• Support columns installed
  – 1100 grout columns and 575 stone columns completed
    (approx. as of June 30)
• Dewatering Program
• Water Treatment
• Waste Management
• Air Monitoring
Dewatering Program

- **Objective:** Maintain dry working conditions for liner, culvert installation

- **Methods:**
  - Isolate high flow areas with sheet piling (remove when done)
  - Trenches with pumping to lower water table (fill when done)
  - Well points where needed (remove when done)
  - 70-80 gallons per minute (available data)

- **Truck water to McDonald Farms for treatment**
Water treatment

- **Objectives:**
  - Treat dewatering liquids for safe discharge to stream
  - Meet discharge permit requirements

- **Methods:**
  - Solids settling and filtration (sediment removal)
  - Chemical precipitation (metals removal)
  - Biological treatment (nutrient removal)
  - Filtration (solids removal)
  - Discharge of treated water
  - Off-site disposal of solids

- **Results:**
  - 9 million gallons pumped and treated (approx.)
  - All discharge limits met
Water Treatment

- All permit requirements met
- Treatment results:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Permit Limit</th>
<th>Effluent Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>Microgram/liter</td>
<td>3.0</td>
<td>&lt;0.6</td>
</tr>
<tr>
<td>Lead</td>
<td>Microgram/liter</td>
<td>13,005</td>
<td>0.6</td>
</tr>
<tr>
<td>Selenium</td>
<td>Microgram/liter</td>
<td>4.6</td>
<td>3.3</td>
</tr>
<tr>
<td>Total inorganic nitrogen</td>
<td>Milligram/liter</td>
<td>10</td>
<td>8.4</td>
</tr>
<tr>
<td>E. Coli</td>
<td># CFU/100 milliliter</td>
<td>126-252</td>
<td>&lt;1-2</td>
</tr>
</tbody>
</table>

See data reports for complete results
• Waste materials
  – Objectives:
    • Excavate wastes as needed to construct drainage system
    • Safely manage excavated material and dispose of solid wastes appropriately
  – Waste materials found:
    • General municipal trash
    • Woody debris
    • Ash (municipal waste and coal)
    • Construction debris – includes asbestos-containing materials
    • Metals-contaminated soils
  – Solid wastes disposed of at Denver Arapahoe Disposal Site (110,000 cy)
  – Clean soils stockpiled on site (9000 cy)
  – Approximately 75% of materials handling completed
Air Monitoring

- Objective: Measure air quality
- Methods:
  - Visual dust monitoring
  - Particulate monitoring (PM10 – Denver, PM2.5 – EPA)
  - Metals levels (lead, arsenic - Denver)
  - Asbestos monitoring
  - Methane monitoring for worker protection
  - VOC monitoring for worker protection
  - Odor monitoring
- Results
  - All standards met
  - See handout
- See data reports for complete results
• Questions?