Practice: 666 - Forest Stand Improvement

Scenario: #1 - Thinning Hand Tools

Scenario Description: An over-stocked stand has declining production and health; it also lacks structural and composition diversity. A consulting forester supervises the operation, and is carried out using hand tools such as chain saws. Managing the stand utilizing accepted stocking guidelines improves plant condition, prevents wildlife habitat degradation, and reduces wildfire hazards.

Before Situation: An overstocked, unhealthy forest stand lacks structural and species diversity. Annual growth rates and vigor are declining due to overstocking of the stand, making it susceptible to insect and disease attack, as well as unacceptable wildfire risk.

After Situation: Thinning adjusts the stand's stocking to an acceptable level to promote stand growth, condition, and improve overall quality. The resultant increased sunlight reaching the forest floor without invasive species composition improves wildlife habitat.

Scenario Feature Measure: Area treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $2,156.19

Scenario Cost/Unit: $215.62

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$23.74	20	$474.73
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$102.74	12	$1,232.91
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acre	$6.66	3.5	$23.32
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.30	20	$86.09
Mobilization						
Mobilization, small equipment	1138	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	$169.58	2	$339.16

Practice: 666 - Forest Stand Improvement

Scenario: #2 - Single Stem Chemical Thinning

Scenario Description: Species composition, stand structure, and stocking density are managed by controlling selected trees and understory vegetation. The tree is debarked with an axe or hatchet and the tree is then injected with an herbicide. Due to the ability of target species to propagate via the root system the injected herbicide is critical in order to ensure control of the target species. The snag trees will remain for wildlife habitat. Up to 35% of the forest stand will be treated. Restoration and Management of Declining (643), Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Brush Management (314) and Integrated Pest Management (595)

Before Situation: The existing stand consists of unwanted/undesirable species and the stocking rate exceeds the recommended level. Undersirable species consist of hardwoods and shrubs that can propogate via root systems that make commercial control unfeasible.

After Situation: The forest health is managed and improved due to the selective management and chemical treatment of hardwoods and shrubs. Treatment of the hardwoods and shrubs promotes plant health and vigor of the remaining trees, and allows them greater availability to water and nutrients and promotes wildlife habitat. Habitat is created for cavity nesting birds by leaving snags on site.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $3,488.58

Scenario Cost/Unit: $348.86

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$23.74	20	$474.73
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$102.74	12	$1,232.91
Materials						
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$42.30	3.5	$148.05
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acre	$6.66	3.5	$23.32
Equipment Installation						
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	$58.58	20	$1,171.62
Pruning tools, hand tools	1318	Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included.	Hour	$4.94	20	$98.81
Mobilization						
Mobilization, small equipment	1138	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	$169.58	2	$339.16

Practice: 666 - Forest Stand Improvement

Scenario: #3 - Chemical, Ground

Scenario Description: Removal of target, undesirable species is achieved using ground applied chemicals to release young, desirable tree species competing with overtopping vegetation. Target removal is necessary to promote plant health and vigor and to achieve the appropriate spacing and trees per acre of the desirable species that facilitates plant growth. Removal is supervised to ensure objectives are achieved. Associated Practice(s): Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Integrated Pest Management (595) and Firebreak (394)

Before Situation: An adequately stocked stand of desirable species is not growing to its potential for the site due to severe competition from undesirable trees and brush competing for water and nutrients. Competition inhibits plant health and vigor.

After Situation: The desirable vegetation is released from the competition by ground applying herbicides to the stand as an over-the-top spray. Undesirable vegetation is managed to promote desirable plant health and vigor through reduced competition. The appropriate stocking density and spacing is achieved.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $7,657.44

Scenario Cost/Unit: $191.44

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$102.74	10	$1,027.42
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$40.73	40	$1,629.18
Herbicide, Surfactant	1095	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. Includes materials and shipping only.	Acre	$1.30	40	$51.82
Mobilization						
Mobilization, small equipment	1138	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	$169.58	2	$339.16
Equipment Installation						
Chemical, ground application, wildland	1313	Chemical application performed by ground equipment. Includes forestry application methods that include heavy equipment such as skidders. Includes material, equipment, power unit and labor costs.	Acre	$115.25	40	$4,609.86

