

Scenario Worksheet	
<b>Practice and Scenario Description:</b>	
Information Type	Data
Region	Appalachian
State	North Carolina
Discipline Group	Wildlife Wetland
Practice Code/Name	395 - Stream Habitat Improvement
Scenario ID	3
Scenario Name	Rock and wood structures

Scenario Description	<p>This scenario describes the implementation of a <b>stream habitat improvement and management project</b> where practices are focused on <b>instream habitat improvement with a combination of rock AND wood structures</b>. This scenario involves placement of large wood and rock structures into a stream channel in order to improve aquatic habitat that currently does not meet quality criteria for stream species habitat. A stream assessment (i.e. Stream Visual Assessment Protocol) should be conducted in order to document habitat components (such as large wood, pools) are not currently present in the stream or are limited for aquatic species. A project design for placement of habitat structures (boulders, boulder clusters, wood, wood structures) will be based on assessment of (a) the target stream reach characteristics and (b) those of a suitable reference reach. These characteristics include channel geometry, channel slope, stream bottom substrate size and composition, and the geomorphic setting influencing the channel form, pattern and profile. Large rocks/boulders placed in the stream channel will mimic geologic material sizes typically present in the watershed or observed in intact, reference stream reaches in the MLRA where the project is located. Rock boulder sizes should also reflect the geomorphic setting of the stream reach. Large wood placed into the stream under this scenario should be similar in species, age, and size (diameter) as trees found in the surrounding riparian area, to the extent possible. Wood, boulders and/or boulder clusters will be placed in the stream to create pool habitat and hydraulic complexity according to NRCS engineering specifications and with close review &amp; approval of a fish habitat biologist onsite during the planning and implementation of the project. This scenario involves restoring one acre of stream. The planned activity will meet the current 395 standard, and facilitating practice standards utilized. Implementation will result in the improvement of instream habitat complexity, hiding and resting cover, and/or increased food availability for fish and other stream species. Payment for implementation is to defray the costs of project implementation. Records demonstrating implementation of this scenario will address resource concerns for stream species of concern will be required.</p>
Before Practice Situation	In this stream reach, habitat for fish, aquatic insects and/or other stream species is sub-optimal as determined by the NRCS Stream Visual Assessment Protocol score of less than 5. The site does not have adequate food, cover, and perhaps habitat connectivity for desired species. Riparian vegetation quality and/or quantity may also be compromised to the extent that the riparian area and floodplain are not functioning to provide necessary stream habitat components, such as large wood and off-channel refuge habitat.
After Practice Situation	Stream habitat within the project reach is improving as a result of placing logs, rocks, or constructing wood and rock structures in the channel and/or along the stream bank. Pool habitat in the reach is improved, and hiding cover, food availability and refuge habitat for all stream species is improving.
Scenario Feature Measure	stream length X bankfull width
Scenario Unit	Acres
Scenario Typical Size	0.5

Cost Summary:		
Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,456.40	\$4,912.80
Equipment/Installation	\$5,852.10	\$11,704.20
Labor	\$1,502.94	\$3,005.88
Mobilization	\$364.38	\$728.76
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$10,175.82	\$20,351.64

Cost Details:										
Select Components										
Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost	Component Justification	Quantity Justification	
Materials	2045	Root Wad	Tree stump buried into the streambank with the roots left exposed. Includes material only.	Ton	\$22.00	10	\$220.00	Root wad from tree in forested landscapes	estimate per current specs	
Materials	2035	Log, un-anchored	Price of log picked up at the Mill. Includes material only.	Ton	\$37.12	30	\$1,113.60	Based on state scenarios	based on state scenarios	
Materials	1761	Boulder	Rock boulders. Includes materials and local delivery (less than 50 miles) only.	Ton	\$28.07	40	\$1,122.80	Based on state scenarios	based on state scenarios	
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	\$72.90	16	\$1,166.40	needed for implementation	based on state scenarios	
Equipment/Installation	032	Hydraulic Excavator, 2 CY	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$156.19	30	\$4,685.70	needed for implementation	based on state scenarios	
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	\$18.67	30	\$560.10	restore riparian vegetation	Code 390,391	
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	\$21.98	30	\$659.40	skilled equipment operation	based on state scenarios	
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	\$35.43	8	\$283.44	Monitoring required by Code 395	as per existing specifications	
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	\$173.20	1	\$173.20	excavator brought on-site	as per existing specifications	
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.55	1	\$55.65		three daily round trips to site	
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	\$21.77	3	\$65.31		three daily round trips to site	
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	\$35.11	2	\$70.22		two daily round trips to site	



