### Scenario Worksheet

<table>
<thead>
<tr>
<th>Information Type</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region</td>
<td>North Carolina</td>
</tr>
<tr>
<td>Discipline Group</td>
<td>Water Management Engineering</td>
</tr>
<tr>
<td>Practice Code/Name</td>
<td>430 - Irrigation Pipeline</td>
</tr>
<tr>
<td>Scenario ID</td>
<td>5</td>
</tr>
<tr>
<td>Scenario Name</td>
<td>HDPE (Iron Pipe Size &amp; Tubing) ≤ 8&quot;</td>
</tr>
<tr>
<td>Scenario Description</td>
<td>Below ground installation of HDPE (Iron Pipe Size &amp; Tubing) pipeline. HDPE is manufactured in sizes between 1 to 12 inches (0.5 to 30 centimeters), and typical scenario size is 8 inches. Construct 1 mile (1,320 feet) of trunk. Class 150 (SDR 13.5-16) HDPE pipe is manufactured into smooth wall pipe with a minimum 2 feet of ground cover. The unit is weight of pipe material in pounds. 1,320 feet (150 ft) HDPE weighs 4.024 lb/ft, or a total of 5,312 pounds. Appurtenances include fittings, valves, control boxes, risers, and other equipment, and are included in the cost of pipe material (additional 10% of pipe material quantity).</td>
</tr>
</tbody>
</table>

#### Before Practice Situation

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

#### After Practice Situation

Pipeline installed to convey and/or distribute water to irrigation systems or reservoirs, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

### Resource Concerns

- Inefficient Use of Irrigation Water
- Inefficient Energy Use

### Associated Practices

- 436 - Irrigation Reservoir
- 441 - Irrigation System, Microirrigation
- 442 - Irrigation System, Sprinkler
- 443 - Irrigation System, Surface & Subsurface
- 447 - Irrigation System, Tailwater Recovery
- 533 - Pumping Plant
- 634 - Waste Transfer

### Scenario Cost

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Scenario Cost</th>
<th>Scenario Cost/Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>$14,198.49</td>
<td>$10.76</td>
</tr>
<tr>
<td>Equipment/Installation</td>
<td>$1,690.64</td>
<td>$1.28</td>
</tr>
<tr>
<td>Labor</td>
<td>$597.44</td>
<td>$0.45</td>
</tr>
<tr>
<td>Mobilization</td>
<td>$185.20</td>
<td>$0.14</td>
</tr>
<tr>
<td>Acquisition of Technical Knowledge</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Foregone Income</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Total</td>
<td>$16,671.77</td>
<td>$12.63</td>
</tr>
</tbody>
</table>

### Cost Details

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Component ID</th>
<th>Component Name</th>
<th>Component Description</th>
<th>Unit</th>
<th>Price ($/unit)</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>1379</td>
<td>Pipe, HDPE, smooth wall, weight priced</td>
<td>High-density polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.</td>
<td>Pound</td>
<td>$2.43</td>
<td>5843</td>
<td>$14,198.49</td>
</tr>
<tr>
<td></td>
<td>53</td>
<td>Mobilization, medium equipment</td>
<td>Equipment with 8-100 HP or typical weights between 50,000 and 80,000 pounds</td>
<td>Each</td>
<td>$357.44</td>
<td>16</td>
<td>$597.44</td>
</tr>
<tr>
<td></td>
<td>1383</td>
<td>Fuser for HDPE Pipe</td>
<td>Fusing machine for 1” to 12” diameter HDPE pipe joints. Equipment costs only. Does not include labor.</td>
<td>Hour</td>
<td>$22.34</td>
<td>16</td>
<td>$357.44</td>
</tr>
<tr>
<td></td>
<td>1139</td>
<td>Mobilization, medium equipment</td>
<td>Equipment with 8-100 HP or typical weights between 50,000 and 80,000 pounds</td>
<td>Each</td>
<td>$92.60</td>
<td>2</td>
<td>$185.20</td>
</tr>
</tbody>
</table>

#### Practice and Scenario Description:

**Description:** Below ground installation of HDPE (Iron Pipe Size & Tubing) pipeline. HDPE (IPS & Tubing) is manufactured in sizes (nominal diameter) from ½-inch to 24-inch; typical practice sizes range from 2-inch to 8-inch. Construct 1 mile (1,320 feet) of trunk. Class 150 (SDR 13.5-16) HDPE pipe is manufactured into smooth wall pipe with a minimum 2 feet of ground cover. The unit is weight of pipe material in pounds. 1,320 feet (150 ft) HDPE weighs 4.024 lb/ft, or a total of 5,312 pounds. Appurtenances include fittings, valves, control boxes, risers, and other equipment, and are included in the cost of pipe material (additional 10% of pipe material quantity).
### Scenario Worksheet

<table>
<thead>
<tr>
<th>Information Type</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region</td>
<td>Appalachian</td>
</tr>
<tr>
<td>State</td>
<td>North Carolina</td>
</tr>
<tr>
<td>Discipline Group</td>
<td>Water Management Engineering</td>
</tr>
<tr>
<td>Practice Code/Name</td>
<td>430 - Irrigation Pipeline</td>
</tr>
<tr>
<td>Scenario ID</td>
<td>6</td>
</tr>
<tr>
<td>Scenario Name</td>
<td>PVC (Plastic Irrigation Pipe) ≤ 8”</td>
</tr>
<tr>
<td>Scenario Description</td>
<td></td>
</tr>
</tbody>
</table>

