

*River Corridor  
Closure Project*

# **CERCLA ARAR Waiver to Allow Treatment of Hazardous Debris within the ERDF Landfill**

## **River & Plateau Committee Briefing**

October 7, 2014



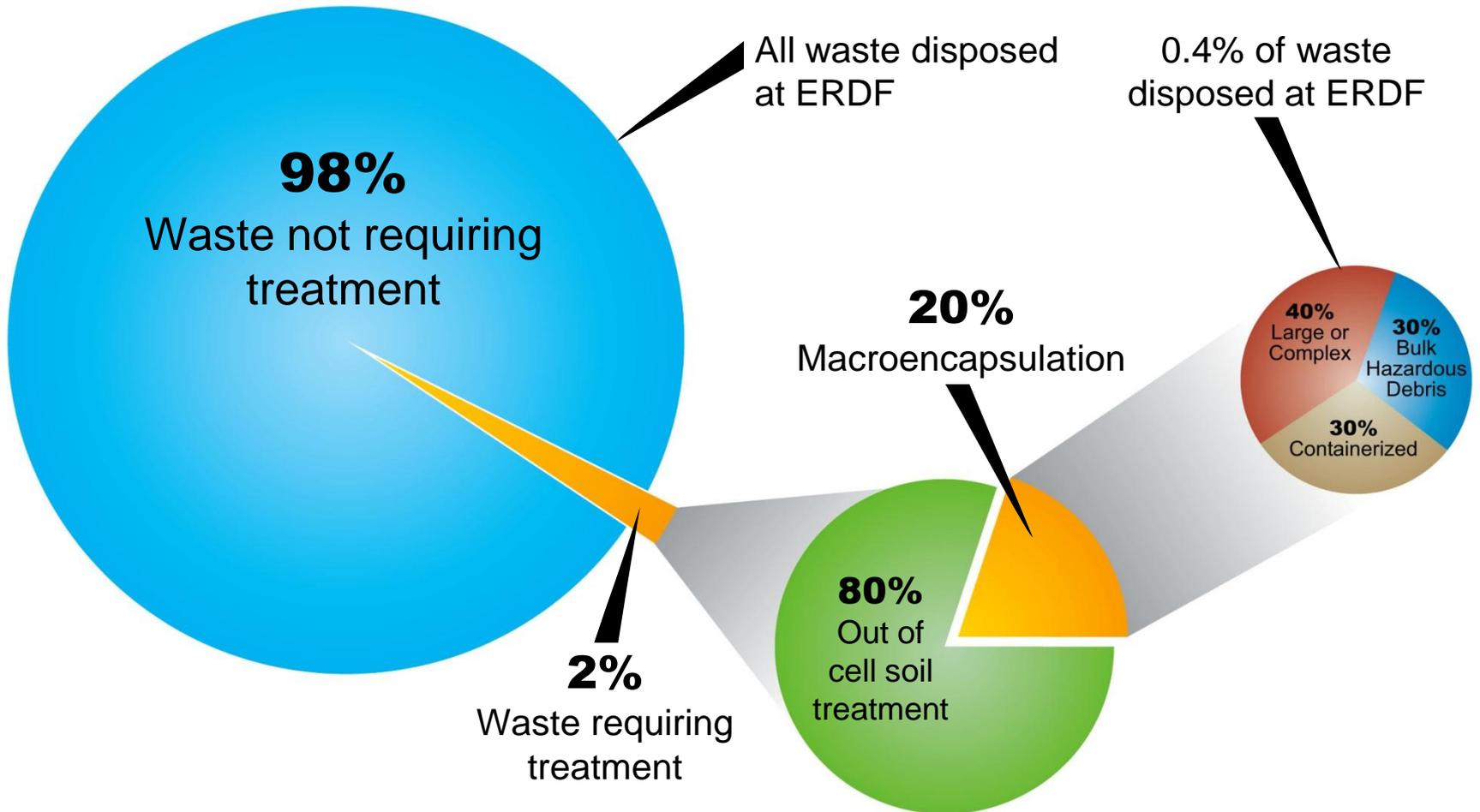
# Purpose

- Perform treatment (e.g. macroencapsulation) of hazardous debris at ERDF in a manner that
  - Provides more protection of human health and the environment
  - Complies with applicable or relevant and appropriate requirements once treatment has been completed (waste will be treated)



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# Waste Requiring Treatment



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# Hazardous Debris Waste Requiring Treatment

## Hazardous and mixed waste characteristics

- Waste composition and waste forms are the same for in-trench and out-of-trench treatment
- Characteristic codes
- No organic vapors present
- No liquids



- *Complex items must be handled and manipulated to assure complete macroencapsulation*
- *Dangerous to coat and inspect underside of complex items*

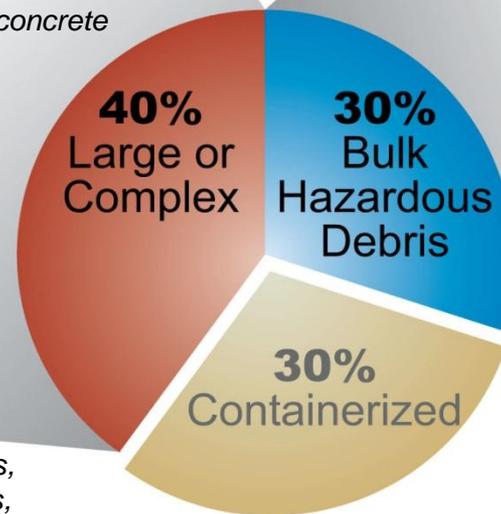
- *Heavy (50 tons after encapsulation) concrete vaults, heel pits, etc.*



