Landfill Layout and Operation

Site layout

Access roads

– permanent main roads
– temporary haul roads
– good access in all weather
  – 22' wide, crowned for drainage
  – slopes
    7% for full truck
    10% for empty truck
Landfill Layout and Operation

• Equipment shelters
• Office/scale house or trailer
  – weight is required
  – waste screening (2-4% of vehicles)
• Soil stockpile area
• Site buffer/visual screen
• Leachate treatment
• Sediment pond
Landfill Layout and Operation

• Truck washing area
  – water accumulation in a depression
  – an actual rinse

• Drop-off areas
  – recyclables, HHW, white goods, tires, oil, car batteries
  – yard waste - possibly composting

• Construction and demolition debris
  – unlined section??
Fill Plan

• Daily cell - typically the amount of refuse received in one day and covered
  – Not to be confused with a larger cell
  – 4’-20’ high, 8’-12’ typical

• Orient working face to minimize wind
  – Placement of temporary litter control fence
Fill Plan

• Size working face to minimize at-site time to extent practical
  — ~20’ per vehicle

• Normal vs. wet vs. windy weather disposal areas
Daily Cover

• Protects Against:
  • wind blown debris
  • odor
  • animals

• Minimize the amount of cover needed
  • historically soil at a ratio of:
    • 4 yd$^3$ refuse/ 1 yd$^3$ soil
    • now 9:1 is more typical, includes scraping some off in the morning

• Stockpile cover for wet and freezing periods
  • excavate in areas of southern exposure
Alternative Daily Cover

- Foams which are sprayed on and last overnight
  - Posi-shell
- Compost
  - Mixed waste residual from a MRF
  - Yard waste
- Plastic sheet
  - one use
  - multiple use
- C&D fines (without wallboard)
Alternative Daily Cover

- Revenue generating material
  - contaminated soil
  - foundry sand
  - ash
  - auto shredder fluff
  - C&D fines

- Lime stabilized sludge

- Use soil as a fire break weekly
Plastic Sheets Pulled Over Refuse

• Sani-cover: vendor literature

• Lifecycle - 30 applications per panel

• claim 30 minute installation

• Must be held in place with soil, sandbags, tires

• One time use:
  
  – 4 mil film, punch holes in morning
Site Hydrology

• Run-on must be minimized through the use of diversion ditches

• Design for 25 year storm

• Manage water so minimum amount is contaminated
  – Temporary berms

• Phased construction to avoid stormwater accumulation

• Valving/berm to segregate clean and contaminated water

• Sediment ponds to treat clean runoff

• Test impounded water before release
Personnel

- scale attendant / record keeper
- equipment operators
  - compact refuse
  - Push refuse
  - haul cover?
- litter control
- traffic control
- manager
- mechanic/handyman
- site engineer - monitor fill plan
- miscellaneous
Personnel

2500 TPD Site:

- 1-traffic control
- 2-compactors
- 2-laborers
- 1-gate attendant
Refuse Density

- AUF – airspace utilization factor
- Allow 1200 - 1500 lb/yd³ initially
- This values allows for:
  - cover soil
  - settlement
Refuse Density

- Variables in Compaction
  - Lift thickness
  - Number of passes
  - Compactor weight

- Field test done under controlled conditions with 2000 tons of refuse
  - No C&D waste, sludge, soil covers

- Heavy vehicles generally achieved better compaction but not always

<table>
<thead>
<tr>
<th>4 passes</th>
<th>8 passes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1' lift - 1500 lb/yd³</td>
<td>1' lift - 1550 lb/yd³</td>
</tr>
<tr>
<td>2.5' lift - 1200 lb/yd³</td>
<td>2.5' lift - 1300 lb/yd³</td>
</tr>
</tbody>
</table>

Waste Age - Aug., 1994
Landfill Fires

Causes

• hot loads
• lightening
• cigarette butts
• hot equipment
• aeration due to wind
  • spontaneous combustion?
Landfill Fires

• Most occur on windward side slopes
• Spreading from burning grass
• Practices to minimize potential for fire:
  • good compaction
  • soil cover daily
  • load screening