

**Practice: 516 - Livestock Pipeline**

**Scenario: #1 - 2 inches or less buried by LF**

**Scenario Description:**

Buried pipeline is installed using PE or equivalent pipe. Pipe size is 2 inches or less and site soils allow for normal excavation. (I.e., soils are not clayey and depth of soil is adequate for burying pipeline to a frost-free depth.) Construct 1000 feet of 1.5 -inch, Schedule 40, PVC Pipeline with appurtenances. The scenario unit is linear feet of pipe. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included.

Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

Associated Practices: Critical Area Planting (342), Fence (382), Prescribed Grazing (528), Pumping Plant (533), Spring Development (574), Watering Facility (614), and Water Harvesting Catchment (636).

**Before Situation:**

Water supplies need to be conveyed through pipelines for use by livestock or wildlife.

**After Situation:**

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.

**Scenario Feature Measure:** Linear foot of pipe

**Scenario Unit:** Linear Foot

**Scenario Typical Size:** 1,000

**Scenario Cost:** \$2,928.84

**Scenario Cost/Unit:** \$2.93

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Trenching, Pipeline Plowing	1096	Includes equipment and labor for plowing small diameter lines in common earth (< 3")	Foot	\$1.11	1000	\$1,110.00
<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	\$22.22	9	\$199.98
<b>Materials</b>						
Pipe, PVC, 1 1/2", SCH 40	975	Materials: - 1 1/2" - PVC - SCH 40 - ASTM D1785	Foot	\$1.10	1000	\$1,100.00
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$259.43	2	\$518.86

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**Scenario: #2 - Over 2 inches, buried by LF**

**Scenario Description:**

Buried pipeline is installed using PE or equivalent pipe. Pipe size is over 2 inches in diameter and site soils allow for normal excavation. (I.e., soils are not clayey and depth of soil is adequate for burying pipeline to a frost-free depth.) Construct 1000 feet of 4 -inch, Schedule 40, PVC Pipeline with appurtenances. The scenario unit is linear feet of pipe. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included.  
Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

Associated Practices: Critical Area Planting (342), Fence (382), Prescribed Grazing (528), Pumping Plant (533), Spring Development (574), Watering Facility (614), and Water Harvesting Catchment (636).

**Before Situation:**

Water supplies need to be conveyed through pipelines for use by livestock or wildlife.

**After Situation:**

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.

**Scenario Feature Measure:** Linear feet of pipe

**Scenario Unit:** Linear Foot

**Scenario Typical Size:** 1,000

**Scenario Cost:** \$5,680.76

**Scenario Cost/Unit:** \$5.68

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Trenching, Earth, 12" x 48"	53	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.39	1000	\$1,390.00
<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	\$22.22	9	\$199.98
<b>Materials</b>						
Pipe, PVC, dia. < 18", weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only.	Pound	\$1.64	2178	\$3,571.92
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$259.43	2	\$518.86

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**Scenario: #3 - 2 inches or less on surface by LF**

**Scenario Description:**

Surface pipeline is installed using PE or equivalent pipe. Pipe size is 2 inches or less. Construct 1000 feet of 1.5 -inch, PE Pipeline with appurtenances. The scenario unit is linear feet of pipe. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included.

Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

Associated Practices: Critical Area Planting (342), Fence (382), Prescribed Grazing (528), Pumping Plant (533), Spring Development (574), Watering Facility (614), and Water Harvesting Catchment (636).

**Before Situation:**

Water supplies need to be conveyed through pipelines for use by livestock or wildlife.

**After Situation:**

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.

**Scenario Feature Measure:** Linear foot of pipe

**Scenario Unit:** Linear Foot

**Scenario Typical Size:** 1,000

**Scenario Cost:** \$1,277.76

**Scenario Cost/Unit:** \$1.28

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<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	\$22.22	8	\$177.76
<b>Materials</b>						
Pipe, PE, 1 ¼", DR 9	998	Materials: - 1 1/4" - PE - 160 psi - ASTM D3035 DR 9	Foot	\$1.10	1000	\$1,100.00

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**Scenario: #4 - Boring, Pipeline, All sizes**

**Scenario Description:**

Pipeline is bored under road or stream using seamless pipe that meets or exceeds main pipeline size and pressure rating. Site location does not allow for open trench. (I.e., No permit can be obtained for open trench on road crossing and/or digging open trench across stream) Bore 100 feet of 4 -inch, Pipeline. Appurtenances include: couplings and fittings to connect to planned pipeline and are included in the cost of pipe material (additional 10% of pipe material quantity). The scenario unit is linear feet of bored pipe from coupler to coupler. Revegetation is not included.

Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

Associated Practices: Critical Area Planting (342), Fence (382), Prescribed Grazing (528), Pumping Plant (533), Spring Development (574), Watering Facility (614), and Water Harvesting Catchment (636).

**Before Situation:**

Water supplies need to be conveyed through pipelines for use by livestock or wildlife.

**After Situation:**

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.

**Scenario Feature Measure:** Linear feet of pipe

**Scenario Unit:** Linear Foot

**Scenario Typical Size:** 100

**Scenario Cost:** \$7,572.22

**Scenario Cost/Unit:** \$75.72

**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	\$56.82	8	\$454.56
Horizontal Boring, > 3" diameter	1132	Includes equipment, labor and setup.	Foot	\$53.10	100	\$5,310.00
<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	\$22.22	8	\$177.76
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	\$37.38	8	\$299.04
<b>Materials</b>						
Pipe, PE, 4", DR 9	1002	Materials: - 4" - PE - 160 psi - ASTM D3035 DR 9	Foot	\$8.12	100	\$812.00
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$259.43	2	\$518.86