Practice: 666 - Forest Stand Improvement

Scenario: #4 - Chemical, Aerial

Scenario Description: Aerially applied chemicals release the desirable trees from competing and/or overtopping vegetation. Releasing the desirable trees from the competition is achieved through the application of appropriate herbicides according to label directions. Application will be by helicopter as an over-the-top spray. The work will be professionally planned and supervised. Resource concerns include: Undesirable plant productivity and health, and Wildlife habitat degradation. Associated Practices: Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Fuel Break (383), Woody Residue Treatment (384), Firebreak (394) and Integrated Pest Management (595).

Before Situation: An adequately stocked stand of desirable species and trees is not growing to its potential for the site due to severe competition from undesirable trees and brush.

After Situation: The released stand of trees contains the composition and quality needed to meet the landowner's objectives and address the resource concerns. Releasing the desirable trees from the competition will be achieved through the application of appropriate herbicides according to label directions. Application will be by helicopter as an over-the-top spray. The work will be professionally planned and supervised.

Scenario Feature Measure: Area treated

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $3,696.97

Scenario Cost/Unit: $92.42

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	$45.66	8	$365.29
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$40.73	40	$1,629.18
Herbicide, Surfactant	1095	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. Includes materials and shipping only.	Acre	$1.30	40	$51.82
Equipment Installation						
Chemical, aerial application, fixed wing	947	Chemical application performed by fixed wing aircraft. Includes equipment, power unit and labor costs.	Acre	$9.32	40	$372.90
Chemical, aerial application, helicopter	1991	Chemical application performed by helicopter on forest only. Includes equipment, mobilization, and labor.	Acre	$31.94	40	$1,277.78

Practice: 666 - Forest Stand Improvement

Scenario: #5 - Mechanical, Light Equipment

Scenario Description: The stocking rate of an unhealthy stand with competing vegetatation is adjusted to an acceptable level using a brush hog. The competing vegetation is controlled to manage desirable trees and species. A brush hog is used by mowing or shredding strips through the stand, mowing between planted rows, etc. to achieve objectives. Stand health and wildlife habitat is improved and undesirable vegetation is managed. Associated Practice(s): Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Integrated Pest Management (595) and Firebreak (394)

Before Situation: An young stand of desirable species is not growing to its potential for the site due to severe competition from undesirable trees and brush competing for water and nutrients. Competition inhibits plant health and vigor. The vegetation to be controlled is small enough that it can be mowed or shredded. The stand may also be overstocked.

After Situation: The stocking rate is adjusted to an acceptable level and the competing vegetation is controlled. The stand growth, condition, and overall quality is improved. In addition, wildlife habitat is improved with the increase of sunlight to the forest floor.

Scenario Feature Measure: Area Treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $1,841.60

Scenario Cost/Unit: $184.16

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.96	20	$479.25
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	$51.16	20	$1,023.19
Mobilization						
Mobilization, small equipment	1138	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	$169.58	2	$339.16

Practice: 666 - Forest Stand Improvement

Scenario: #6 - Mechanical, Heavy Equipment

Scenario Description: The stocking rate of an unhealthy stand with competing vegetatation is adjusted to an acceptable level using mechanical treatment such as a masticator or mulcher. The competing vegetation is controlled to manage desirable trees and species. Trees are marked by a consultant. Stand health and wildlife habitat is improved and undesirable vegetation is managed. Associated Practices: Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Fuel Break (383), Woody Residue Treatment (384), Firebreak (394) and Integrated Pest Management (595)

Before Situation: An young stand of desirable species is not growing to its potential for the site due to severe competition from undesirable trees and brush competing for water and nutrients. Competition inhibits plant health and vigor. The vegetation to be controlled is too large to be mowed or shredded, requiring larger mechanical methods such as masticators or mulchers.

After Situation: The stocking rate is adjusted to an acceptable level and the competing vegetation is controlled. The stand growth, composition, condition, and overall quality is improved. In addition, wildlife habitat is improved with the increase of sunlight to the forest floor. . Therefore other mechanical methods such as using masticators or mulchers is necessary.

