Idaho National Engineering and Environmental Laboratory

Innovative Grouting Technologies for the Subsurface Disposal Area at the Idaho National Engineering and Environmental Laboratory

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INEEL’s Subsurface Disposal Area
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- 100,000 cubic meters of waste
- Buried in boxes, drums, and a variety of vaults
- Radioactive contaminants of concern in this material include Sr-90, Tc-99, C-14, H-3, Nb-94, Pu-239, Am-241, Np-237, U-234, and U238
Disposal of Waste at the SDA
Disposal of Drums at the SDA
In Situ Grouting Drill Rig
Jet Grouting
Drill Stem
In Situ Grouting Process
Jet Grouting Simulated Waste
Grouted Debris Using Molten Paraffin
Debris Soaked by Waxfix
Retrieved Soil/Waxfix Wasteform
Retrieved Soil/Gment-12 Wasteform
Retrieval of Grouted Debris
Cryogenic Retrieval
In Situ Vitrification

- Initiates melt below grade
- Focus treatment on area of contamination
- Overburden is not consumed
- Maximizes safety by enhancing offgas release pathways
- Reduces offgas treatment requirements due to overburden filtration and cooling
- Improves processing depth capability
- Experience - WAG 1 Tank Melt & LANL Soil Melt
Vitrified Waste
Summary

• There are a variety of technologies available for stabilizing waste in place

• Grouting can be used to stabilize the waste in place or make it so that the waste can be retrieved with minimal contamination spread

• In situ vitrification can be used to treat and stabilize the waste to a nonleachable form