Noxious and invasive species may also be present on the site. Soils are compacted as a result of past heavy equipment activities or from other land uses. Sheet and rill erosion is occurring in areas where the soil was severely disturbed exposing bare soil. If left untreated, soil compaction and erosion issues will result in poor survival or reduced growth of trees/shrubs to be established on the site.
After Practice Situation	Undesirable vegetation has been removed using mechanical methods reducing competition for target trees and/or shrubs. Woody debris has been removed to facilitate tree/shrub planting operations. Soil compaction has been alleviated, allowing penetration of moisture and allowing roots to grow properly. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size is 40 acres.
Scenario Feature Measure	Area of Treatment
Scenario Unit	Acre
Scenario Typical Size	40

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$804.18	\$20.10
Equipment/Installation	\$12,354.98	\$308.87
Labor	\$5,018.50	\$125.46
Mobilization	\$3,245.82	\$81.15
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$21,423.48	\$535.59

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	334	Herbicide, Glyphosate	A broad-spectrum, non-selective systemic herbicide. Product is typically used in these practices 340, 645, 314, 666, and 512. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$11.04	16	\$176.64
Materials	338	Herbicide, Triclopyr	Triclopyr butoxyethyl ester (BEE) is a selective foliar and root absorbed, translocated herbicide used for control of woody and broadleaf plants. Product is typically used in these practices 595, 314, 645 and 666. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$61.01	10	\$610.10
Materials	1095	Herbicide, Surfactant	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. Materials only.	Acre	\$1.09	16	\$17.44
Equipment/Installation	939	Truck, Pickup	Equipment and power unit costs. Labor not included.	Hour	\$30.07	14	\$420.98
Equipment/Installation	943	Mechanical cutter, chopper	Masticator, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	\$135.63	60	\$8,137.80
Equipment/Installation	965	All terrain vehicles, ATV	Includes equipment, power unit and labor costs.	Hour	\$32.87	60	\$1,972.20
Equipment/Installation	1313	Chemical, ground application, wildland	Chemical application performed by ground equipment. Includes forestry application methods that include heavy equipment such as skidders. Includes equipment, power unit and labor costs.	Acre	\$114.00	16	\$1,824.00
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	30	\$918.30
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$28.43	60	\$1,705.80
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	40	\$2,394.40
Mobilization	1043	Mobilization, Material, distance > 50 miles	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.	Dollar	\$1.00	1750	\$1,750.00

Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	2	\$529.34
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$30.75	16	\$492.00
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	\$59.31	8	\$474.48

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	490 - Tree & Shrub Site Preparation
Scenario ID	1
Scenario Name	Blading and Raking
Scenario Description	This practice involves the use of heavy machinery to treat an area in order to improve site conditions for establishing trees and/or shrubs. Typical sites include trees and brush cover that is not appropriate to the site or providing the desired condition for the landowner. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition and soil quality degradation - soil erosion - sheet and rill, habitat degradation
Before Practice Situation	The site is dominated by undesirable vegetation including herbaceous plants and significant amounts of woody vegetation (trees and brush) occupying the site. There is also a significant component of woody debris onsite. Noxious and invasive species may also be present on the site. Soils are compacted as a result of past heavy equipment activities or from other land uses. Sheet and rill erosion is occurring in areas where the soil was severely disturbed exposing bare soil. If left untreated, soil compaction and erosion issues will result in poor survival or reduced growth of trees/shrubs to be established on the site.
After Practice Situation	Undesirable vegetation has been removed using mechanical methods reducing competition for target trees and/or shrubs. Woody debris has been removed to facilitate tree/shrub planting operations. Soil compaction has been alleviated, allowing penetration of moisture and allowing roots to grow properly. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size is 40 acres.
Scenario Feature Measure	Area of Treatment
Scenario Unit	Acre
Scenario Typical Size	40

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$7,202.26	\$180.06
Labor	\$2,946.60	\$73.67
Mobilization	\$2,999.32	\$74.98
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$13,148.18	\$328.70

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation	965	All terrain vehicles, ATV	Includes equipment, power unit and labor costs.	Hour	\$32.87	8	\$262.96
Equipment/Installation	1317	Heavy mechanical site prep, raking	Mechanical operations that pushing and raking trees and vegetation. Requires heavy equipment such as dozers. Includes equipment, power unit and labor costs.	Acre	\$162.86	20	\$3,257.20
Equipment/Installation	937	Chainsaw	Equipment and power unit costs. Labor not included.	Hour	\$6.21	20	\$124.20
Equipment/Installation	939	Truck, Pickup	Equipment and power unit costs. Labor not included.	Hour	\$30.07	10	\$300.70
Equipment/Installation	1314	Heavy mechanical site prep, shearing, V-blade, K-G blading	Mechanical operations that shear trees and vegetation. Requires heavy equipment such as dozers, Includes equipment, power unit and labor costs.	Acre	\$162.86	20	\$3,257.20
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$59.86	20	\$1,197.20
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$28.43	40	\$1,137.20
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	20	\$612.20
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$495.05	4	\$1,980.20
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$30.75	8	\$246.00
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$37.33	8	\$298.64
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	\$59.31	8	\$474.48

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Alaska
State	Alaska
Discipline Group	Forestry
Practice Code/Name	490 - Tree & Shrub Site Preparation
Scenario ID	10
Scenario Name	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 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/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 Practice 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 Practice 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.
Scenario Feature Measure	area of treatment
Scenario Unit	Acre
Scenario Typical Size	1.5

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$114.20	\$76.13
Equipment/Installation	\$24.57	\$16.38
Labor	\$61.22	\$40.81
Mobilization	\$264.67	\$176.45
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$464.66	\$309.77

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	330	Herbicide, 2,4-D	Product is typically used in these practices 595, 512 and 314. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$6.00	16	\$96.00
Materials	334	Herbicide, Glyphosate	A broad-spectrum, non-selective systemic herbicide. Product is typically used in these practices 340, 645, 314, 666, and 512. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$11.04	1.5	\$16.56
Materials	1095	Herbicide, Surfactant	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. Materials only.	Acre	\$1.09	1.5	\$1.64
Equipment/Installation	945	Tillage, Light	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$11.34	1.5	\$17.01
Equipment/Installation	948	Chemical, ground application	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.04	1.5	\$7.56
Labor	231	General Labor	Labor performed using basic tools 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	\$30.61	2	\$61.22
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$264.67	1	\$264.67