Scenario Feature Measure: Area treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $5,362.29

Scenario Cost/Unit: $536.23

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.96	30	$718.88
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$102.74	15	$1,541.13
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acre	$6.66	10	$66.62
Equipment Installation						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	$84.38	30	$2,531.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$252.13	2	$504.26

Practice: 666 - Forest Stand Improvement

Scenario: #7 - Forest Openings, Low Density

Scenario Description: Two acre patches are created in over-mature or degraded stands using hand tools such as chainsaws. Small openings are created by removing all undesirable trees greater than 2" in diameter. Removal of undesirable trees fosters regeneration of shade-tolerant, desirable species. Early successional wildlife habitat is created promoting forest diversity. Resource concerns include: Undesirable plant productivity and health, Inadequate structure and composition, and habitat degradation. Associated Practices: Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Fuel Break (383), Woody Residue Treatment (384), Firebreak (394) and Integrated Pest Management (595)

Before Situation: An overly mature, existing stand has been degraded in value by previous management practices. The stand is stocked with the remaining undesirable speices. Wildlife habitat is degraded. The undersirable species are overshadowing the desirable species inhibiting plant health and vigor.

After Situation: A young stand of desirable species is established by removing competing, larger undersirable species. An early successional wildlife habitat is created along side the forest diversity. Small openings are created by removing all trees greater than 2" in diameter. Removal of larger trees fosters regeneration of shade-tolerant, desirable species. Trees are removed using a chainsaw.

Scenario Feature Measure: Area treated

Scenario Unit: Acre

Scenario Typical Size: 2

Total Scenario Cost: $1,363.88

Scenario Cost/Unit: $681.94

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$23.74	16	$379.78
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$102.74	4	$410.97
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.30	16	$68.87
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$252.13	2	$504.26

Practice: 666 - Forest Stand Improvement

Scenario: #8 - Comprehensive Forest Stand Treatment with Chipping

Scenario Description: Trees within a woodlot are managed as part of a Forest Stewardship Plan (or approved equivalent) to create the appropriate stocking density for both forest health and wildlife habitat. Overstocked species over 5 inches in diameter are removed with a feller buncher. Over stocked species under 5 inches in diameter are removed using a mechanical chopper. The material is then run through a chipper/shredder and spread within the stand. Overstocked trees that are inaccessible by the large equipment are removed manually with a chainsaw. Woody vegetation and invasive species left by the cuttings that are inhibiting regeneration are removed using an herbacide that can control the woody species. The herbicide is applied via spot treatment. Activities are supervised, trees marked, and reviewed according to the management objectives by a specialist to ensure objectives are being achieved. Resource concerns include: Inadequate structure and composition, Undesirable plant productivity and health, and Habitat degradation. Associated Practices: Restoration and Management of Declining and Rare Habitat (643), Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Brush Management (314), Woody Residue Treatment (384),Prescribed Burning (338), Firebreak (394), Fuel Break (383) and Integrated Pest Management (595).

Before Situation: A 10 acre mature, unhealthy forest contains over-stocked trees lacking diversity in variety and stand age. The woodlot includes undersirable, invasive species inhibiting plant health. Undesirable species do not meet adequate needs of food and cover for targeted wildlife species.

After Situation: Forest health is managed and improved by manipulating the stand density and structure to restore natural/desirable plant communities. An even-aged management system is implement creating a forest of preferred, native trees and shrubs, and understory species. The stand may vary in tree/shrub spacing, density, and class size. Plant health and vigor is improved. Healthy forest provides suitable food and cover for a variety of small and large mammals, forest interior birds, migratory songbirds, pollinators, reptiles, and amphibians.

