



U.S. DEPARTMENT OF **ENERGY**

WM Symposia 2012

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EM *Environmental Management*

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

EM Mission

“Complete the safe cleanup of the environmental legacy brought about from five decades of nuclear weapons development, production, and Government-sponsored nuclear energy research”

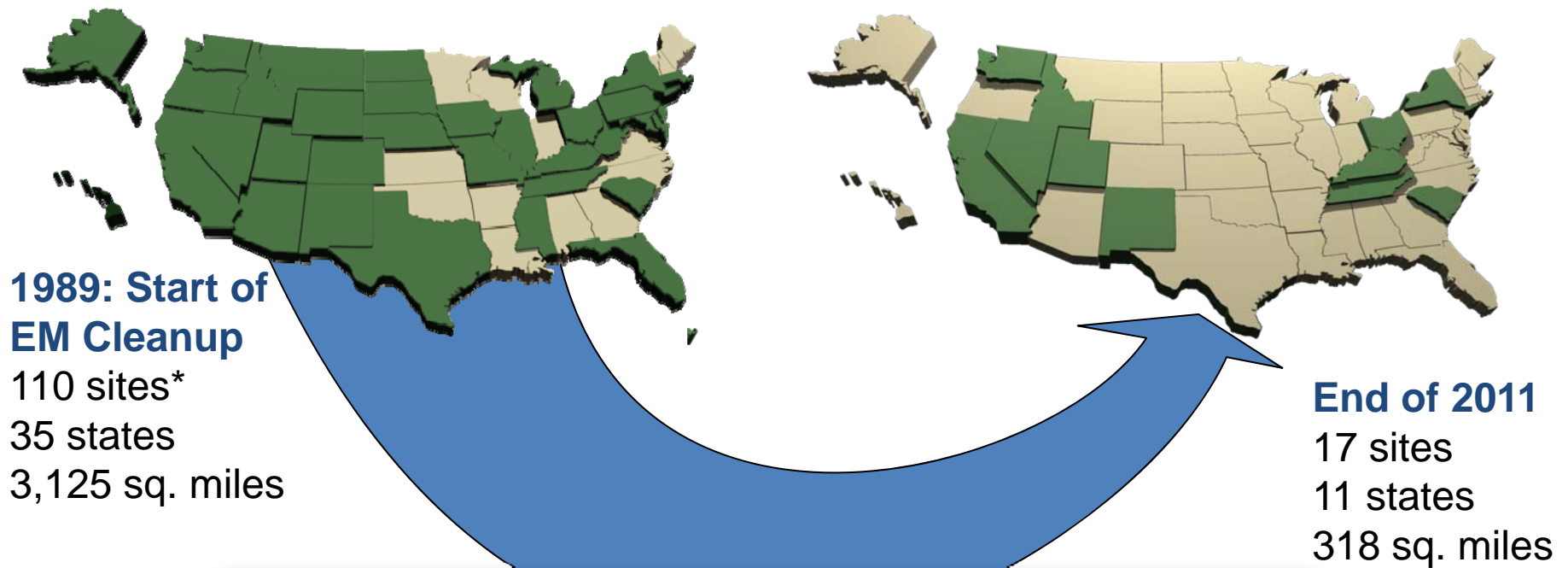
- From a legacy of weapons production to the world’s largest environmental cleanup program
- Operating in the world’s most complex regulatory environment
- EM clean-up enables DOE to maintain ongoing operations and other critical missions (NNSA/SC) while achieving compliance with governing environmental laws



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Progress to Date and Challenges Ahead



- The program's toughest challenges are still ahead, including processing liquid tank waste and deactivating and decommissioning a large number of facilities.
- These challenges require innovative technical solutions and scientific approaches.



