U.S. DEPARTMENT OF ENERGY

U.S. DOE Environmental Management

Update on Waste Management (and other EM Mission Units)

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ENVIRONMENTAL MANAGEMENT SITE-SPECIFIC ADVISORY BOARD CHAIRS MEETING

APRIL 18-19, 2012
PADUCAH, KENTUCKY

Discussion Outline

- Compliance update
- Recent program accomplishments
- FY 12 waste management priorities
- FY 13 waste management priorities
- Strategic goals related to waste and materials disposition
- Update on Blue Ribbon Commission Related Activities
- Update on DOE 435.1 revision
- Update on Asset Revitalization Initiative

EM Mission Units Work Closely Together to Ensure Mission Completion at Sites

- Office of Site Restoration (EM-10)
  - Soil and Ground Remediation
  - D&D & Facility Engineering
  - Compliance
  - *Champion for Oak Ridge, Richland, Portsmouth, Paducah*
- Office of Tank Waste and Nuclear Materials (EM-20)
  - Waste Processing
  - Nuclear Materials Disposition
  - Waste Treatment Plant/Office of River Protection
  - *Champion for Savannah River, Office of River Protection*
- Office of Waste Management (EM-30)
  - Disposal Operations
  - Disposition Planning and Policy
  - Packaging and Transportation
  - *Champion for Idaho, Carlsbad/WIPP, LANL, Other NNSA sites, West Valley, Other Small sites*

Compliance Update

- EM cleanup activities are currently governed by approximately 45 enforceable agreements with federal and state regulators
- In FY 2012, EM expects to meet 100% of its approximately 180 enforceable-agreement milestones
- Based on the President's budget request, EM also expects to meet all of its approximately 120 FY 2013 enforceable-agreement milestones while continuing to make significant progress toward key cleanup goals
- EM is currently analyzing the potential compliance impacts of various funding scenarios in FY 2014 and beyond.

FY2011 and FY2012
Waste Management Accomplishments

- In 2011, continued progress in disposition of transuranic (TRU) wastes
  - Completed 10,000 shipment to WIPP
  - Initiated use of TRUPACT-III shipping cask
  - Completed 1,040 shipments of TRU waste to WIPP, resulting in over 7,300 m^3 disposed
  - Removed all legacy TRU waste from three small quantity sites
- Optimized low level and mixed low level waste disposal activities throughout the complex
  - At Nevada, began operations at new mixed waste disposal facility (January 2011)
  - Disposed of over 50,000 m^3 of waste at Nevada, while reducing cost of operations
- Published draft GTCC LLW Disposal EIS
- Negotiated framework agreement with State of New Mexico, prioritizing removal of combustible above grade TRU waste from Los Alamos National Lab
- Published first waste incidental to reprocessing determination, pursuant to DOE Order 435.1 (regarding West Valley melter)
- Approved Waste Determination on SRS F Tank Farm and began closure of Tanks18 & 19
- Initiated plutonium oxide processing at SRS for disposal at WIPP

FY 12 Waste Management Priorities

- Closure of Tanks 18 and 19 at SRS
- Start up and treatment of sodium bearing waste at Idaho
- Resumption of retrieval operations in Advanced Mixed Waste Treatment Project
- Optimizing TRU waste shipments to WIPP
- Implementing LANL Framework Agreement and increasing shipments of above-ground TRU waste from LANL
- Completing remediation and repackaging of legacy TRU waste at Savannah River Site
- Complete removal of legacy RH TRU from an additional small quantity site
- Continued packaging of RH TRU wastes at Idaho and Argonne

More FY 12 Waste Management Priorities

- Shipment of U^{233} material to Nevada for storage and future programmatic use; completing planning to support direct disposal campaign of U^{233} CEUSP material in future; and, development of Phase 2 processing strategy for balance of U^{233} inventory
- Continued optimized LLW and MLLW disposal operations at Nevada, anticipating 1.2 million cubic feet
- Issue Hanford's final Tank Closure Waste Management EIS and Records of Decisions
- Support Department's response to recommendations of the Blue Ribbon Commission
- Share draft revision to DOE Order 435.1, *Radioactive Waste Management,* for public input

