

# Energy *Solutions* Treatment Capabilities

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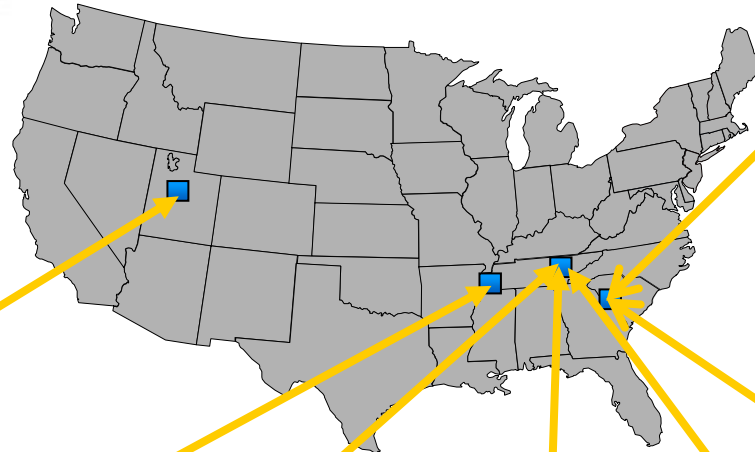
March 2009



# Facilities



- ❖ Six (6) Licensed Operations Facilities
- ❖ Two (2) Disposal Facilities
- ❖ Logistics Operations



**Clive Disposal**



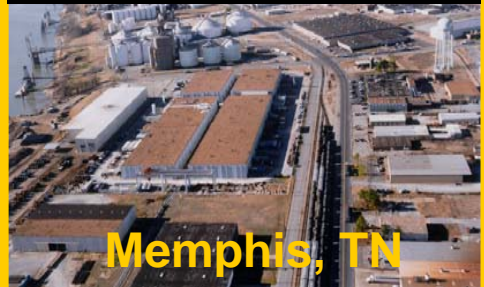
**Chem-Nuclear Disposal**



**Barnwell Processing**



**Memphis Operations**



**Gallaher Road Operations**



**Bear Creek Operations**



**Manufacturing Sciences**



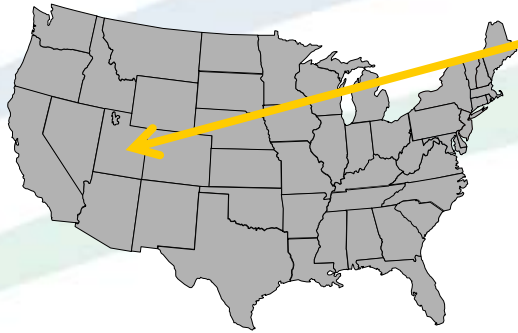
**Memphis, TN**

**Kingston, TN**

**Oak Ridge, TN**

**Oak Ridge, TN**

# Clive Disposal



- ❖ Class A Low-level Waste Disposal
- ❖ Mixed Low-level Waste Treatment
- ❖ Mixed Low-level Waste Disposal





# Clive Disposal

## Mixed Waste: Treatment and Disposal

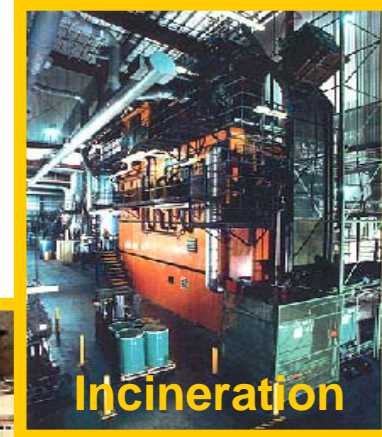
- ❖ Stabilization
- ❖ Solidification
- ❖ Vacuum Thermal Desorption (VTD)
- ❖ Macroencapsulation



# Bear Creek Operations



- ❖ Incineration
  - Two (2) Commercial Low-level Radioactive Units
  - Solids, Liquids, Oils, and Sludges
- ❖ Compaction
  - Largest LLW Compactor in U.S.
- ❖ Metal Melt Furnace
  - Produce 10,000 Kg Shield Blocks for High Energy Physics Labs
- ❖ RCRA Part B Mixed Waste Permit
- ❖ Eastern U.S. transfer station/ waste preparation for Clive Disposal



# Lead Casting/Recycling

- ❖ Outlet for contaminated lead recycling
- ❖ Products for sale to the nuclear industry:
  - DOT Type A Packages
  - Process Shields for Liners
  - Specialty Shields for Accelerators
  - Transfer Bells





# Specialty Services

- ❖ NTS Waste Certification Program
- ❖ Final Resin Dewatering and Solidification
- ❖ High Rad CW Water/Sludge Drying
- ❖ Source Solidification
- ❖ Repackaging Services



# RCRA Permit TNHW-129



- ❖ RCRA Temporary Authorization (TA) Permit TNHW-129 approved in April '08
  - First Mixed Waste shipment received on May 22, 2008
- ❖ TA currently includes two categories of mixed waste
  - Macroencapsulation of up to 4,800 cuft of radioactive elemental lead and hazardous debris per day
  - Sorting and Segregation of waste up to 4,800 cubic feet per day
- ❖ Current Projects
  - D008 Debris sorting/transload – Macro at Clive
  - Alpha LLW Debris –Macro to NTS





# RCRA Permit TNHW-129

## Under Permit Review:

### Treatment Technologies Include:

- ❖ Amalgamation
- ❖ Chemical Reduction
- ❖ Deactivation
- ❖ Neutralization
- ❖ Stabilization
- ❖ Carbon adsorption
- ❖ Chemical or electrolytic oxidation
- ❖ Wet air oxidation
- ❖ Chemical precipitation
- ❖ Debris washing