**Feasibility Study for the Ricochet Area**
**Munitions Response Site in State Game Lands 211, Pennsylvania**
**Military Munitions Response Program**

# Alternative 4 – Focused Surface and Subsurface Removal of Munitions with Containment and Controls

- Explosive risk is mitigated by focused removal of munitions in both surface and subsurface.
- Surface removal focused in specific area where munitions density is greater than 1 item per acre.
  - Search entire area – 1,334 acres.
  - Conduct search with analog instrumentation – metal detectors.
  - Clear brush as needed to access area.
  - Removal and disposal of all munitions and other metal debris.
- Subsurface removal focused in areas where subsurface activities are planned.
  - Clear 100% of wild game food plots.
  - Provide support to on-site construction during road building for timber harvesting.
- Public awareness outreach and training consistent with Alternative 2 provided.

# Feasibility Study for the Ricochet Area Munitions Response Site in State Game Lands 211, Pennsylvania
## Military Munitions Response Program

# Alternative 4 – Focused Surface and Subsurface Removal of Munitions with Containment and Controls

## Evaluation Criteria Rating

| Evaluation Criteria | Rating | |
|---|---|---|
| Overall protectiveness of human health and the environment | ● | Surface removals focused in high density areas, trails, and subsurface removals at wild game food areas provide some protection for human health. However, surface and subsurface removals are not protective of the environment because of clearing, grubbing, and excavation/detonation activities at the site. |
| Compliance with applicable or relevant and appropriate requirements | ● | Implemented to comply. |
| Long-term effectiveness and permanence | ◑ | Permanently removing unexploded ordnance (UXO) provides long-term effectiveness; however, UXO and discarded military munitions below the surface would remain outside of the high density areas and could potentially move to the surface because of erosion, frost heave, or human interaction. |
| Reduction of toxicity, mobility, or volume of contaminants through treatment | ◑ | Reduces the toxicity, mobility, or volume of munitions in the high density areas and wild game food areas. It does not reduce in other areas. |
| Short-term effectiveness | ◑ | During the removal of munitions there is an increased risk to the community and workers that would need to be mitigated through engineering controls and/or blocking off munitions work zones. |
| Implementability | ● | Surface and subsurface removals of UXO and discarded munitions were implemented effectively during the remedial investigation. Specific procedures are required to protect natural and cultural resources. Detonations in place are complicated to conduct than consolidated detonations because it is difficult to control the area and transport engineering controls to the item. |
| Cost | $6,757,826 | |
| Regulatory agency acceptance | The criteria for regulatory agency acceptance cannot be fully evaluated and assessed until comments of the feasibility study are received. | |
| Community acceptance | The criteria for community acceptance cannot be fully evaluated and assessed until comments of the proposed plan are received. | |

Favorable ● Moderately Favorable ◑ Not Favorable ●

**Feasibility Study for the Ricochet Area Munitions Response Site in State Game Lands 211, Pennsylvania**
**Military Munitions Response Program**

# Alternative 4 –
# Focused Surface and Subsurface Removal of Munitions with Containment and Controls