FY 13 Waste Management Priorities

- Complete treatment of sodium bearing waste
- Implement the LANL Framework Agreement, increasing above grade TRU shipments and submitting below-grade TRU strategy
- Optimize TRU waste shipments to WIPP
  - LANL, Idaho, Savannah River
- Begin shipment of U^{233} CEUSP material for direct disposal
- Continue Phase 2 planning for U^{233} processing
- Continue optimized LLW and MLLW disposal operations at Nevada
- Publish final GTCC LLW Disposal EIS
- Design sludge processing facility at Oak Ridge

Other Waste & Materials Disposition Updates

- Development of strategy for potential decontamination and recycling of nickel from gaseous diffusion plants
  - Portsmouth site contract published request for expressions of interest in March 2012, seeking industry input on technical and acquisition strategies
  - Future policy considerations will be informed by responses
- Excess Uranium management strategies
  - Bartering continues to support Portsmouth D&D activities under current Secretarial determination (through calendar year 2013)
  - DOE actively engaged with industry on possible enrichment of some tails to support DOE mission needs
- Mercury storage
  - EIS was published in January 2011. Additional NEPA review is planned.
  - The schedule for development of the storage facility is to be determined.

Goals Related to Waste Management

- Goal: Reduce the life cycle cost and risks of nuclear legacy cleanup
  - Objective: Disposition radioactive waste and materials
  - Develop a strategy for recycling nickel for unrestricted release and brief DOE leadership on proposed strategy
  - Develop preferred alternative for the disposal location(s) for Greater-than-Class C low level radioactive waste and DOE GTCC-like LLW
  - Develop a corporate strategy for disposition of defense high level waste that incorporates the Department's expertise with geologic repositories and considers the recommendations of the Blue Ribbon Commission

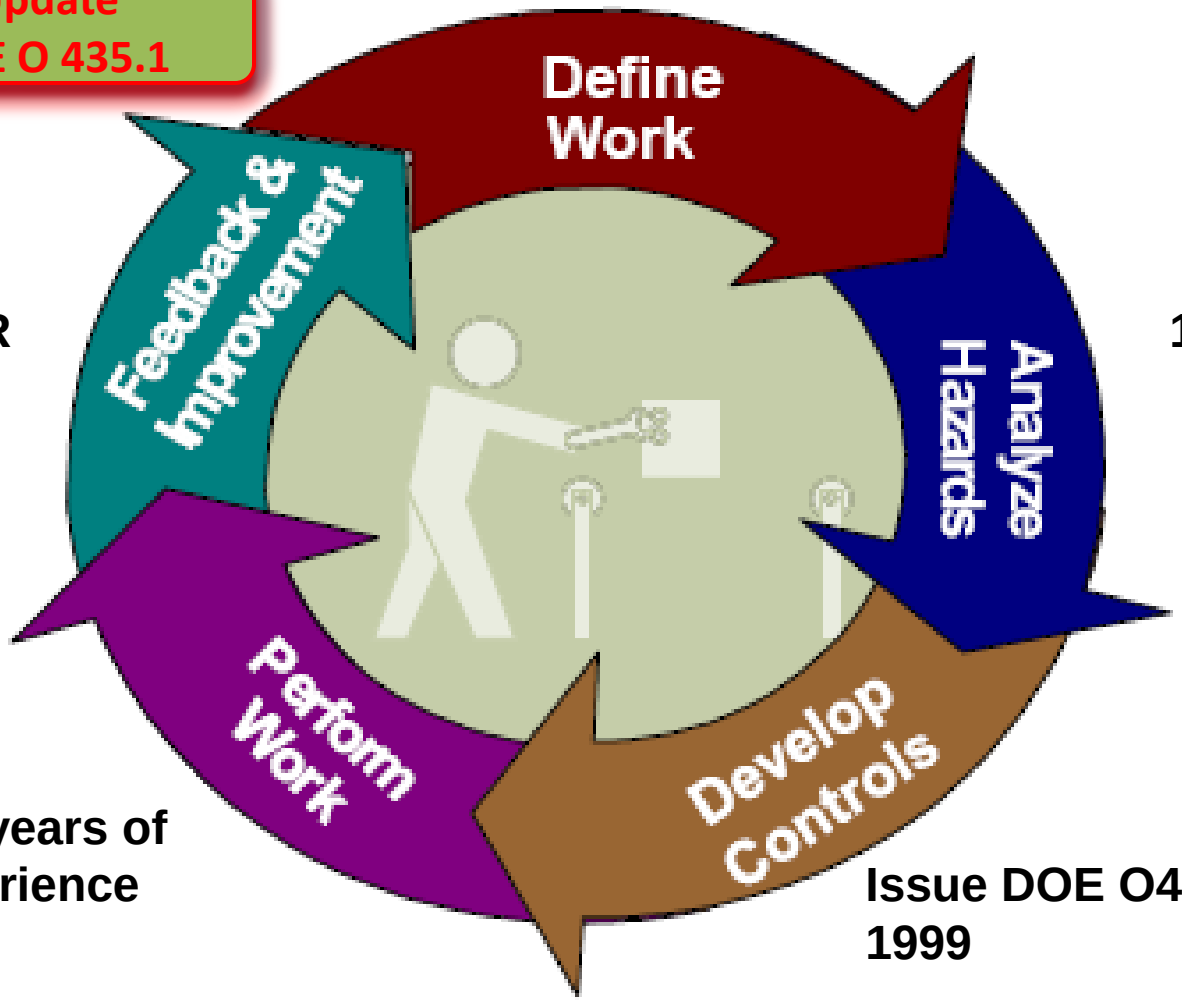
Update on Blue Ribbon Commission-Related Efforts

