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Future Vision: The West Valley Demonstration Project 2020

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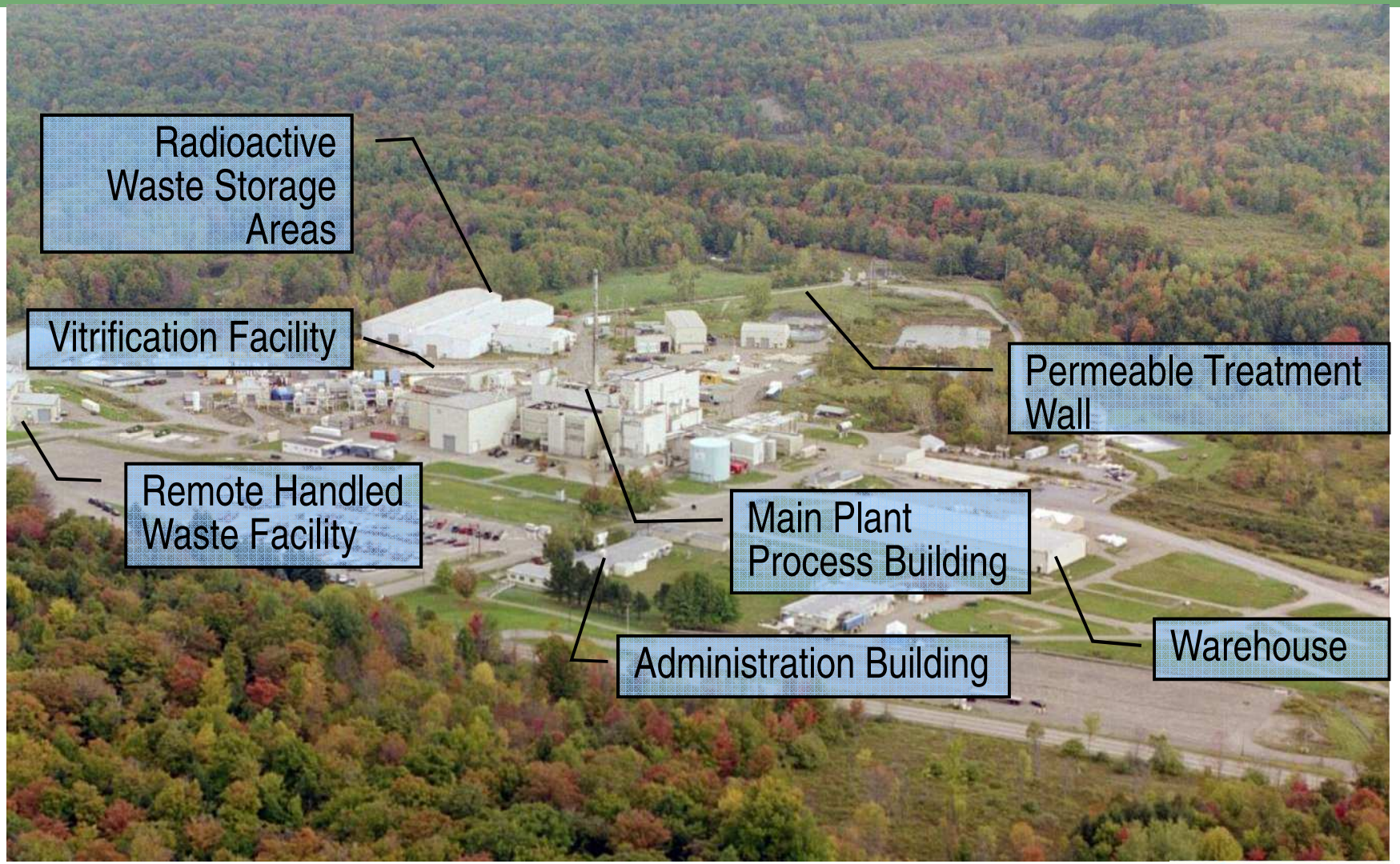
Session # 16

