Former ASARCO Smelter
El Paso, Texas

Landfill Design and Construction

Meeting with TCEQ/USEPA

May 6, 2011
Landfill Agenda

- Materials Balance
- PBA Constraints and Considerations
- Fines Pile Slope Evaluation
- Category 1 Landfill Discussion
  - Configuration
  - Design/Build
  - Schedule
- Class 3 Landfill Discussion
## Distribution of Solids and Solids Materials

<table>
<thead>
<tr>
<th>Source</th>
<th>Total Volume of Material CY</th>
<th>Possible Class 3 or Beneficial Reuse Volume CY</th>
<th>Category I Cell Disposal Volume CY</th>
<th>Beneficial Reuse Options Being Considered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Category I Cell 3</td>
<td>22,500¹</td>
<td>0</td>
<td>22,500</td>
<td>None</td>
</tr>
<tr>
<td>Slag Fines Pile</td>
<td>130,000</td>
<td>0³</td>
<td>0</td>
<td>Close fines pile in-place</td>
</tr>
<tr>
<td>Parker Brothers Arroyo Slag</td>
<td>1,200,000 (estimate)</td>
<td>600,000³</td>
<td>0</td>
<td>Potential use as soil/slag surface layer for new waste cell, site cover material, on-site erosion control or possible TxDOT reuse.</td>
</tr>
<tr>
<td>IA-4 – Material Near BNSF</td>
<td>4,000²</td>
<td>0</td>
<td>4,000</td>
<td>May be impractical to remove this material. Insitu treatment will be evaluated.</td>
</tr>
<tr>
<td>IA 11 – Former Landfill Material East of I-10</td>
<td>43,000</td>
<td>10,000</td>
<td>33,000</td>
<td>Construction debris could be used as on-site fill material. Volume includes small piles.</td>
</tr>
<tr>
<td>Demolition (assumed)</td>
<td>120,000</td>
<td>85,000</td>
<td>35,000</td>
<td>Construction debris could be used as on-site fill material.</td>
</tr>
<tr>
<td>Plant Facility Removals</td>
<td>45,500³</td>
<td>0</td>
<td>45,000</td>
<td>Includes volume allowances for Acid Plant, Converter Building, Reverb Area, PCB Area, etc.</td>
</tr>
<tr>
<td>Boneyard Area</td>
<td>50,000</td>
<td>0</td>
<td>50,000</td>
<td>Removal volume to be refined after field work complete.</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,615,000</td>
<td>695,000³</td>
<td>190,000</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
(1) 22,500 CY of waste to be relocated from cell 3 to eliminate the waste mounding.
(2) This material is located under the BNSF Railroad and may be impractical to remove.
(3) To be determined after field work complete.
Existing Drainage Conditions
Former El Paso Smelter – End Vision
PBA End Vision Close Up

Cap Fines Pile

New Category 1 Landfill

Stack Memorial
Fines Pile Drainage Pattern

- Existing low points where ponding and infiltration occurs
Former El Paso Smelter – Cell Locations

- **Fines pile Close in-place**:
- **Category 1 landfill**: Planned to be 200,000 yd³ with possible expansion to 250,000 yd³ by raising fill height.
- **Alternative class 3 cell**:
- **Cells 1, 2, and 3**:

**LEGEND**
- Property boundary
- Existing slag fines pile
- Existing waste repository
- Proposed landfill cell

Scale: 1’ = 1,000’
New Category I Landfill Conceptual Plan
Conceptual Cross Section Thru New Category 1 Landfill
El Paso Smelter – Recommended Liner System: Side Slope

**Note:** Geomembrane = 60 mil textured HDPE or 40 mil textured LLDPE
El Paso Smelter – Recommended Liner System: Floor

Note: Geomembrane = 60 mil textured HDPE or 40 mil textured LLDPE
El Paso Smelter – Recommended Liner System: Floor at Leachate Collection Sump

Note: Geomembrane = 60 mil textured HDPE or 40 mil textured LLDPE
Cover System – Category I

Cover surface to be contoured and landscaped to blend into the surrounding environment.

1' SOIL/SLAG SURFACE LAYER
2' SITE SOIL
CATEGORY 1 WASTE
2' PROTECTIVE COVER
60 MIL HDPE GEOMEMBRANE
8" PREPARED SUBGRADE

CATEGORY 1 CELL
Category 1 Landfill Fill Control Procedures

- Accept only soils from Category 1 removal areas
- Place select materials as cushion layer on side-slopes
- Establish in-cell access ramp with disposed materials to save airspace
- Place excavated materials in horizontal lifts - compact
- Slope working area to a temporary sump during periods of potential rain
- Collect and manage water that accumulates in temporary sump and LCRS
- Cap outboard slopes as fill is raised
Class 3 Landfill

- Evaluate viable locations, evaluate and select
- Prepare grading plan
- Fill control procedures:
  - Accept only soils/debris from inert removal and demolition areas
  - Place materials (add soil to fill excessive voids) in horizontal lifts - compact
  - Slope working area to collection points or appropriately run-off during periods of potential rain
  - Manage any collected water
  - Cap outboard slopes as fill is raised
Class 3 Anticipated Section

Cover surface to be contoured and landscaped to blend into the surrounding environment.