- In response to the Blue Ribbon Commission Report, issued in January, the Secretary established a multi-tier, DOE task force to evaluate the recommendation and develop a strategy
- EM is fully engaged and supporting this task force
- The draft strategy is under development and will be provided to Congress in July 2012

Update of DOE 435.1, Continuing the ISMS Feedback Loop

Update DOE O 435.1

DNFSB 94-2



2010 CWR

1996 CWR

>10 years of experience

Issue DOE O435.1 1999

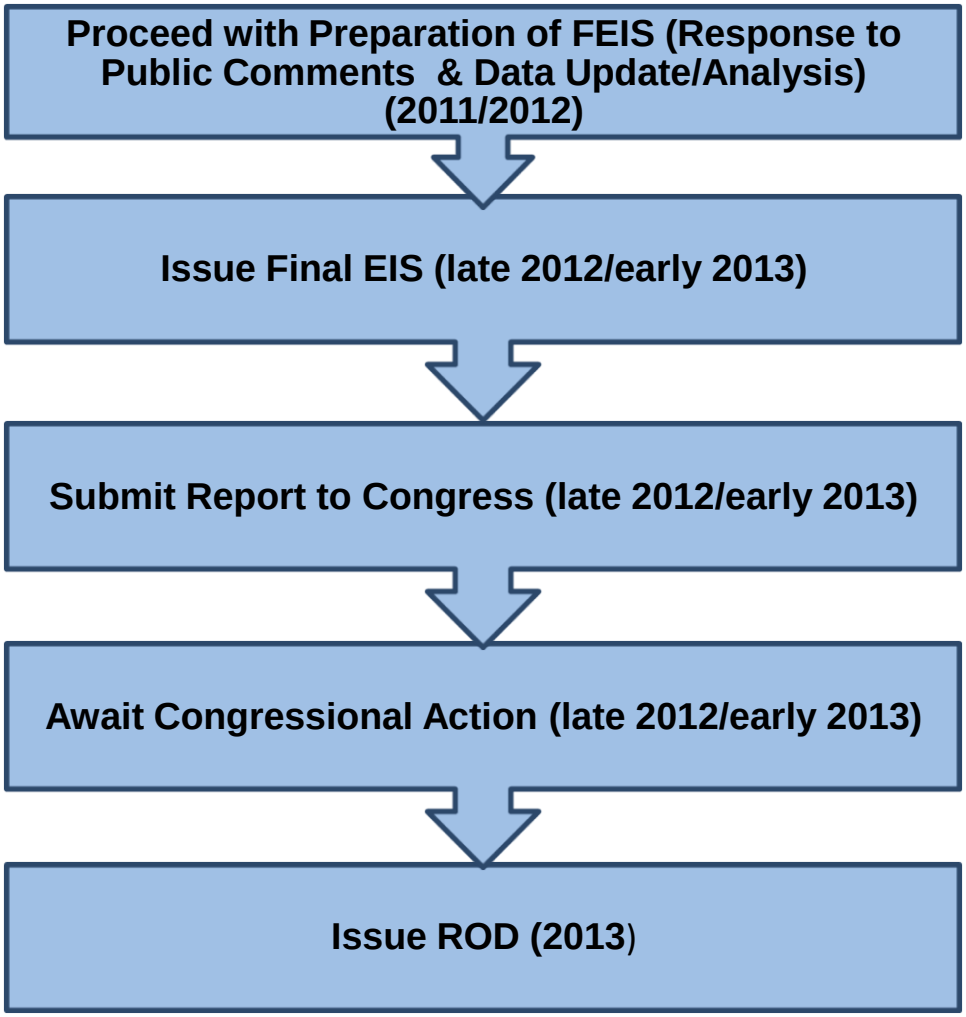
Next Steps in DOE Order 435.1 Update

- Fall/Winter 2011
  - Complete technical updates and first draft of new Technical Standard
  - DOE General Counsel review
  - Informal cross-PSO and Field review
- Late Spring 2012
  - Continue discussions with stakeholders
  - Release updated DOE O 435.1 for public review
- Summer 2012
  - Formal DOE review through RevCom
- Winter 2012
  - Release final DOE 435.1 for use across the complex
  - Begin outreach and training to DOE and contractor staff

Greater-than-Class C LLW Disposal

- DOE is responsible for GTCC LLW disposal in a facility licensed by NRC.
- On February 25, 2011, DOE issued Draft GTCC EIS and completed public comment period on June 27, 2011.
  - Final EIS expected in late 2012.
- Total GTCC inventory is ~12,000 cubic meters
  - Includes activated metals, sealed sources and other waste.
  - Includes both commercial GTCC wastes and similar DOE wastes without a disposal path.