Scenario Feature Measure: Area treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $7,085.33

Scenario Cost/Unit: $708.53

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.96	20	$479.25
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$23.74	20	$474.73
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$102.74	20	$2,054.84
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$40.73	1.3	$52.95
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acre	$6.66	3.5	$23.32
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$32.21	16	$515.32
Brush Chipper, 12" capacity	1869	Brush Chipper, 12" capacity, typically 130 HP. Includes chipper and power unit. Does not include labor.	Hour	$54.00	10	$539.99
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.30	20	$86.09
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost	Hour	$58.58	20	$1,171.62

		included.				
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	$84.38	10	$843.80

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$252.13	2	$504.26
Mobilization, small equipment	1138	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	$169.58	2	$339.16

Practice: 666 - Forest Stand Improvement

Scenario: #9 - Comprehensive Forest Stand Treatment, no chipping

Scenario Description: Trees within a woodlot are managed as part of a Forest Stewardship Plan (or approved equivalant) to create the appropriate stocking density for forest health or wildlife. Overstocked species over 5 inches in diameter are removed with a feller buncher. Over stocked speices under 5 inches in diameter are removed using a chainsaw. Woody vegetation and invasive species left by the cuttings that are inhibiting regeneration are removed using an herbacide that can control the woody species. The herbicide is applied via spot treatment. Activities are supervised, trees marked, and reviewed according to the management objectives by a specialist to ensure objectives are being achieved. Resource concerns include: Inadequate structure and composition, Undesirable plant productivity and health, and Habitat degradation. Associated Practices: Restoration and Management of Declining and Rare Habitat (643), Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Brush Management (314), Woody Residue Treatment (384),Prescribed Burning (338), Firebreak (394), Fuel Break (383) and Integrated Pest Management (595).

Before Situation: A 10 acre mature, unhealthy forest contains over-stocked trees lacking diversity in variety and stand age. The woodlot includes undersirable, invasive species inhibiting plant health. Undesirable species do not meet adequate needs of food and cover for targeted wildlife species.

After Situation: Forest health is managed and improved by manipulating the stand density and structure to restore natural/desirable plant communities. An even-aged management system is implemented creating a forest of preferred, native trees and shrubs, and understory species. The stand may vary in tree/shrub spacing, density, and class size. Plant health and vigor is improved. Healthy forest provides suitable food and cover for a variety of small and large mammals, forest interior birds, migratory songbirds, pollinators, reptiles, and amphibians.

Scenario Feature Measure: Area treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $5,161.15

Scenario Cost/Unit: $516.12

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$23.74	40	$949.45
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$102.74	20	$2,054.84
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$40.73	10	$407.30
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acre	$6.66	10	$66.62
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.30	40	$172.17
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	$58.58	20	$1,171.62
Mobilization						
Mobilization, small equipment	1138	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	$169.58	2	$339.16

Practice: 666 - Forest Stand Improvement

Scenario: #10 - Forest opening, heavy density

Scenario Description: Early successional habitat opening creation: Cuts should occur from September through March to minimize disturbance to nesting birds. A well stocked pole-timber sized northern hardwood stand has the potential to provide optimal food and habitat for numerous life stages of early successional target wildlife. A professional biologist or forester has flagged out four (4) five (5) acre wildlife openings (clear cuts). Cuts should be in wide blocks. Where possible, forest wildlife openings will be applied no closer than 300 feet from any edge of the forest area. Location of wildlife openings can be adjusted to avoid steep slopes, streams, wetlands, and other environmentally sensitive areas. Tree tops can be loped and left in place.

Before Situation: Young forest dominated by pole-sized timber (4 to 8 inches DBH). Early successional shrub habitat is lacking in the forest block. Forest canopy needs to be opened to stimulate shrub growth in the under story.

After Situation: Minimum 5 acre opening is created. Large mast trees or other species valuable to wildlife may be retained at a rate of 10 to 12 trees per acre. Wildlife habitat is improved with the increase of sunlight to the forest floor.

