MANAGEMENT OF CONFINED DISPOSAL

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E2D2 Keywords: Technical Framework, Manual
Confined Disposal Facilities

• CDFs used because:
  – More economical for some projects
  – Most common option for material unsuitable for open water

• Regulated under CWA
  – discharge to US waters by definition
  – 404 permit
  – 401 State water quality certification

Confined Disposal Facilities

FACTORS:
• Operational considerations
• Engineering design
• Contaminant pathways and controls
• Long-term management
• Monitoring
Operational Considerations

• Method of filling
  – Hydraulic
  – Mechanical

• Frequency and duration of filling

• Surface water management

• Long-term management strategy
CDF Engineering Design

- Dike Design
- Sizing for Initial Storage and Solids Retention
- Outlet Weir Design

CDF Dikes

- Planning
  - Design life/ Total volume
  - Staged construction vs one-time construction
- Design
  - Geotechnical
  - Coastal (overtopping and erosion)
- Construction
  - Conventional earthwork
  - Special methods (soft foundations)
CDF Design Objectives

• Retain solids during placement by providing adequate ponded area and ponded volume for clarification
• Provide adequate volume storage for the project
• Contain contaminants
Concept of a dredged material settling basin

Concept of dredged material settling basin
Outlet Weir Design

• Structural Design
  – Long-term fill height
  – Flowrate
  – Flotation
• Weir crest length for effective withdrawal
• Ease of operation
• Drawdown after disposal
CDF Contaminant Pathways

- Effluent During Filling
- Surface Runoff
- Leachate to groundwater
- Direct uptake by plants/animals
- Volatilization to air

Evaluated using Upland (CDF) Testing Manual

CDF Pathway Controls

- Operational (During filling)
- Treatment of Discharges (Removal, Phase Transfer, or Degradation)
- Engineered Controls (Containment or Isolation)
- Site Management (After Filling)
Long Term Storage and Dewatering

- Prediction of consolidation/desiccation rates
- Site management for dewatering
- Dewatering equipment and operations
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Confined Disposal of Dredged Material

- Field investigations and sampling
- Site selection to avoid groundwater impacts
- Settling tests for evaluation of solids retention
- Consolidation tests for evaluation of long-term storage
- Design for solids retention
- Design for storage during filling
- Weir design
- Design of chemical clarification systems
- Prediction of dredged material consolidation
- Dredged material dewatering operations
- Design and construction of dikes
- Operation and management activities
- Long-term management plans

Design and Management of CDFs
ADDAMS Programs

- SETTLE - Initial Storage and Solids Retention
- PSDDF - Long Term Storage and Dewatering
- D2M2 - Planning for multiple sites