- Proposed disposal methods: deep geologic repository, intermediate depth borehole; enhanced near-surface trench and above-grade vault.
- Proposed Disposal Locations: DOE sites (Hanford, Idaho, Los Alamos, WIPP/WIPP vicinity, Nevada, Savannah River) and generic commercial.
- Before selecting GTCC LLW disposal site, DOE must submit a Report to the U.S. Congress and await Congressional action.

Path Forward for GTCC EIS



Update on Asset Revitalization Initiative (ARI)

- ARI is a DOE-wide effort to advance beneficial reuse of its unique and diverse mix of assets, including land, facilities, infrastructure, equipment, technologies, natural resources, and a highly skilled workforce.
  - Promotes a more efficient business environment to encourage collaboration between public and private resources.
  - Maximize benefits to achieve energy and environmental goals as well as to stimulate and diversify regional economies.
- DOE ARI Implementation Office established:
  - Developing list of potentially available buildings and land
  - Identifying available intellectual property
  - Working on streamlined processes and standard techniques
  - Promoting collaboration with government, industry and communities

More on ARI

- Asset Revitalization Workshop for DOE, DOE contractors and community reuse organizations – June 13-14 in Oak Ridge TN
- EM evaluating property transfer requests at East Tennessee Technology Park and Hanford

In Closing….