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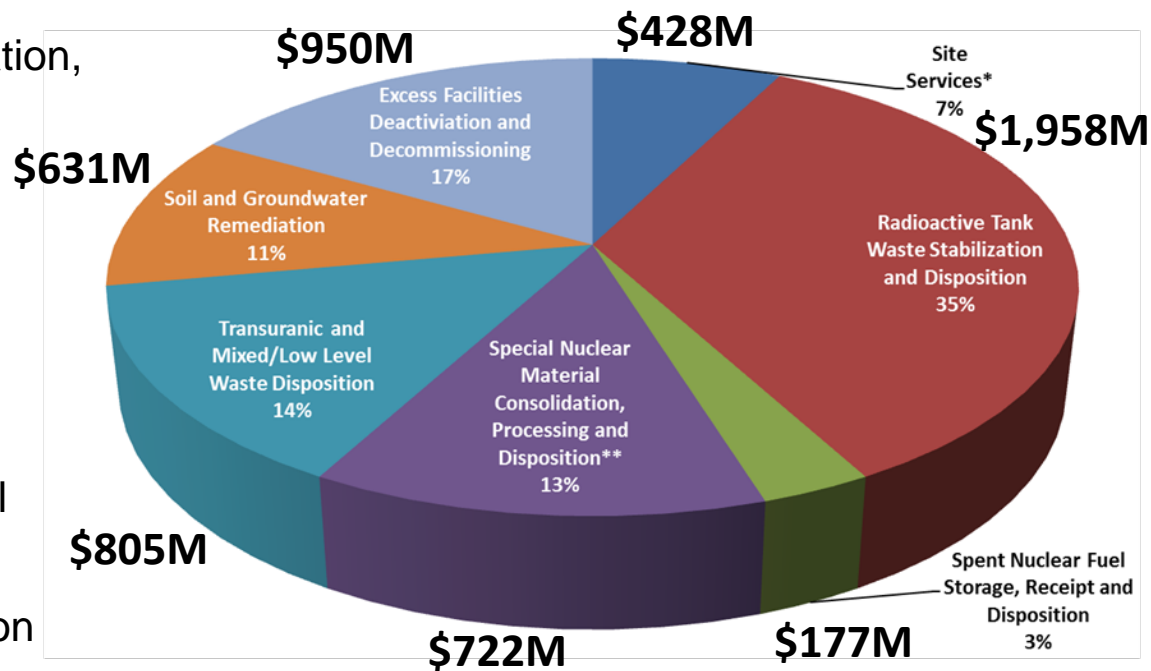
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EM Program Priorities & FY 2013 Budget

Maintain a safe, secure, and compliant posture in the EM complex

- Radioactive tank waste stabilization, treatment, and disposal
- Spent (used) nuclear fuel storage, receipt, and disposition
- Special nuclear material consolidation, processing, and disposition
- Transuranic and mixed/low-level waste disposition
- Soil and groundwater remediation
- Excess facilities deactivation and decommissioning (D&D)

FY 2013 Budget Request - \$5.65B



* Includes Program Direction, Program Support, TDD, Post Closure Administration and Community and Regulatory Support

** Includes Safeguards and Security

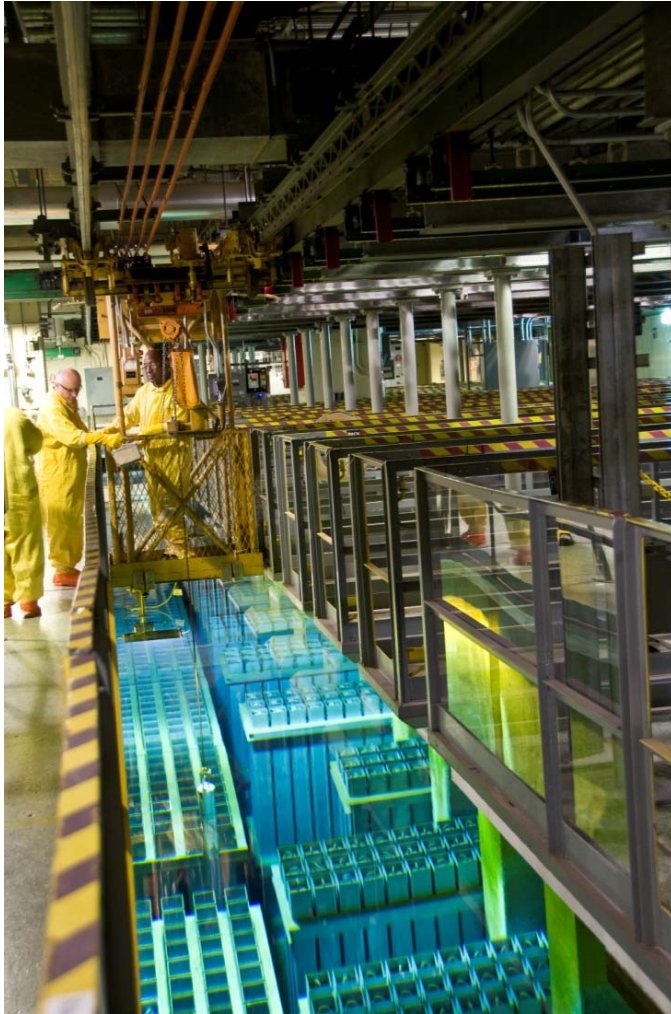


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FY 2013 budget supports major cleanup accomplishments in all areas of EM's cleanup mission



