West Valley Demonstration Project

Nuclear Regulatory Commission-licensed Disposal Area Cap Plan
Dan Meess, WVNSCO Chief Engineer

South Plateau Aerial View

Erdman Brook
NDA
SDA
Frank's Creek
NDA History

- Radioactive waste disposal area used:
  - 1966-1981 by NFS for reprocessing-related wastes
  - 1982-1986 by DOE for WVDP-related LLW
- Contents
  - 360,000 cubic feet of buried waste
    - 44.8% from NFS
    - 55.2% from WVDP
  - 298,000 curies of radioactive materials
    - 99.6% from NFS
    - 0.4% from WVDP

NDA Current Status

- NDA subject to water infiltration issues
  - Interceptor Trench installed as part of kerosene mitigation plan collects ~400,000 gallons of mildly contaminated water annually
    - Kerosene has never been detected above action levels in trench
    - Water is treated and released through Liquid Waste Treatment System
  - Preventing water from coming in contact with waste was identified as a “best practice”
- Existing earthen cap needs attention
  - Similar to the State-licensed Disposal Area before it was capped, the earthen cap is subject to degradation due to weather
Key Project Design Criteria

- Minimize surface and groundwater infiltration into the NDA for at least 30 years using a geomembrane liner and barrier wall
- Geomembrane permeability must be $10^{-7}$ cm/sec, maintenance minimal, UV resistant, puncture resistant
- Stabilize the geomembrane liner against wind uplift forces
- Control storm water run-off discharge to pre-construction conditions for 25-year, 24-hour storm.
- Key the barrier wall into unweathered Lavery Till
- Provide barrier wall with permeability of $10^{-7}$ cm/sec
- Provide upgradient and downgradient groundwater monitoring
- Maintain existing groundwater monitoring wells
- Design to avoid impact on SDA
Possible methods of reducing water infiltration were explored. A cap/barrier wall combination was identified and designed based on:

- NYSERDA’s success at managing the water infiltration issues at the SDA
- Durability and cost-effectiveness of cover and barrier wall
- Doesn’t preclude other actions of managing the NDA in the future
- Designed by Butler Construction, Inc. with McMahon and Mann Consulting Engineers P.C.

Design includes:

- Geomembrane cap over 7-acre area
- Barrier wall along two sides in groundwater upgradient direction (South & West)
Groundwater Barrier Wall

- Soil-bentonite backfill
  (Permeability $10^{-7}$ cm/sec)
- 3-foot width
- 5-foot key into Unweathered Lavery Till
- Working platform
- Subsurface explorations
- Post-construction monitoring
**NDA Cap Design Review Process**

- Interactive final design review team consisted of
  - DOE
  - NYSERDA
  - NYSDEC
  - U.S. Army Corps of Engineers
  - WVNSCO

- Design and construction documents also provided to
  - U.S. NRC
  - U.S. EPA

- Design and construction specification are nearly complete

- WVNSCO will provide to DOE this week
  - Construction package
  - Draft Interim Measure Work Plan

**NDA Cap Anticipated Schedule**

- June 2007  Design and construction package provided to DOE
- Mid-July 2007 Submit Interim Measure Work Plan and supporting documents to NYSDEC for approval
- Late Aug 2007 Expected NYSDEC approval Award construction contract
- Late Sept 2007 Begin site work: survey and core borings
- Sept 2008  Slurry wall and cap completion