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<b>Practice and Scenario Description:</b>									
Information Type	Data								
Region	Appalachian								
State	North Carolina								
Discipline Group	Wildlife Wetland								
Practice Code/Name	395 - Stream Habitat Improvement								
Scenario ID	2								
Scenario Name	Instream rock placement								
Scenario Description	This scenario describes the implementation of a stream habitat improvement and management project that places individual boulders or boulder clusters, or rock structures in or adjacent to the stream channel as habitat components. A project design for boulder placement will be based on assessment of the target stream reach characteristics and those of a suitable reference reach. These characteristics include channel geometry, channel slope, stream bottom substrate size and composition, and the geomorphic setting influencing the channel form, pattern and profile. Large rocks/boulders placed in the stream channel will mimic geologic material sizes typically present in the watershed or observed in intact, reference stream reaches in the MLRA where the project is located. Boulders should be placed in streams to create pool habitat and hydraulic complexity according to NRCS engineering specifications and with close review & approval of a fish habitat biologist onsite during implementation of the project design. Spawning gravel placement should be placed to restore spawning area substrates potentially disturbed by rock placement. The planned activity will meet the current 395 standard, and facilitating practice standards utilized. Implementation will result in the improvement of instream habitat complexity, hiding and resting cover, spawning habitat, and/or increased food availability for fish and other stream species. Payment for implementation is to defray the costs of stream habitat assessment, and project implementation. Records demonstrating implementation of this scenario will address resource concerns for stream species of concern will be required.								
Before Practice Situation	In this stream reach, habitat for fish, aquatic insects and other stream species is sub-optimal as determined by the NRCS Stream Visual Assessment Protocol score of less than 5 overall. The site does not have adequate food, cover, and perhaps habitat connectivity for desired species. Riparian vegetation quality and/or quantity may be also compromised to the extent that the riparian area and floodplain are not functioning to provide necessary stream and riparian habitat components, such as large wood, leaf matter, and shade.								
After Practice Situation	Stream habitat within the project reach is improving as a result of placing boulders or constructing rock structures in the channel and/or along the stream bank. Hydraulic complexity of the habitat in the reach is increased, and hiding cover, food availability and refuge habitat for stream species is improving. Streambank vegetation is increasing and contributing to stability of the streambanks.								
Scenario Feature Measure	Bankfull width x reach length								
Scenario Unit	Acres								
Scenario Typical Size	0.5								
<b>Cost Summary:</b>									
Cost Category	Scenario Cost	Scenario Cost/Unit							
Materials	\$2,245.60	\$4,491.20							
Equipment/Installation	\$5,560.50	\$11,121.00							
Labor	\$398.12	\$1,916.24							
Mobilization	\$345.83	\$691.66							
Acquisition of Technical Knowledge	\$0.00	\$0.00							
Foregone Income	\$0.00	\$0.00							
Total	\$9,110.05	\$18,220.10							
<b>Cost Details:</b>									
<a href="#">Select Components</a>									
Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost	Component Justification	Quantity Justification
Materials	1761	Boulder	Rock boulders. Includes materials and local delivery (less than 50 miles) only. Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Ton	\$28.07	80	\$2,245.60	Stream habitat improvement	based on State Scenarios
Equipment/Installation	1215	Truck, dump, 12 CY	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$72.90	12	\$874.80	Material not available onsite	based on State Scenarios
Equipment/Installation	932	Hydraulic Excavator, 2 CY	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	\$156.19	30	\$4,685.70	Needed to place material in stream	based on State Scenarios
Labor	231	General Labor	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$18.67	16	\$298.72	Restore riparian vegetation damaged by heavy equipment	based on State Scenarios
Labor	233	Equipment Operators, Heavy	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Hour	\$21.98	30	\$659.40	Dump truck driver to deliver material, excavator operator to place material in stream	based on State Scenarios
Mobilization	1140	Mobilization, large equipment	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Each	\$173.20	1	\$173.20	excavator brought on-site	
Mobilization	1142	Mobilization, General labor	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	\$18.55	2	\$37.10		two daily round trips to site
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/franch managers, etc.	Hour	\$21.77	3	\$65.31		three daily round trips to site
Mobilization	1145	Mobilization, Supervisor or Manager		Hour	\$35.11	2	\$70.22		two daily round trips to site