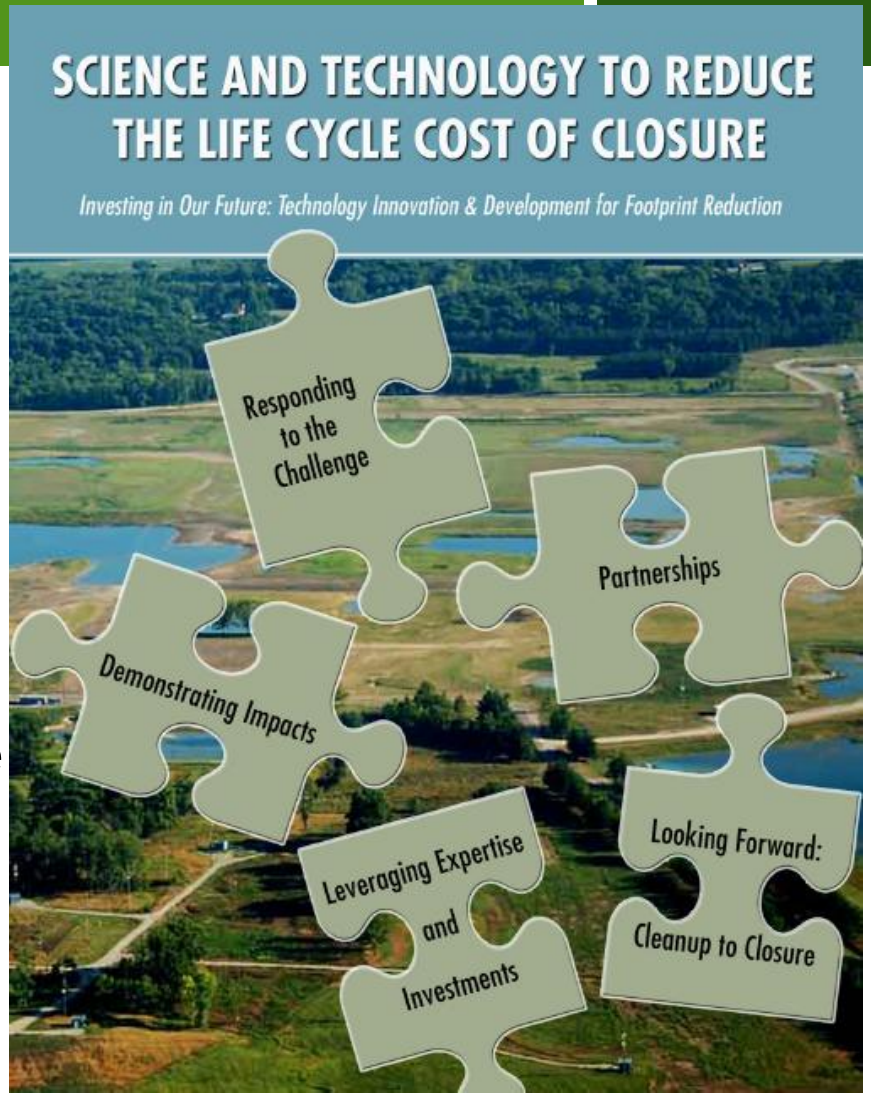
- The recent organization strengthens the program's ability to support and achieve its goals – especially in the area of waste management.
- EM continues to make progress toward disposition of its legacy wastes, while identifying ways to reduce project costs.
- EM will continue to work with its stakeholders – especially the Site-Specific Advisory Boards – to discuss and refine our plans
- Our ability to work together to optimize our cleanup and waste management strategies is as critical as ever, in light of the fiscal challenges we face