WVDP Site Facilities



The West Valley Demonstration Project

EM Environmental Management
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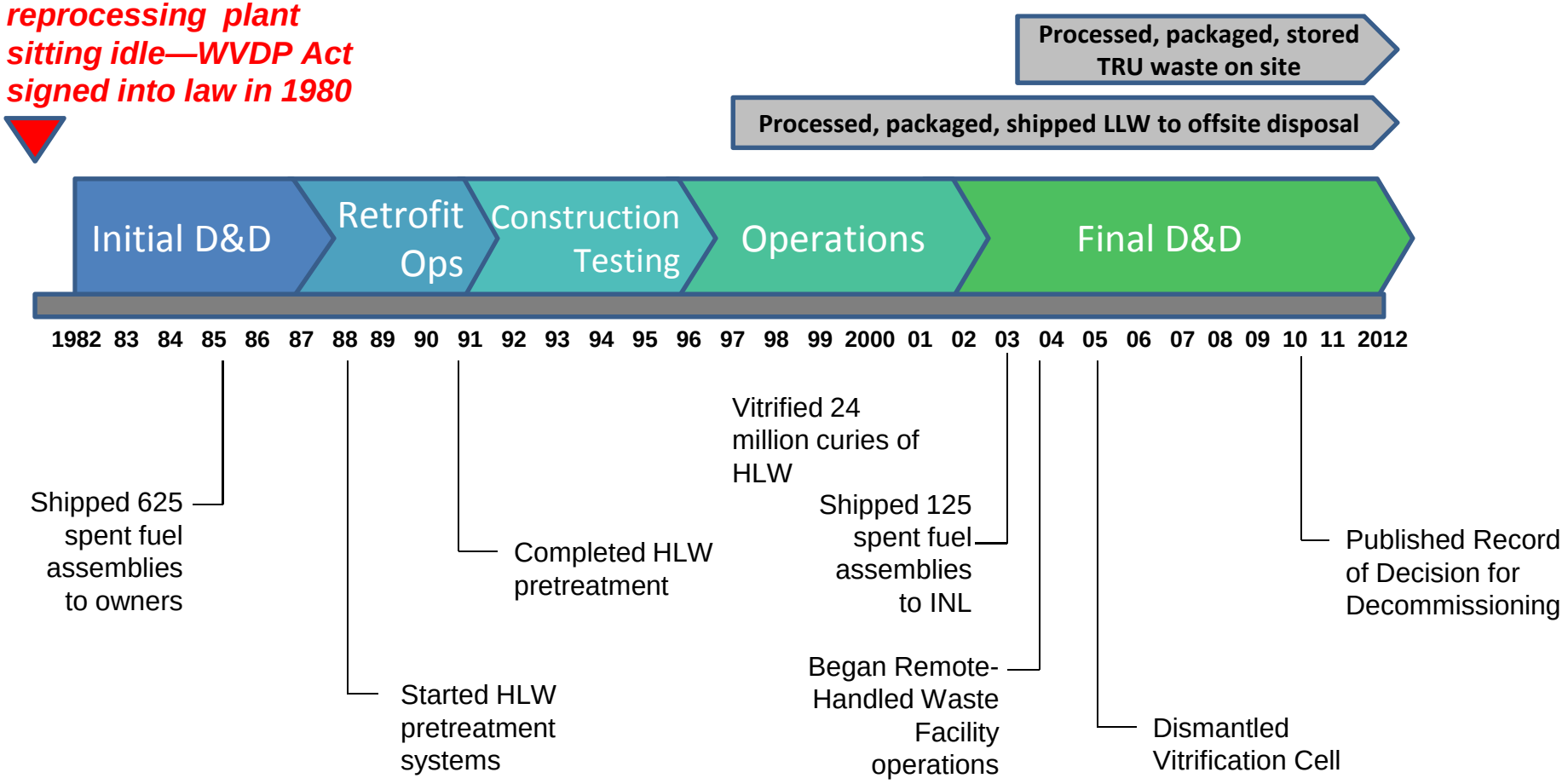
WVDP Mission

The WVDP mission was defined by an act of Congress in 1980 – Public Law 98-368

- Solidify the high-level radioactive waste at the Center — ***Completed***
  - 99.7% of the curies in the tanks were vitrified and the glass is contained in 275 stainless steel canisters
- Develop containers suitable for permanent disposal of the waste — ***Completed***
- Transport the solidified waste to a federal repository for permanent disposal — ***Pending Repository***
- Dispose of low-level radioactive waste and transuranic waste — ***In Progress***
- Decontaminate and decommission the underground high-level waste tanks, facilities and any material and hardware used in connection with the Project — ***In Progress***

WVDP Accomplishments/Successes

Commercial reprocessing plant sitting idle—WVDP Act signed into law in 1980



2 of 5 WVDP Act mandates fulfilled

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Phased Decisionmaking

In 2010, DOE published the Final Environmental Impact Statement and Record of Decision (ROD) for Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and the Western New York Nuclear Service Center