Scenario Worksheet									
<b>Practice and Scenario Description:</b>									
Information Type	Data								
Region	Appalachian								
State	North Carolina								
Discipline Group	Wildlife Wetland								
Practice Code/Name	395 - Stream Habitat Improvement								
Scenario ID	1								
Scenario Name	Instream wood placement								
Scenario Description	This scenario involves placement of large wood (logs, root wads, log structures) into a stream channel in order to improve aquatic habitat that currently does not meet quality criteria for stream species habitat. A stream assessment (i.e. Stream Visual Assessment Protocol) should be conducted in order to document habitat components lacking for aquatic species (i.e. large wood, pools). A project design for wood placement will be based on assessment of the target stream reach characteristics and those of a suitable reference reach. These characteristics include channel geometry, channel slope, stream bottom substrate size and composition, and the geomorphic setting influencing the channel form, pattern and profile. Large wood and root wads placed into the stream will mimic genus, age, and size of mature trees found in intact, reference riparian areas in the MLRA where the project is located. Large wood/trees with rootwads intact should be placed in streams to create pool habitat according to NRCS engineering specifications and with close review & approval of a fish habitat biologist. Boulders placed to provide ballast shall only be used if the geomorphic setting and project design demand this component. The planned activity will meet the current 395 standard, and facilitating practice standards utilized, including timing of work windows required for protected aquatic and riparian species, and protecting/restoring vegetation and substrates of/ro areas impacted by heavy equipment. Implementation will result in the improvement of instream habitat complexity, hiding and resting cover, and/or increased food availability for fish and other stream species. Payment for implementation is to defray the costs of project implementation. Monitoring records demonstrating implementation of this scenario will address resource concerns for stream species of concern are required.								
Before Practice Situation	In this stream reach, habitat for fish, aquatic insects and/or other stream species is sub-optimal as determined by the NRCS Stream Visual Assessment Protocol score of less than 5 overall. The site does not have adequate food, cover, and perhaps habitat connectivity for desired species. Riparian vegetation quality and/or quantity may also be compromised to the extent that the riparian area and floodplain are not functioning to provide necessary stream and riparian habitat components, such as large wood.								
After Practice Situation	Stream habitat within the project reach is improving as a result of placing logs, root wads, and/or wood structures in the channel and/or along the stream bank. Pool habitat in the reach is improved, and hiding cover, food availability and refuge habitat for all stream species is improving.								
Scenario Feature Measure	Bankfull width x reach length								
Scenario Unit	Acres								
Scenario Typical Size	0.5								
<b>Cost Summary:</b>									
Cost Category	Scenario Cost	Scenario Cost/Unit							
Materials	\$2,689.72	\$5,379.44							
Equipment/Installation	\$4,331.76	\$8,663.52							
Labor	\$838.50	\$1,677.00							
Mobilization	\$519.03	\$1,038.06							
Acquisition of Technical Knowledge	\$0.00	\$0.00							
Foregone Income	\$0.00	\$0.00							
Total	\$8,359.11	\$16,718.22							
<b>Cost Details:</b>									
<a href="#">Select Components</a>									
Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost	Component Justification	Quantity Justification
Materials	2045	Root Wad	Tree stump buried into the streambank with the roots left exposed. Includes material only.	Ton	\$22.00	36	\$792.00	Root wad from tree in forested landscapes	estimate per current specs
Materials	2035	Log, un-anchored	Price of log picked up at the Mill. Includes material only.	Ton	\$37.12	35	\$1,350.24	Logs used in forested landscapes	as per current specifications
Materials	1761	Boulder	Rock boulders. Includes materials and local delivery (less than 50 miles) only. Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Ton	\$28.07	20	\$561.40	Provide ballast	if needed, as per current specifications
Equipment/Installation	1215	Truck, dump, 12 CY	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$72.90	8	\$583.20	Haul logs, rock needed for project	estimate per current specs
Equipment/Installation	932	Hydraulic Excavator, 2 CY	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	\$156.19	24	\$3,748.56	Required for excavation and placement of boulders/logs, gravel	as per current specifications
Labor	231	General Labor	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$18.67	8	\$149.36	required to handle materials on-site and signal to excavator operator	two, half days work
Labor	233	Equipment Operators, Heavy	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$21.98	24	\$527.52	excavator operator	three 8-hours days work
Labor	234	Supervisor or Manager	Equipment >=150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Hour	\$35.43	4	\$141.72	project manager providing supervision to ensure construction occurs according to specifications	two, two hour site visits
Mobilization	1140	Mobilization, large equipment	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Each	\$173.20	2	\$346.40		
Mobilization	1142	Mobilization, General labor	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	\$18.55	2	\$37.10		two daily round trips to site
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	\$21.77	3	\$65.31		three daily round trips to site
Mobilization	1145	Mobilization, Supervisor or Manager		Hour	\$35.11	2	\$70.22		two daily round trips to site