Scenario Feature Measure: Area treated

Scenario Unit: Acre

Scenario Typical Size: 5

Total Scenario Cost: $6,315.61

Scenario Cost/Unit: $1,263.12

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12”, Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$39.93	30	$1,198.03
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	$45.66	15	$684.91
Equipment Installation						
Feller buncher	941	Equipment and power unit costs. Labor not included.	Hour	$115.66	30	$3,469.90
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$481.39	2	$962.77

Practice: 666 - Forest Stand Improvement

Scenario: #11 - Wildlife selective tree felling

Scenario Description: Selective tree felling calls for cutting with chainsaw large trees that are scattered throughout shrubs in order to maintain canopy opening and sunlight penetration to shrub layer . Stock is typically >4” dbh or 20’ tall. Leave about 10 to 12 wildlife reserve trees per acre and all shagbark hickory. Trees can be cut and left or removed. Only cut while dormant. Can be used to regenerate aspen. Associated Practices: Restoration and Management of Declining and Rare Habitat(643), Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Brush Management (314), Forest Slash Treatment (384) and Integrated Pest Management (595).

Before Situation: Tree canopy beginning to close and shade out shrubland habitat, reducing wildlife value for early successional species.

After Situation: Large trees removed to an acceptable level to promote shrubland habitat, improving wildlife habitat with the resulting increase of sunlight reaching the forest floor.

Scenario Feature Measure: Area treated

Scenario Unit: Acre

Scenario Typical Size: 5

Total Scenario Cost: $1,326.28

Scenario Cost/Unit: $265.26

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$23.74	17	$403.52
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$102.74	5	$513.71
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acre	$6.66	5	$33.31
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.30	8.5	$36.59
Mobilization						
Mobilization, small equipment	1138	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	$169.58	2	$339.16

Practice: 666 - Forest Stand Improvement

Scenario: #38 - Basal Stem Treatment

Scenario Description: Interfering understory vegetation, which is to large to effectively control with foliar herbicides, is treated with herbicides applied into or on the bark of targeted undesirable woody plants. This treatment is intended to be utilized in forest stands up to ten years prior to a regenerating timber harvest.

Before Situation: Interfering vegetation in the forest understory pose a threat to the stand's long-term productivity, health, and future structure and composition. Some of these undersirable species can propogate via root systems that make mechanical control ineffective.

After Situation: Due to the selective management and chemical treatment of undesirable trees and shrubs, the residual forest health and productivity is improved, the stand structure and composition is corrected, and desirable wildlife habitat is capable of establishing.

Scenario Feature Measure: Acres Treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $3,793.65

Scenario Cost/Unit: $379.36

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$42.30	10	$422.99
Equipment Installation						
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	$58.58	40	$2,343.24
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$102.74	10	$1,027.42

Practice: 666 - Forest Stand Improvement

Scenario: #40 - Thinning with Hand Tools without a Consultant

Scenario Description: The stocking rate of an unhealthy stand which lacks species diversity is adjusted to an acceptable stocking level. The operation is supervised by a professional state or local forester and is carried out using hand tools such as chain saws.

Before Situation: The stocking rate is too high to ensure forest health. Stand also lacks species diversity.

After Situation: Managing stand stocking has improved plant productivity and health, prevented wildlife habitat degradation, reduced wildlife hazards and provided adequate structure and composition.

Scenario Feature Measure: Acres Treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $841.22

Scenario Cost/Unit: $84.12

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.30	30	$129.13
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$23.74	30	$712.09

Practice: 666 - Forest Stand Improvement

Scenario: #43 - Wildlife Crop Tree Release

Scenario Description: This stand treatment manually cuts (chainsaw) all competing woody vegetation from at least three sides of individual "Crop Trees" (E, W, &S sides) at a minimum distance from the stump of one and a half times the stand's average height and not to exceed three times the stand's average height. Utilize Woody Residue Treatment (384) to properly reduce the resulting slash created from releasing crop trees as necessary.

Before Situation: Valuable soft or hard mast producing trees or shrubs have been found in a forest stand, but are need of treatment due to over-topping from adjacent faster growing trees. The landowner's objective is to management area for wildlife habitat. Resource Concern: INADEQUATE HABITAT FOR FISH AND WILDLIFE – Habitat degradation.

After Situation: Mast producing trees are released, improving wildlife habitat.

Scenario Feature Measure: Acres Treated

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $327.07

Scenario Cost/Unit: $327.07

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.30	8	$34.43
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$23.74	8	$189.89
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$102.74	1	$102.74