- **Phased Decisionmaking ROD**
- **Phase 1 Decommissioning Plan**

Phase 1 Studies

- **Final Decommissioning ROD**
- **Phase 2 Decommissioning Plan**

Phase 1 Decommissioning

Phase 1 Facility Disposition

- Relocate 275 HLW Canisters to new dry cask storage facility
- Demolish Vitrification Facility (Vit) and Main Plant Process Building (MPPB)
- Remove ancillary facilities
- Ship legacy Low Level Waste

Phase 1 Soil Remediation

- Remove Below Grade Portion of MPPB and Vit (including source area of plume)
- Remove Lagoons and Liquid Waste Treatment Facility
- Ship Legacy TRU Waste
- Remove Remote Handled Waste Facility and remaining ancillary facilities
- Remediate all WMA 1 & 2 Soil

Phase 2 Decommissioning

(Decisions made by 2020)

Phase 2 Decisions

- Closure decision for Waste Tank Farm
- Closure decisions for NRC-licensed Disposal Area and State-licensed Disposal Area

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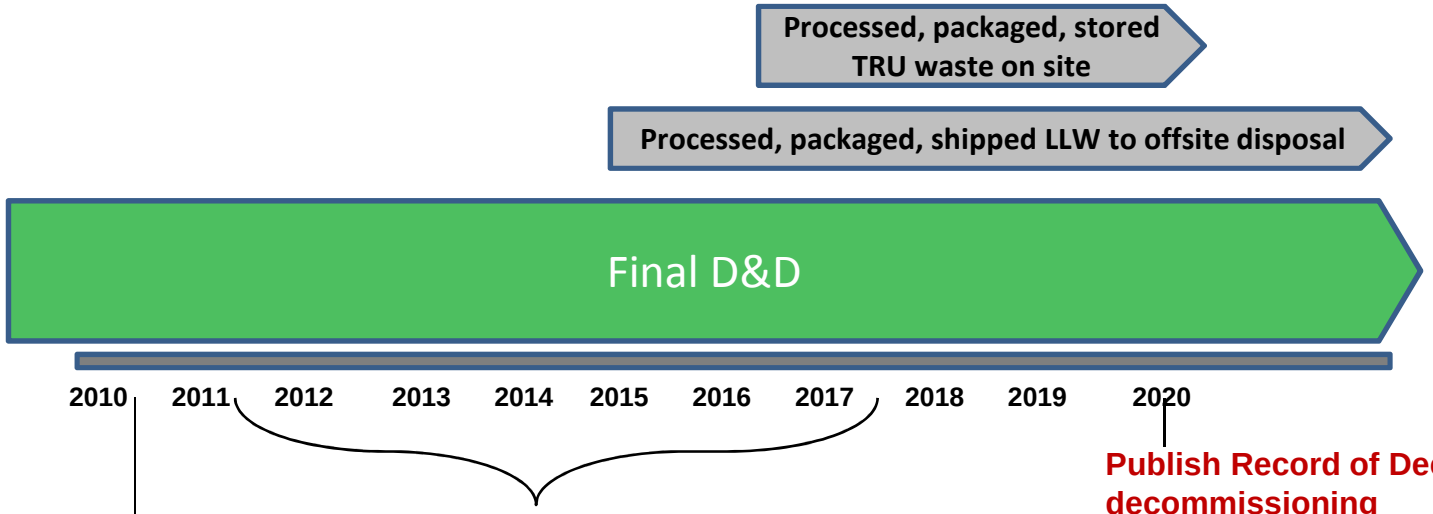
WVDP Decommissioning Timeline



Published Record of Decision for Phase 1 Decommissioning

Phase 1 Facility Disposition*
- Demolish 01-14 Facility
- Relocate 275 HLW canisters
- Remove above grade portions of MPPB & Vitrification facility
- Demolish ancillary facilities
- Package TRU waste for disposal; store on site
- Manage HLW & TRU on-site
- Dispose LLW

*Based on $75M/yr funding

Publish Record of Decision for Phase 2 decommissioning

Phase 1 Soil Remediation

Remove:
- Below grade portions of MPPB and Vit, including plume source
- RHWF
- Lagoon 1
- Demineralizer sludge ponds and LLWTF

Manage HLW on-site
Dispose LLW & TRU

Phase 2 Decommissioning

Implement decisions for:
- HLW canisters
- Waste tank farm
- NRC-licensed disposal area
- State-licensed disposal area