- *The 324 Building alone will generate 3,000 cubic yards of hazardous debris. This highly contaminated facility poses extensive disposal challenges.*



- *Long Length Pumps, Thermocouples, Screens, Risers, Sluicers, Dip Tubes, etc. from Tank Farms*



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# Radiological Hazards

- Whenever debris treatment is performed, potential radiological hazards exist in the form of:
  - Direct Radiation
  - Loose Surface Contamination
  - Airborne Radioactivity
- Performing the debris treatment “In-Trench” offers:
  - Reduced number of item handling/rigging events, thereby less opportunity for elevated airborne radioactivity or loss of loose radioactive material to the environment
  - Increased distance between the worker and high dose rate items
  - Fewer workers required in close proximity to high dose rate items
  - Less worker time in vicinity of high dose rate items

## **Direct Radiation**

- Radiation dose rates to which ERDF workers are typically exposed throughout the debris treatment process:
  - Up to 300 mR/hr contact
  - Up to 50 mR/hr at 30 cm
  - Up to 10 mR/hr at 1 meter
- Contact dose rates as high as 2500 mR/hr have been encountered.

## Loose Surface Contamination

- Loose surface contamination on items bound for debris treatment is controlled by wrapping/enclosing the items.
- Levels of loose contamination contained within item packaging:
  - Up to 600 million dpm/100cm<sup>2</sup> beta/gamma
  - Up to 90 thousand dpm/100cm<sup>2</sup> alpha
  - Loose surface contamination at these levels could present a significant hazard to workers and normally unaffected areas should the item packaging lose its integrity.
  - A “clean” area is less than 1,000 dpm/100cm<sup>2</sup> beta/gamma or 20 dpm/100cm<sup>2</sup> alpha.
- We protect our workers from radioactive contamination by:
  - Maximizing the distance between the worker and the contaminated item
  - Minimizing item handling which could lead to loss of package integrity

## **Airborne Radioactivity**

- Airborne radioactive particulate becomes a concern should item packaging lose its integrity during item handling operations.
- This concern can be minimized by reducing item rigging/handling activities which could breach item packaging.
- Calculations indicate the breach of a package containing levels encountered to date could result in elevated airborne radioactivity concentrations of up to 92 times the DOE limit for the posting of airborne radioactivity areas.

# In-Trench vs. Out-of-Trench Treatment

## In-Trench Treatment



1 Offload into a staging area inside of the trench



2 Encapsulate with grout

### In-Trench Treatment:

- Reduces risks to environment
- Reduces radiological and industrial risks to workers (ALARA)
- Proven to be safe and efficient
- Reduces disposal costs

### Out-of-Trench Treatment:

- Increases risk to environment and workers
  - Significantly increases radiological exposure
  - Significantly increases industrial risks
  - Significantly increases chemical risks
- Increases treatment to disposal timeframe
- Increases disposal costs

## Out-of-Trench Treatment



1 Offload into a staging area outside of the trench



2 Protect from elements



3 Relocate to treatment area



4 Spray primer



5 Spray first coat of foam



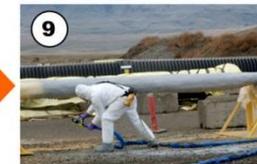
6 Spray second coat of foam



7 Spray third coat of foam



8 Spray first coat of encapsulation coating



9 Spray second coat of encapsulation coating



10 Reposition debris to complete process



11 Complete foaming



12 Complete coating



13 Load finished debris



14 Transport finished debris to trench



15 Offload finished debris into trench

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# Summary

## IN-TRENCH TREATMENT

- More Protective of Human Health and the Environment
  - Specific controls will ensure protection of human health and the environment during the short time following placement of untreated hazardous and radioactive debris waste within the landfill cell until appropriate treatment is completed.
  - The workers will be able to significantly: increase the distance between themselves and the debris waste, reduce their exposure time, and decrease the potential for package breach reducing their exposure to radiological dose and/or contamination thus fulfilling the key tenets of ALARA.
- Treatment within the trench is more robust and eliminates potential damage to treated items prior to disposal.
- Does not waive the treatment of any hazardous debris or change the ERDF Waste Acceptance Criteria (WAC). The waiver just changes the location of where the treatment is performed.

## Update

- **2012-May 2014:** Development and evaluation of waiver alternatives
- **June 2014:** EPA HQ visited ERDF to assist with determination of the type of waiver and the approval process
  - *EPA determined that the “Greater Risk to Health and the Environment” ARAR waiver applicable in this situation*
  - *EPA selected the hazardous debris items to be covered under the waiver and treated within the ERDF trench:*
    - » *Hazardous Waste Debris that can not be sized reduced (e.g. radiation contamination, radiation dose) to fit into a 20 CY roll-on/roll-off container*
    - » *Hazardous debris that can fit into a 20 cy roll-on/roll-off container will continue to be treated outside of the trench*
  - *EPA requested preparation of support documentation for the Administrative Record to support selection of the preferred alternative*
- **July-August 2014:** Development of support documentation (working with EPA HQ)
- **September 2014:** Draft support documentation submitted to EPA HQ for review
- **October 2014:** Finalize support documentation
- **Nov. 2014 - March 2015:** Prepare Proposed Plan, Fact Sheets, Notices, ROD Amendment