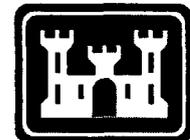


**Proposed Action Memorandum
Interim Removal Action, TNT Area B,
Plum Brook Ordnance Works,
Sandusky, Ohio**

Presented to
PBOW Restoration Advisory Board

27 March 2002



Purpose of TNT Area B Action Memorandum

- Present the selected response action
 - ➔ Based on results of remedial investigation / feasibility study (RI/FS) completed for TNT Area B soils
 - ➔ Prevents human exposure to soil containing constituents of concern (COCs) at concentrations above remediation goals
 - ➔ Reduce potential ecological hazards

- Provide for public comment



Community Involvement

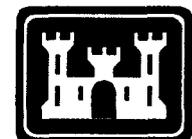
- The Action Memorandum is made available to the public for a 30-day review and comment period.
- At the end of the 30-day review period, all comments will be documented in the administrative record (AR) as well as evaluated and incorporated into the overall remediation plans, if deemed feasible by USACE.



Summary of Selected Response Action

- USACE will complete a Non-Time Critical Removal Action (NTCRA) at TNTB, consisting of:
 - ➔ Excavation of approximately 3,300 CY of site soils
 - ➔ Backfill excavation with clean material
 - ➔ Ex-situ stabilization of excavated material
 - ➔ Off-site disposal of stabilized waste.

- The selected alternative may be the final response action for soils at TNTB.
 - ➔ The NTCRA will be documented in a Decision Document for TNT Area B by the USACE.
 - ➔ Additional action(s) may be required if soils are determined to be a continuing source of groundwater contamination that pose a risk to human health.



TNT Area B Site Location



Summary of TNT Area B RI

- Summary of remedial investigation (RI) fieldwork
 - ➔ Field investigation conducted in 1998
 - ➔ Nitroaromatic field screening analyses of 391 surface and subsurface soil samples.
 - ➔ 40 confirmation soil samples analyzed using SW-846 Method 8330 with second column confirmation.

- Summary of HHRA Results
 - ➔ Thirteen (13) COCs identified in site soils.
 - ◆ Six site-related nitroaromatic compounds (2-A-4,6-DNT; 4-A-2,6-DNT; 2,6-DNT; 2,4-DNT; 2-nitrotoluene, 2,4,6-TNT)
 - ◆ Remaining seven COCs are polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAH).



Summary of TNT Area B RI (continued)

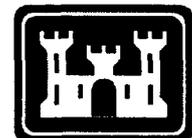
- Summary of HHRA Results (continued)
 - ➔ Surface soil exposure (groundskeeper and indoor worker)
 - ◆ Total incremental lifetime cancer risks (ILCR) are $1E-4$ for groundskeeper and $5E-5$ for indoor worker.
 - ◆ The hazard indices (HI) are 20 and 7, respectively.
 - ➔ Total soil exposure (construction worker and resident)
 - ◆ ILCRs are $2E-5$ and $1E-3$, respectively.
 - ◆ HIs are 70 and 244, respectively.
 - ➔ Risk-based remediation criteria developed for all COCs
 - ◆ Tables 5-13 through 5-16, TNT B RI Report, Volume II
 - ➔ No unacceptable HI or ILCRs associated with exposure to surface water or sediment.



Summary of TNT Area B RI (continued)

■ Summary of SLERA results

- ➔ Surface soil hazard quotients (HQ) determined using food chain modeling
 - ◆ HQs of 40,000, 20,000, 5000, 4000, and 1000 for the marsh wren, shrew, deer mouse, raccoon, and cottontail rabbit, respectively
 - ◆ 2,4,6-TNT and 4-Amino-2,6-DNT maximum concentrations may potentially cause adverse ecological effects
- ➔ HHRA-based remedial objectives produce acceptable HQs for ecological receptors.



Summary of Evaluated Alternatives

- Alternative 1, No Action
- Alternative 2, In-Situ Chemical Oxidation, Excavation, and Off-Site Disposal
- Alternative 3, Excavation, Ex-Situ Stabilization, and Off-Site Disposal
- Alternative 4, Excavation, On-Site Composting, and Off-Site Disposal



Alternative 1 Details

■ No Action

- Required by NCP as baseline for comparing other alternatives
- Does not reduce human health risks to levels considered acceptable by USEPA.
- Does not employ removal, containment, or treatment actions that mitigate impact of source areas on receptors or other media.
- Thus, No Action was not considered the recommended alternative.



Alternative 2 Details

- In-Situ Chemical Oxidation, Excavation, and Off-Site Disposal
 - ➔ In-situ treatment avoids generating large quantities of hazardous wastes.
 - ➔ Only PCBs above PRGs would be excavated and disposed off-site (approximately 400 cubic yards).
 - ➔ Soil may be hazardous waste due to levels of 2,4-DNT and lead; oxidation would not transform or decrease toxicity of lead in soil.



Alternative 3 Details

- Excavation, Ex-Situ Stabilization, and Off-Site Disposal
 - ➔ Excavate approximately 3,300 CY of contaminated soil.
 - ➔ On-site ex-situ treatment of the excavated soil prior to off-site disposal.
 - ➔ Portion of excavated soil classified as hazardous waste treated using on-site stabilization (approximately 560 CY).
 - ➔ Stabilization will immobilize all COCs; however, it will not destroy, transform, or remove the contaminants from the soil.



Alternative 4 Details

- Excavation, On-Site Composting, and Off-Site Disposal
 - Excavate approximately 3,300 CY of contaminated soil.
 - On-site ex-situ treatment of the excavated soil prior to off-site disposal.
 - Portion of excavated soil classified as hazardous waste treated on-site using composting (approximately 560 CY).
 - Composting will not reduce the toxicity of lead; thus, composted soil may require further treatment or disposal as hazardous waste.



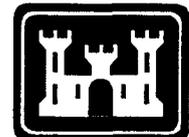
Proposed Action Description - Alternative 3

- Excavate areas where COC concentrations > PRGs (~3,300 CY).
- On-site chemical stabilization of excavated soil classified as hazardous waste based on TCLP testing.
 - Treatability study precedes remedial action
 - 560 CY may be hazardous waste based on levels of 2,4-DNT.
 - 400 CY may be hazardous waste due to high lead levels.
- Off-site disposal of excavated / stabilized soils.
 - Stabilized soil tested using TCLP (1 sample per 150 tons).
 - Non-hazardous soils disposed off-site.
 - Hazardous soils require further stabilization or alternative treatment.
- Clean fill in excavations, graded for proper drainage, and reseeded.



Remedial Performance of Proposed Action

- Alternative 3 is protective of human health and the environment
- Complies with Applicable or Relevant and Appropriate Requirements (ARARs)
- Permanently removes COCs at concentrations above PRGs
- Permanently reduces toxicity and mobility of contaminants
 - Volume of contaminants is not reduced
- No risk to the community or environment during implementation
- Is technically & administratively implementable
 - No engineering or regulatory restrictions prevent implementation.
 - Stabilizing agents and equipment required are readily available.



Proposed Action Schedule and Cost

- Alternative 3 can be implemented in 9 to 12 months.
 - Prepare and review of work plans.
 - Mobilization and excavation of 3,300 CY of contaminated soil.
 - Ex-situ stabilization of excavated soil classified as hazardous waste (about 560 cubic yards).
 - Confirmatory sampling, disposal of treated and non-hazardous soil, and demobilization.

- Estimated capital cost for Alternative 3 is \$495,000.
 - There are no long-term O&M costs associated with Alternative 3. Therefore, the present value of this alternative is the same as its capital cost.