Additional Detail/Backup

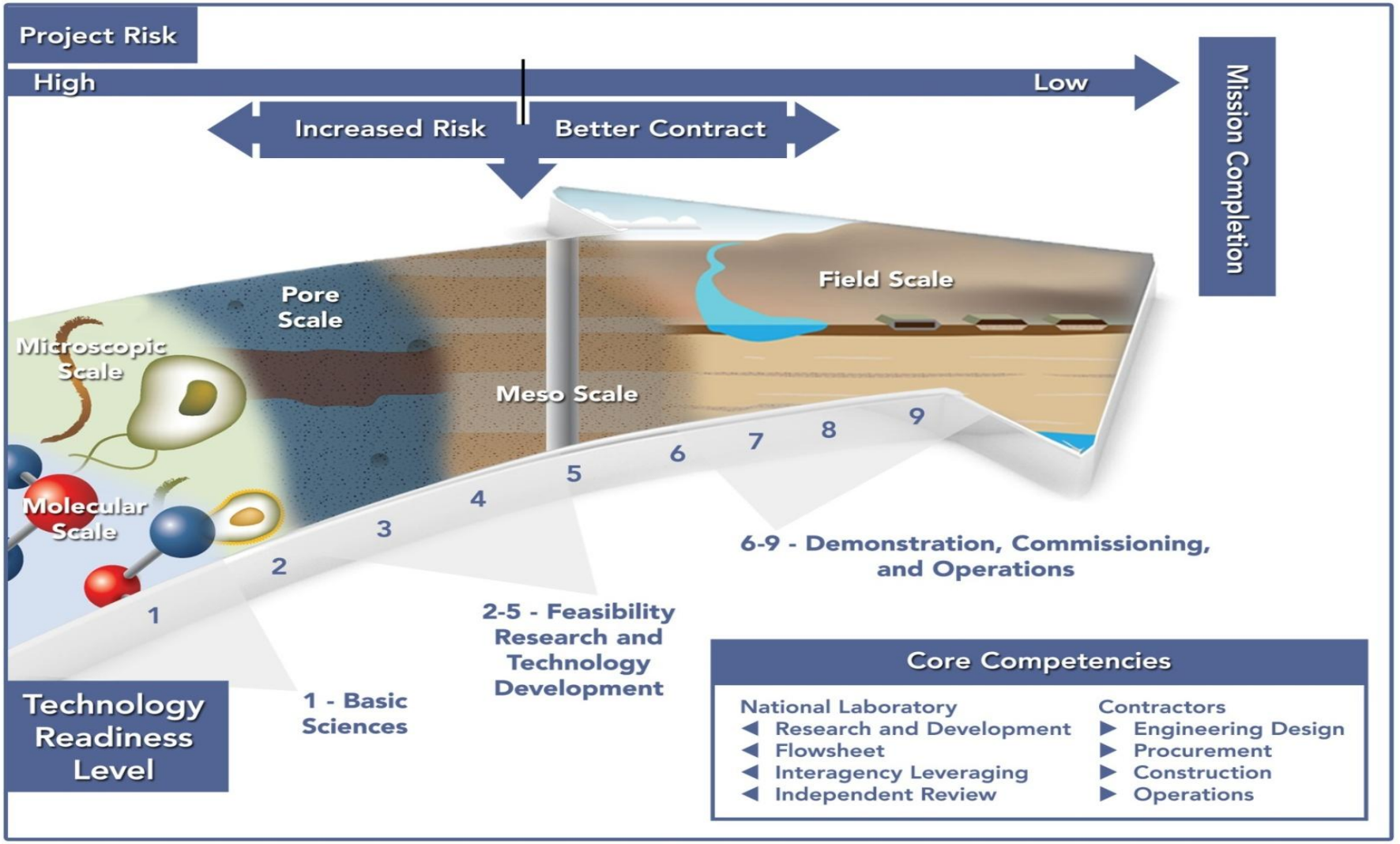
EM Technology Efforts

This plan outlines necessary investments and projected returns through technology programs that address critical EM challenges

- ✓ Waste processing targets saving $18-30B through accelerated tank closure
- ✓ Groundwater & Soils targets saving $10B by providing transformational remediation strategies
- ✓ D&D could save $4B through innovative building disposition
- ✓ Nuclear materials could save $1B through development of processes to reduce the number of canisters