- **Tank Waste:** Close 2 High Level Waste tanks
- **Nuclear Materials:** Package over 20,000 metric tons of depleted and other uranium
- **Soil and Groundwater:** Complete remediation on over 100 release sites
- **Solid Waste:** Disposition over 9,000 cubic meters of transuranic waste from inventory
- **Excess Facilities:** Deactivate and decommission over 75 facilities



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EM Program Goals & Achievements



Goal 1:
Improve
safety and
quality
performance



Goal 2:
Reduce the
life cycle
cost and
risks of the
nuclear
legacy
cleanup



Goal 3:
Improvement
of project,
budget, and
contract
management



Goal 4:
Execute the
EM Mission
in a
sustainable
manner



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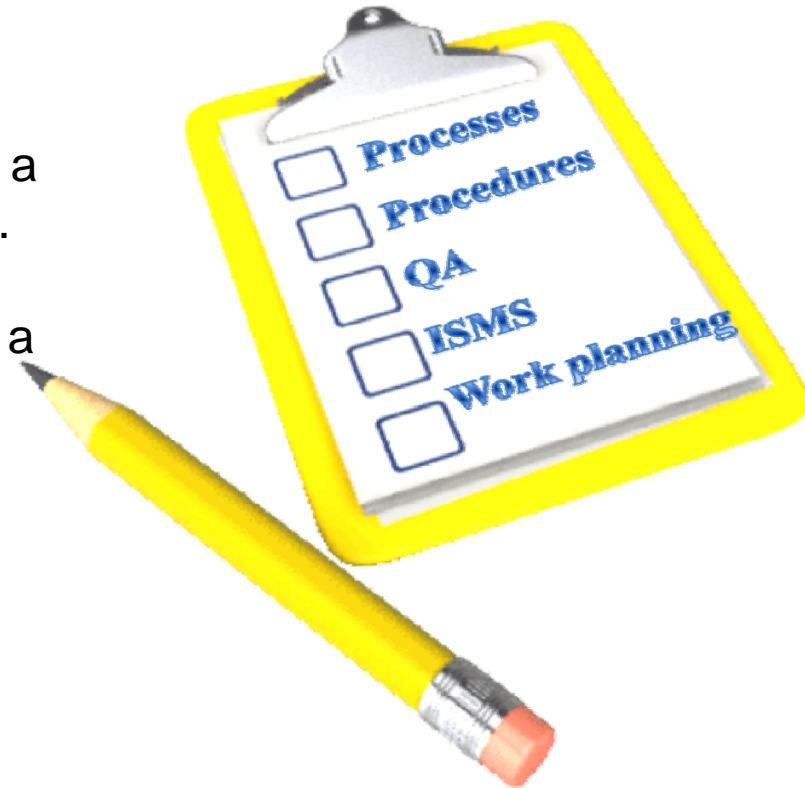
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Goal 1: Improve safety, security and quality assurance towards a goal of zero accidents, incidents, and defects

SAFETY



- Safety is a DOE core value—long-term experience in the nuclear field has shown that a safe workplace is also a productive workplace.
- EM is committed to conducting quality work in a safe and secure manner and will improve its safety performance through ongoing efforts to develop a more robust safety culture.

