

**Practice: 574 - Spring Development**

**Scenario: #1 - Solid Well Tile & Pipe**

**Scenario Description:**

Develop a water source from a natural spring or seep (i.e., spring development) to provide water for livestock, and/or wildlife needs. The collection system is commonly composed of a single or a network of perforated 4 inch diameter drainage pipe placed in an excavated collection trench that runs across the slope. This typical scenario includes excavating and exposing the water source at the spring/seep (typically on a hillside) and constructing a water collection structure by installing a 100 ft long, 4 inch diameter HDPE perforated pipe enclosed in a sand/gravel envelope overlaid by 2 ft wide filter fabric (50 ft long). Water is then directed (via 20 ft long, 4 inch PVC) to a spring box (36-48 inch diameter x 8 ft long concrete well tile) that is located below the collection trench, equipped with a watertight lid and two outlets. One outlet serves as overflow pipe to account for occasions where inflow exceeds outflow. The outflow pipe from the spring box can be directed to buried large storage (not included) and/or to a watering facility (not included) for use.

Resource Concern: Livestock production limitation - Inadequate livestock water.

Associated Practices: 516-Livestock Pipeline; 614-Watering Facility; 382-Fence; Critical Area Planting (342).

**Before Situation:**

Livestock operation with inadequate fresh water for livestock and an on-site undeveloped spring/seep.

**After Situation:**

Spring development system provides adequate water for the intended use. The system typically runs all year long in most zones.

**Scenario Feature Measure: Number of Developments**

**Scenario Unit: Each**

**Scenario Typical Size: 1**

**Scenario Cost: \$4,585.38**

**Scenario Cost/Unit: \$4,585.38**

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$55.45	16	\$887.20
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.42	22	\$53.24
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed 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	\$485.73	1.5	\$728.60
<b>Labor</b>						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$24.86	16	\$397.76
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	\$24.74	32	\$791.68
<b>Materials</b>						
Pipe, HDPE, 4", PCPT, Single Wall	1270	Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 4" diameter - ASTM F405. Material cost only.	Foot	\$0.45	100	\$45.00
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$34.86	16	\$557.76
Pipe, PVC, 4", SCH 40	978	Materials: - 4" - PVC - SCH 40 - ASTM D1785	Foot	\$3.99	20	\$79.80
Spring Collection Box Cover, steel, 4' diameter	1281	4' diameter x 1/4" thick Steel lid with handle for spring collection box. Materials and fabrication.	Each	\$178.11	1	\$178.11
Poly film, 6 mil.	245	6 mil, polyethylene, black	Square Foot	\$0.08	1000	\$80.00
Well Casing, Concrete	2173	Concrete tile 3' diameter x 8' long. Materials only.	Foot	\$66.37	8	\$530.96

**Mobilization**

**Mobilization**

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$255.27	1	\$255.27
--------------------------------	------	---	------	----------	---	----------

**Practice: 574 - Spring Development**

**Scenario: #2 - Perforated Well Tile**

**Scenario Description:**

Develop a water source from a natural spring, seep, or other wet area to provide water for livestock and/or wildlife needs. This typical scenario includes excavating and exposing the water source at the spring/seep and installing a 3'-4' dia x 8' deep perforated concrete well tile enveloped in crushed stone, with geotextile fabric placed along the stone soil interface. Water seeps through the fabric and stone into the collection well. The perforated concrete well tile is equipped with a watertight lid and two outlets. One outlet serves as overflow pipe to account for occasions where inflow exceeds outflow. The outflow pipe (not included) from the well can be directed to buried large storage (not included), and/or to a watering facility (not included) for use.

Resource Concern: Livestock production limitation - Inadequate livestock water.

Associated Practices: 516-Livestock Pipeline; 614-Watering Facility; 382-Fence; Critical Area Planting (342).

**Before Situation:**

Livestock operation with inadequate fresh water for livestock and an on-site undeveloped spring/seep.

**After Situation:**

Spring development system provides adequate water for the intended use. The system typically runs all year long in most zones.

**Scenario Feature Measure: Number of Developments**

**Scenario Unit:** Each

**Scenario Typical Size:** 1

**Scenario Cost:** \$2,198.58

**Scenario Cost/Unit:** \$2,198.58

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$55.45	4	\$221.80
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.42	56	\$135.52
<b>Labor</b>						
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	\$24.74	16	\$395.84
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$24.86	6	\$149.16
<b>Materials</b>						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$34.86	8	\$278.88
Spring Collection Box Cover, steel, 4' diameter	1281	4' diameter x 1/4" thick Steel lid with handle for spring collection box. Materials and fabrication.	Each	\$178.11	1	\$178.11
Well Casing, Concrete, perforated	2174	Perforated concrete tile 3' diameter x 8' long. Materials only.	Foot	\$73.00	8	\$584.00
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$255.27	1	\$255.27