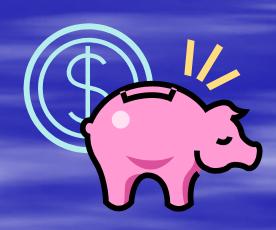
US ERA ARCHIVE DOCUMENT

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-ClosurePlans
- 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 inhouse 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 nonhazardous 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 postclosure 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



RCHIVE DOCUMENT

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 thirdparty 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