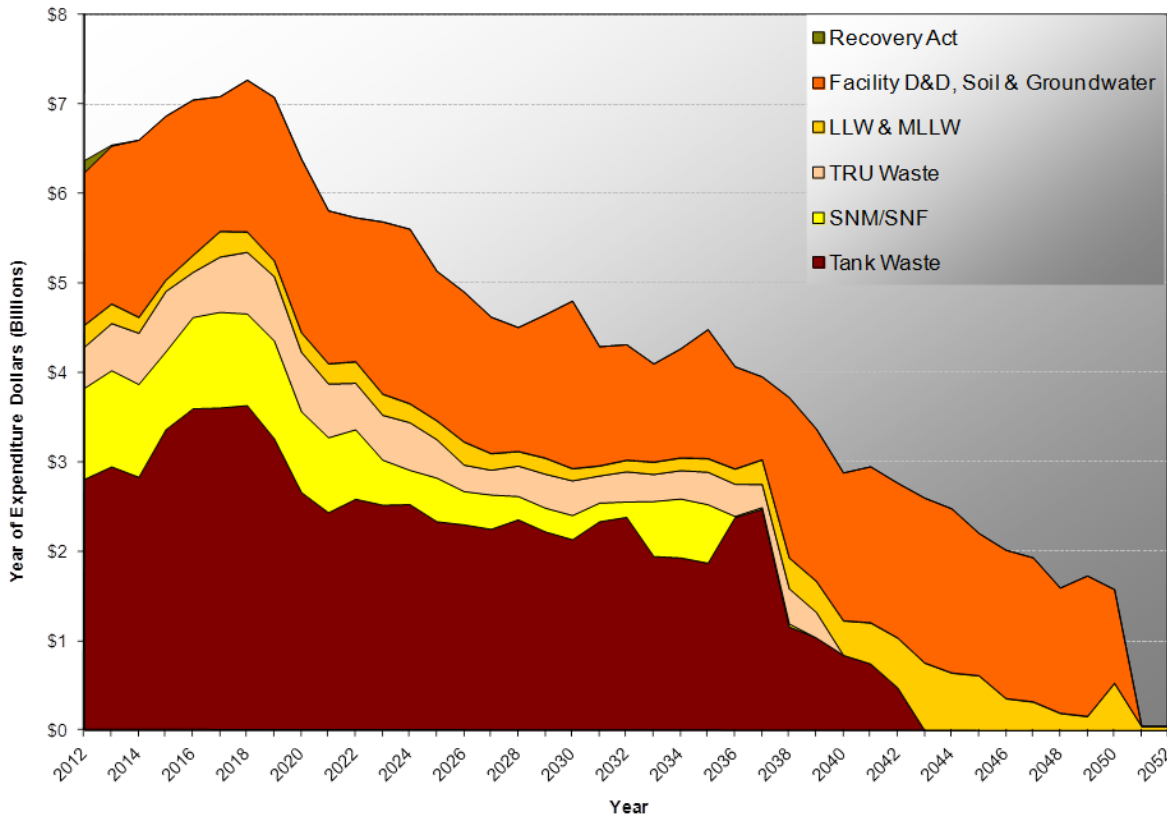


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Goal 2: Reduce the life-cycle cost and accelerate the cleanup of the Cold War legacy



Life Cycle Cost Reduction:

- Completion of the three major tank waste projects
- Reduce the EM legacy footprint
- Disposition of legacy transuranic (TRU) waste
- Disposition of radioactive waste and materials

To-Go Costs \$175B to \$209B



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Goal 2 Objective: Complete the three major tank waste treatment construction projects

Sodium Bearing Waste Facility

Construction complete 2011 (operational 2012)



Salt Waste Processing Facility

Construction complete 2014 (operational 2014)



Waste Treatment Plant

Construction complete 2016 (operational 2019)



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Goal 2 Objective: Complete disposition of 90 percent of the legacy transuranic waste



➤ All Legacy TRU waste to WIPP by 2020, except for Hanford

➤ 67% Legacy TRU disposed to date against the 90% goal.*

Completed Legacy TRU Sites

- ✓ Teledyne-Brown
- ✓ ARCO
- ✓ Energy Technology Engineering Center
- ✓ University of Missouri Research Reactor
- ✓ US Army Materiel Command
- ✓ Lovelace Respiratory Research Institute
- ✓ Rocky Flats Environmental Technology Site
- ✓ Mound
- ✓ Brookhaven National Laboratory
- ✓ Knolls Atomic Power Laboratory-Nuclear Fuel Services
- ✓ Fernald
- ✓ Battelle Columbus Laboratories
- ✓ AREVA (Framatome)
- ✓ General Electric Vallecitos Nuclear Center
- ✓ Nevada Test Site
- ✓ Lawrence Livermore National Laboratory (Site 300)
- ✓ Lawrence Berkeley National Laboratory
- ✓ NRD
- ✓ Bettis Atomic Power Laboratory

*Data as of 12/31/11



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Goal 2 Objective: Reduce the EM Legacy Footprint

Savannah River
M Area Before



Before: LANL TA-21



Savannah River
M Area After

After: LANL TA-21



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Goal 3: Continuous improvement of project, budget, and contract management

- Delivering results on time, within cost, and with world-class technical competencies.
- EM will take measures to improve its management of budget, contracts and project management to ensure project performance.
 - Contracting Summit
 - Complex-wide strategic planning analysis