**Before Practice Situation**
Pipeline installed to convey and/or distribute water to irrigation systems or reservoirs, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

**After Practice Situation**
Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

### Cost Summary:

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Scenario Cost</th>
<th>Scenario Cost/Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>$1,889.01</td>
<td>$1.43</td>
</tr>
<tr>
<td>Equipment/Installation</td>
<td>$1,333.20</td>
<td>$1.01</td>
</tr>
<tr>
<td>Labor</td>
<td>$896.16</td>
<td>$0.68</td>
</tr>
<tr>
<td>Mobilization</td>
<td>$185.20</td>
<td>$0.14</td>
</tr>
<tr>
<td>Acquisition of Technical Knowledge</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Foregone Income</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$4,303.57</strong></td>
<td><strong>$3.26</strong></td>
</tr>
</tbody>
</table>

### Cost Details:

#### Materials

<table>
<thead>
<tr>
<th>Component ID</th>
<th>Component Name</th>
<th>Component Description</th>
<th>Unit</th>
<th>Unit Price ($/unit)</th>
<th>Quantity</th>
<th>Cost</th>
<th>Component Justification</th>
<th>Quantity Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1323</td>
<td>Pipe, PVC, dia. &lt; 18&quot;, weight priced</td>
<td>Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe material for pipes with diameters less than 18&quot;. Materials only.</td>
<td>Pound</td>
<td>$1.39</td>
<td>1,236</td>
<td>$1,889.01</td>
<td>1359 lbs</td>
<td>(0.936 lbs/ft * 1320 ft) * 1.10</td>
</tr>
</tbody>
</table>

#### Equipment/Installation

<table>
<thead>
<tr>
<th>Component ID</th>
<th>Component Name</th>
<th>Component Description</th>
<th>Unit</th>
<th>Unit Price ($/unit)</th>
<th>Quantity</th>
<th>Cost</th>
<th>Component Justification</th>
<th>Quantity Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>53</td>
<td>Trenching, Earth, 12” x 48”</td>
<td>Trenching, earth, 12&quot; wide x 48&quot; depth, includes equipment and labor for trenching and backfilling</td>
<td>Foot</td>
<td>$1.01</td>
<td>1320</td>
<td>$1,333.20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Labor

<table>
<thead>
<tr>
<th>Component ID</th>
<th>Component Name</th>
<th>Component Description</th>
<th>Unit</th>
<th>Unit Price ($/unit)</th>
<th>Quantity</th>
<th>Cost</th>
<th>Component Justification</th>
<th>Quantity Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>231</td>
<td>General Labor</td>
<td>Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training, e.g., hand, hand, ladder, concrete placement, flagger, etc.</td>
<td>Hour</td>
<td>$18.67</td>
<td>48</td>
<td>$896.16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Mobilization

<table>
<thead>
<tr>
<th>Component ID</th>
<th>Component Name</th>
<th>Component Description</th>
<th>Unit</th>
<th>Unit Price ($/unit)</th>
<th>Quantity</th>
<th>Cost</th>
<th>Component Justification</th>
<th>Quantity Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1139</td>
<td>Mobilization, medium equipment</td>
<td>Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.</td>
<td>Each</td>
<td>$92.60</td>
<td>2</td>
<td>$185.20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Practice and Scenario Description:

**Description:** Below ground installation of PVC (Plastic Irrigation Pipe) pipeline. PVC (PIP) is manufactured in sizes, nominal diameter from 0.5” to 24"; typical practice sizes range from 0.5" to 8". PVC (PIP) is manufactured in sizes, nominal diameter from 0.5" to 8"; typical practice sizes range from 0.5" to 8". Construct 1 mile (1,800 feet) of 6" Class 50 (SDR-81.0) PVC (PIP) with appurtenances, installed below ground and in a location of 3 feet of ground cover. The unit is weight of pipe in pounds. 1,320 feet of 6" Class 50 (SDR-81.0) PVC (PIP) weighs 0.936 lb/ft or 1,236 pounds. Additional includes couplings, fittings, air vents, pressure relief valves, manholes, manways, and valve boxes, and is accentuated in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements.

**Resource Concerns:** Inefficient Use of Irrigation Water; Inefficient Energy Use.

**Associated Practices:** 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

**Practice and Scenario Description:** Below ground installation of PVC (Plastic Irrigation Pipe) pipeline. PVC (PIP) is manufactured in sizes, nominal diameter from 0.5” to 24"; typical practice sizes range from 0.5” to 8”. Construct 1 mile (1,800 feet) of 6” Class 50 (SDR-81.0) PVC (PIP) with appurtenances, installed below ground and in a location of 3 feet of ground cover. The unit is weight of pipe in pounds. 1,320 feet of 6” Class 50 (SDR-81.0) PVC (PIP) weighs 0.936 lb/ft or 1,236 pounds. Additional includes couplings, fittings, air vents, pressure relief valves, manholes, manways, and valve boxes, and is accentuated in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements.

**Resource Concerns:** Inefficient Use of Irrigation Water; Inefficient Energy Use.

**Associated Practices:** 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.