Cost Estimating for RCRA
Financial Assurance

- A good cost estimate is a key link between an approved permit, plan, or remedy selection and the need to obtain adequate financial assurance.

- Many – if not most – facility cost estimates are believed to be inadequate both in their levels of detail and in their use of current pricing.

- Regulators need enhanced resources in order to review and evaluate facility cost estimates.
Cost Estimating for RCRA

Financial Assurance

- Regulatory Requirements
- Cost Estimating Resources
- Cost Estimating Basics
- Cost Estimating Examples
REGULATORY GUIDANCE

- 40 CFR 264.142 and 144
- 40 CFR 265.142 and 144
- OSWER Directive 9476.00-5
  (January, 1987)
- OSWER Directive 9476.00-6
  (November, 1986)
- Interim Guidance – RCRA Corrective Action
  (September, 2003)
REGULATORY REQUIREMENTS

- Based upon Closure & Post-Closure Plans
- Most Expensive Options
- Third-Party Costs
- Salvage Credits and Zero Economic Value
- Annual Updates
- Corrective Action Plans
Facility cost estimates are required for closures & post-closures

- Facility cost estimates shall be based upon closure & post-closure plans, whether permitted or interim status.
- Each activity listed in a permit or plan shall be accounted for and priced in the estimates.
- Post-closure maintenance usually – but not always – is based upon 30-year periods of performance.
Facility Cost Estimates Shall Reflect the Most Expensive Options

- Estimates shall reflect closure costs for each activity covered by the permits or plans.
- Estimates shall be predicated upon the assumption that all activities are to be closed concurrently.
- Estimates shall include the maximum permitted quantities and volumes.
- Estimates with onsite disposal pricing also should include offsite transportation and disposal options.
Facility Cost Estimates Shall Reflect Third Party Costs

- Estimates shall not be based upon the use of in-house resources even if available.
- Parent companies and subsidiaries shall not be considered third parties for estimating purposes.
- Market-based pricing which reflects outside contractor services should be used to develop the estimates.
Facility Cost Estimates Shall Preclude Salvage Credits and Zero Costs for Wastes Generated During Closure

- Potential salvage values – such as reusable drums or tanks – shall not be incorporated into cost estimate to offset costs
- Disposal costs for recycling of hazardous or non-hazardous materials with potential economic value shall not be assigned “zero” values
Facility Cost Estimates Shall be Updated Annually for Inflation and/or to Reflect Changed Conditions

- To account for inflation, either:
  recalculate estimates annually using current pricing; or multiply original estimate by an inflation factor

- If TSDF units are added, expanded or closed, cost estimates must be updated to reflect the changed conditions
Cost Estimates for Corrective Action

- Congress intended TSDFs to provide adequate financial assurance for corrective actions

- Cost estimates are necessary to determine the values of financial assurance required

- See “Interim Guidance on Financial Responsibility for Facilities Subject to RCRA Corrective Action”
Cost Estimating Resources

- CostPro parametric software and manual
- RACER parametric software with on-line help
- RSMeans cost references (manuals or CDs)
- Other cost estimate review resources
CostPro Software

- Developed by EPA in mid-1990’s and follows the detailed methodology of OSWER Directive 9476.00-6 (1986)
- Provides seventeen (17) basic models developed primarily for closure and post-closure activities
RACER Software

- Developed by USAF in early 1990’s for use by RPMs to estimate the costs of CERCLA and RCRA activities

- Provides approximately 100 parametric models – including key remediation technologies as well as many civil works activities, such as infrastructure construction and demolition
R.S. Means Cost References

- Provides a common database for both RACER and CostPro systems
- Includes thousands of line items
- Two complementary references for environmental line items
- Other references for civil works activities
Other Resources of Cost Estimate
Review Support

- Intra-office cost estimating expertise – such as a CERCLA counterpart
- Intra-office databases or prior case files of similar projects – RCRA and CERCLA
- Other state or Federal resources
- Outside contractors – without conflicts of interest - employed on an as-needed basis
Cost Estimating Basics

- Estimate Format
- Quantity Takeoff
- Production Efficiency
- Unit Pricing
- Total Cost
Estimate Format

- A Work Breakdown Structure (WBS) approach is the ideal method to organize the estimate

- A WBS is analogous to an outline for a thesis or term paper

- A WBS begins with major activities and adds increasing levels of detail as necessary
Drum Storage Closure WBS

- Inventory Drums
- Dispose of Drums
  - solids drums
  - liquids drums
- Decon Building
  - wash/rinse
  - sampling & analysis
- Health & Safety
  - levels of protection
  - planning & inspections
- Site Supervision
- Site Certification
Quantity Takeoff

- May be included in permit or specifications
- May be derived from plans or from known processes or activities
- May be based on other parameters (such as calculating the quantity of excavation crew hours using soil volume and production efficiency of excavator)
- Document basis of quantities employed
Production Efficiency

- The amount of time required to perform a task will affect the cost.

- Some production efficiencies – or hourly outputs – can be found in standard databases such as RSMeans.

- Some production efficiencies may be based upon either facility or regulatory experience with other projects.

- Document basis of production utilized.
Unit Pricing

- Most unit prices can be found in standard databases such as RSMeans or in office case files
- Unit prices are tied to production efficiencies – “faster” usually equates to lower cost and “slower” usually means higher cost
- For offsite T&D, it may be necessary to call other TSDF facilities for pricing
- Document basis of pricing
Total Estimated Cost

- RSMeans unit pricing usually is based upon subcontractor rates, including overhead and profit, and may be considered contract direct costs.

- In addition to contract direct costs, estimates should include contract indirect costs – also called third-party general contractor costs - such as site management, home-office G&A, and profit.

- In addition, the cost estimate should include design costs and contingencies, as necessary.
Cost Estimate Samples

- CostPro Example – Landfill Cap
- RACER Example – Pump & Treat
- Excel Example – Drum Storage Warehouse
Summary and Discussion