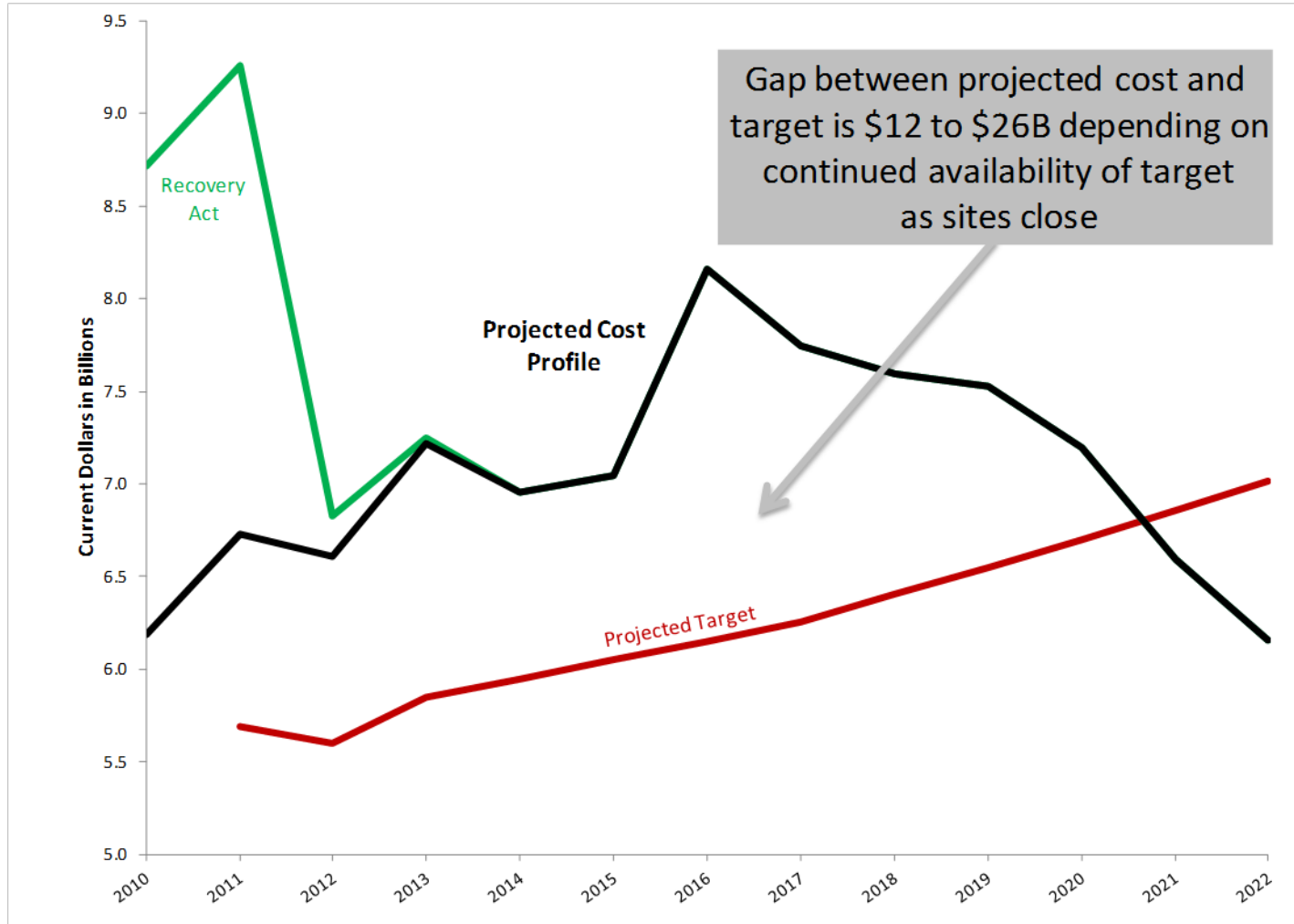
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Current Planning Estimates Exceed Anticipated Available Funding (Near Term)