Manage HLW on-site
Dispose LLW

Phase 1 Studies

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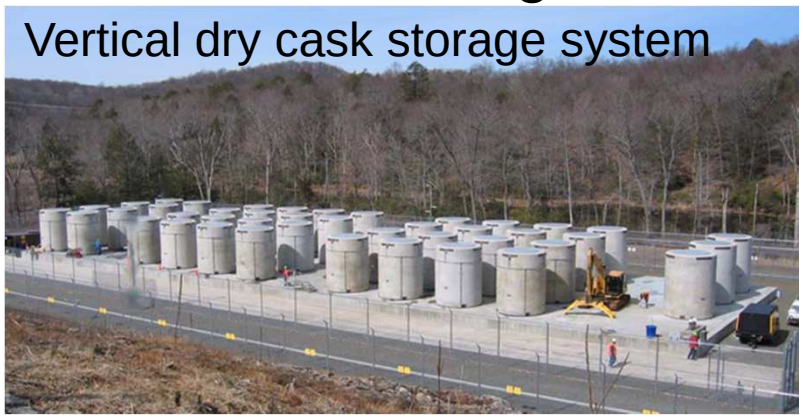
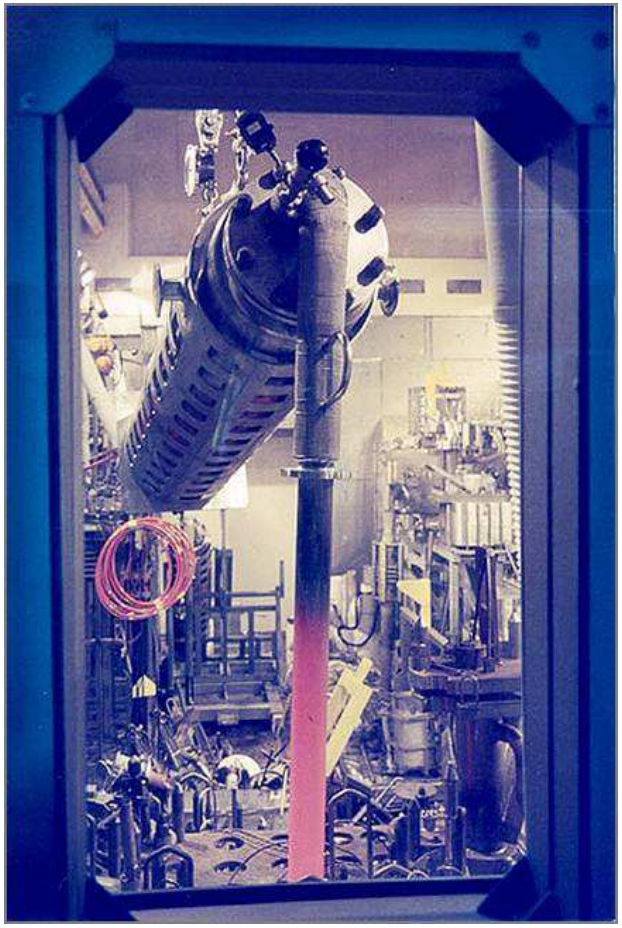
Challenge: HLW Disposal

- Relocating waste from Main Plant's High Level Waste Interim Storage to a stand alone dry cask storage system:
  - 275 HLW canisters
  - 2 evacuated canisters
  - 1 non-routine HLW canister
  - 2 SNF debris drums
- Use current licensed SNF shipping cask multi-purpose canister overpacks and current SNF cask designs:
  - 5 HLW canisters per package
  - 3 canisters in separate cask (2 evacuated canisters and 1 non-routine canister)
  - SNF debris in separate cask


Vertical dry cask storage system

HLW Disposal continued

- Packaging non-conforming HLW is problematic
  - Currently evaluating Waste Acceptance Product Specifications (WAPS) for Vitrified High-Level Waste Forms DOE/EM-0093 Rev 3
  - Pursuing alternatives for SNF debris
- HLW interim storage will be provided on site until a federal repository for permanent disposal is available



Major Challenges for Decommissioning

The WVDP faces challenges for Decommissioning:

- Disposal of transuranic waste (TRU)
- Disposal of high-level waste (HLW)
- Disposition of underground tanks that contained HLW
- Disposition of shallow land burial grounds
- Sufficient funding to enable steady progress
  - ➢ Funding reductions = increased risk