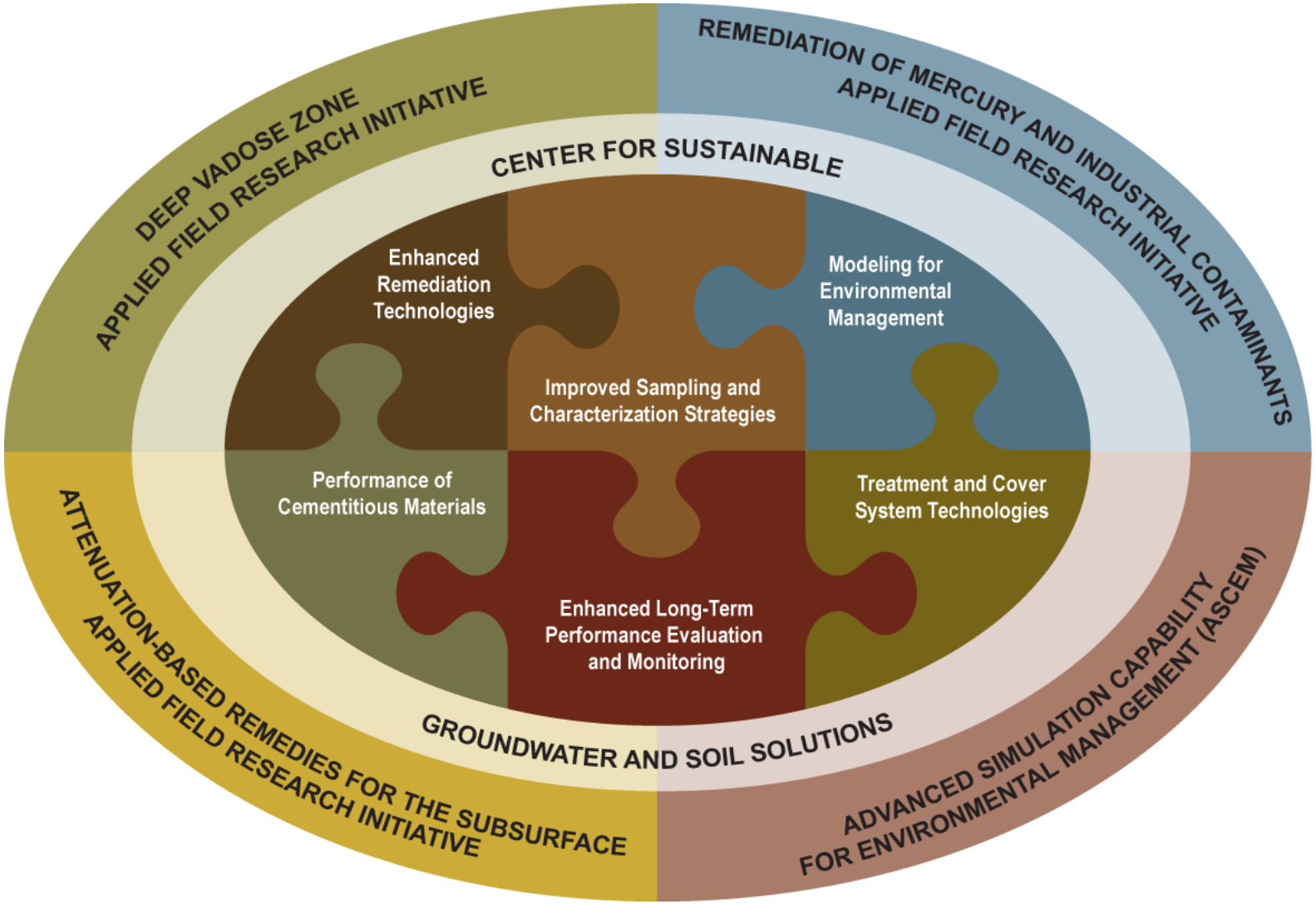


Technology Maturation Vision



Collaborative Technology Strategy

Soil and Groundwater Remediation Technology Programs



Tank Waste Management Technology Development Program

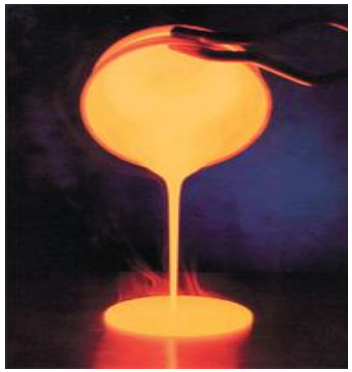
- EM's TDD initiatives will focus on integrated systems research and development to enable more effective and efficient treatment of tank waste.
- Goal: Reduce tank waste mission lifecycle by one third.

EM Scope: Safely store ~90 million gallons of liquid radioactive waste in 228 underground tanks; and retrieve, treat, and solidify waste for safe disposal.

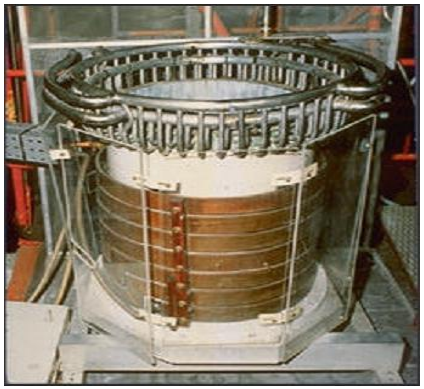
Current approach is estimated to require ~20 years to complete at Savannah River Site (SRS) and ~35 years at Hanford .

