

**Practice:** 584 - Channel Bed Stabilization

**Scenario:** #4 - Structural- J Hook, Cross Vane, etc.requiring boulders

**Scenario Description:** Stabilize Channel to prevent degradation and excessive erosion creating excessive sediment and stream water quality degradation by constructing in stream in channel components such as J-Hooks, Vanes, Cross Vanes or Combo Root Wad/Log Vane and J-Hook structures. The purpose of this practice is to maintain, improve, and restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. Scenario: Install 2 J hooks on 500 ' section of 100 SM watershed channel, where the bankfull depth is 8.0' and the J hook is as high as 1/2 bankfull or 4.0'. Each J hook develops an average pool depth of 8.0'and have a arm length of 130' long with a 53' long (7' deep) hook. Boulders are an average dimension of 3'x2.5'x2' and weigh 1,800#. 225 boulders are required for one structure. Payment does not include cost of channel low bank shaping (assumed this is covered in either vegetative or bioengineered scenario). Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility

**Before Situation:** The unstable channel is trying to redefine it's normal meander and reduce erosive forces by vertical and laterally moving into a landowners field at an accelerated rate. The stream has severely degraded streambanks that are unstable and show signs of active erosion. Two J hooks (125 CY each) on hgh velocity stream require boulders to be installed to naturally create a thalweg to disaapate energy and move erosive factors away from the banks, back into the stream and to create natural pools for habitat. Soil Erosion: The stream channel is unstable causing scoring and erosion. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

**After Situation:** Stream channel is stable. Other associated practices could be (326) Clearing and Snagging, (396 ) Aquatic Organism Passage, (395) Stream Habitat Improvement and Management, (580) Streambank and Shoreline Protection, or (587) Structure for Water Control. Re-vegetation of exposed surfaces will be completed using 342 - Critical Area Planting. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

**Scenario Feature Measure:** <Unknown>

**Scenario Unit:** Cubic Yard

**Scenario Typical Size:** 250

**Total Scenario Cost:** \$25,197.69

**Scenario Cost/Unit:** \$100.79

**Cost Details**

Component Name	Id	Description	Unit	Cost	Qty	Total
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**Equipment Installation**

Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$55.63	40	\$2,225.05
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yard	\$2.93	260	\$762.36
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$163.20	20	\$3,264.03

**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	\$24.21	16	\$387.37
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.07	40	\$802.78
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	\$39.78	60	\$2,387.00

**Mobilization**

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$253.88	1	\$253.88
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**Materials**

Boulder	1761	Rock boulders (approximately 5 ft dia. 6.67 Tons) Includes materials and delivery (up to 100 miles) only.	Ton	\$34.32	412	\$14,138.92
Geotextile, non-woven, heavy weight	1210	Non-woven greater than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only.	Square Yard	\$4.15	235	\$976.30