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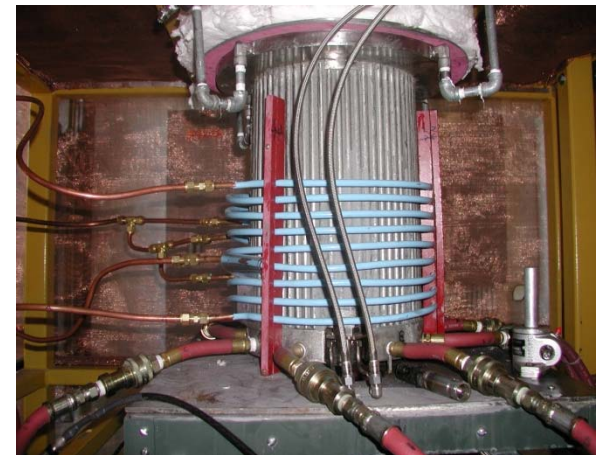
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Reducing tank waste treatment and disposal life-cycle costs

Activities:

- Develop and deploy at-tank processing.
- Increase waste loading in glass to reduce canister production.
- Develop next-generation melters to improve processing.
- Develop and deploy alternative treatment and separations processes.
- Develop alternative waste forms.
- Develop technologies for accelerated tank waste retrieval and tank closure.



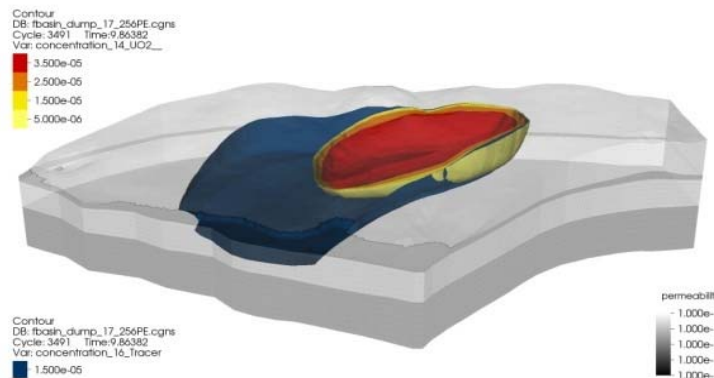
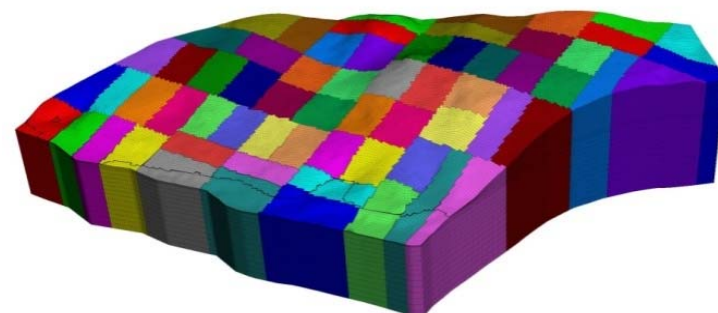
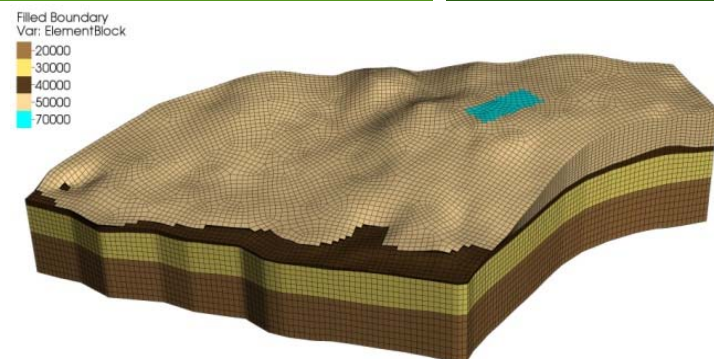
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Soil and Groundwater modeling capability

Advanced Simulation Capability for Environment Management (ASCEM)

- A state-of-the-art tool for predicting how subsurface contamination behaves in natural and engineered systems.
- ASCEM provides technically robust performance and risk assessments for EM cleanup and closure.
- Will be used in combination with advanced remediation strategies to reduce risk, cost and time-line for site closure.



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Goal 4: Execute the EM Mission in a sustainable manner

EM is committed to implementation of Presidential Executive Order 13514 to reduce energy intensity in agency buildings.

- Creating a natural gas supply has the potential for lifecycle cost and greenhouse gas emissions reductions
- SRS operating the largest biomass facility supporting federal operations.



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EM: A National Responsibility

- Time is not on our side – costs and risks increase over time.
- We have a responsibility to relieve future generations of this environmental and financial liability.
- We have delivered significant cleanup progress in the past several years.



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