Outcome-Based Initiatives:

- Develop next generation waste processing technologies to increase throughput and reduce life-cycle cost
- Decrease waste processing technical risk through predictive processes and science and engineering
- Develop enhanced tools and methods to enable risk-informed tank retrieval and closure

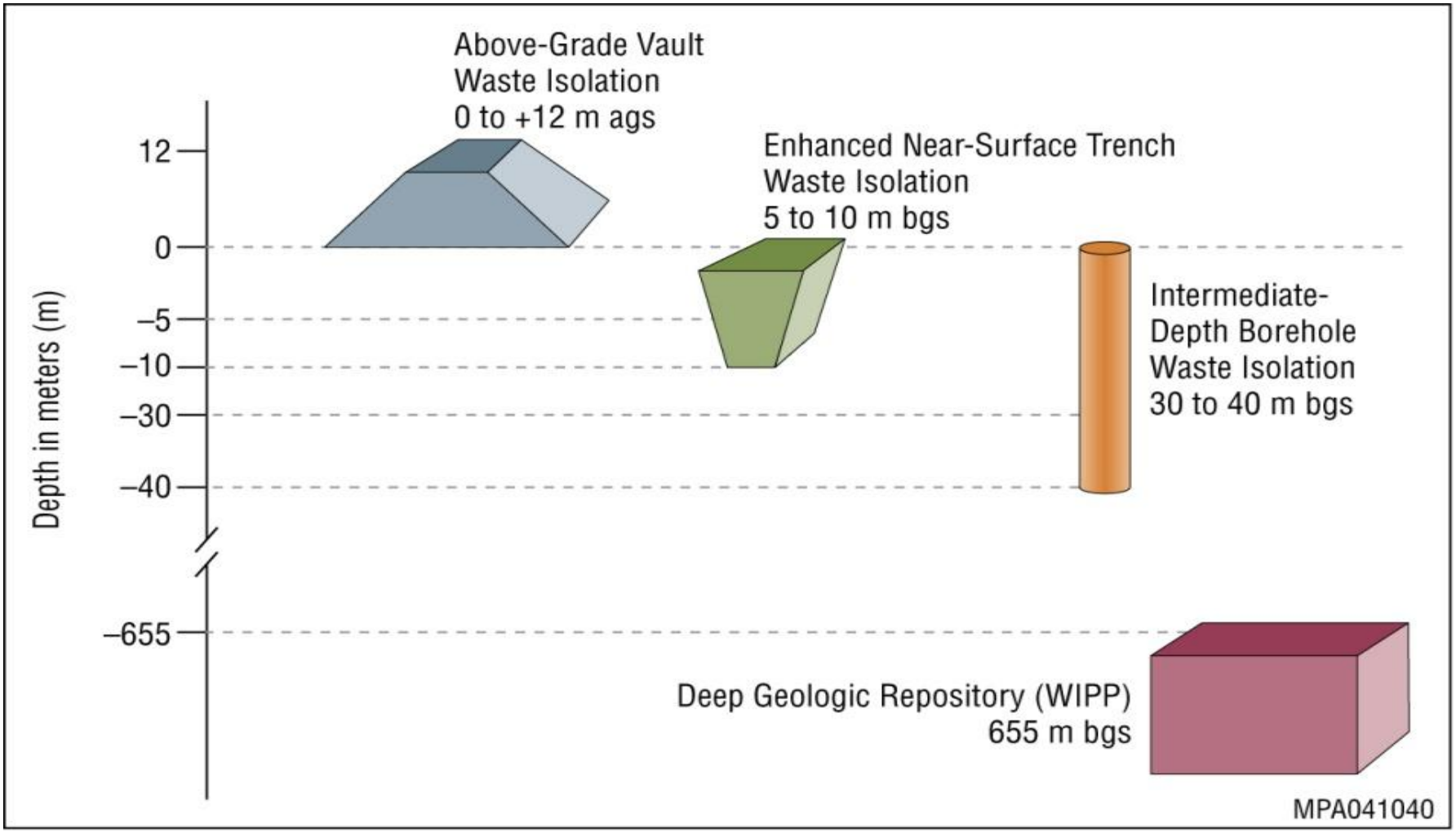


Advanced Glass Formulations



Cold Crucible Induction Melter

GTCC Proposed Design Alternatives



Proposed GTCC Disposal Locations

- Six DOE sites with existing radioactive waste disposal operations and federal land in the WIPP vicinity
- Generic commercial facilities in four NRC regions across the U.S. (Region I-Northeast, Region II-Southeast, Region III-Midwest, and Region IV-West)