Main Plant Process Building & associated facilities

Challenge: TRU disposal continued

- WV Managing ~ 1,200 m^3 of TRU/GTCC – RH, CH, Mixed, Non-Mixed
- Most TRU/GTCC by WIR, contains fuel debris or is contaminated with TRU material originating from Head End or Vitrification processes
- High dose rate RH-TRU
- Prolonged storage of TRU will slow decommissioning progress, i.e. need to maintain storage facilities

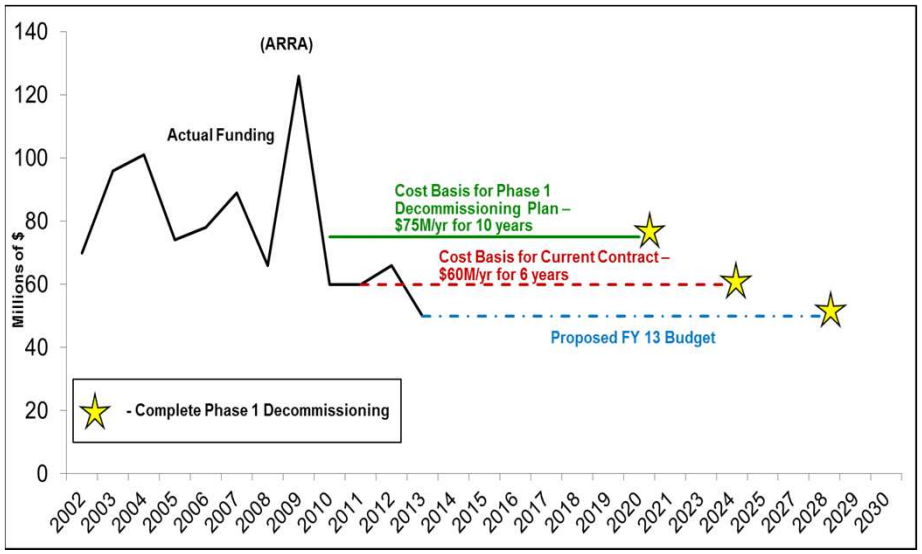
Challenge: TRU Disposal

The Horizontal Emplacement and Retrieval Equipment (HERE) is used to push remote-handled transuranic waste into horizontal boreholes in the disposal room walls.

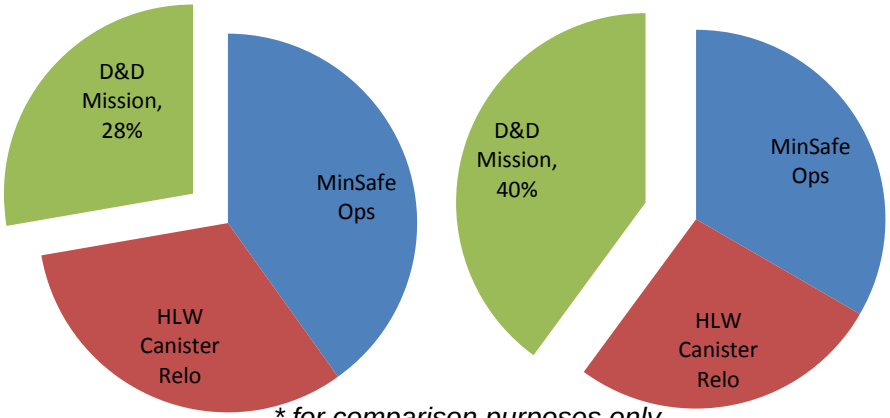
Challenge: Disposition of In-Ground Facilities

- Underground tanks
  - DOE desires consistent approach complex-wide
    - Performance modeling
    - Decommissioning/closure methodology
  - RCRA regulation of WVDP vs CERCLA at other sites
  - West Valley site subject to NRC decommissioning requirements
- Shallow land burial ground
  - Does not meet NRC requirements in its current condition
  - West Valley site subject to NRC decommissioning requirements

Challenge for WVDP Completion: Funding



Funded at $49.9M*



Funded at $60.0M*

** for comparison purposes only*

Funding priorities

- ~$20M/yr for min safe operations
- HLW canister relocation **(critical path)**

Impacts of reduced funding

- Delays scheduled activities
  - Waste shipments
  - Demolition of facilities
- Increases costs
  - Upgrades/maintenance of waste storage facilities
  - Continued monitoring & maintenance of waste in storage
  - Continued monitoring & maintenance of facilities slated for demolition

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The WVDP Vision for 2020