



# Subsurface Unexploded Ordnance (UXO) Detection/Discrimination R&D Program

## Problem

The Department of Defense (DoD) has a potential liability of more than \$35 billion for the cleanup of unexploded ordnance (UXO) contamination at Base Realignment and Closure (BRAC) sites, Formerly Used Defense Sites (FUDS), and other DoD sites. Currently, commercially available UXO detection technologies provide at best 80 percent probability of UXO detection and approximately 40 percent probability of false positive responses. Hence, large costs are incurred during UXO site remediation due to the excavation of non-UXO anomalies such as range clutter.

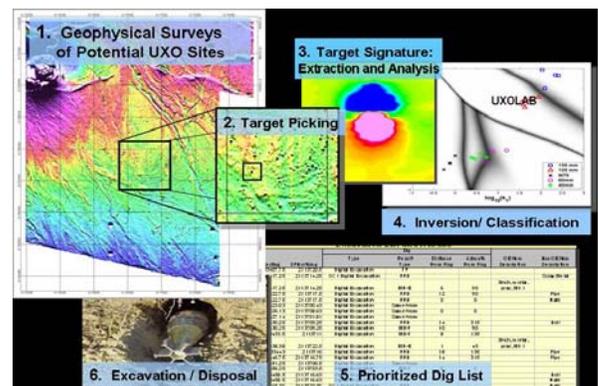


## Description of Research

ERDC has the Army Environmental Quality Technology (EQT) Program lead for the development of innovative technologies for the detection and discrimination of UXO. Research conducted by ERDC ranges from fundamental studies and phenomenological modeling to applied research, advanced development, demonstration and validation of advanced sensor systems, platforms and processing algorithms. ERDC is also developing new comprehensive data acquisition and discrimination algorithms using detailed, physics-based signature modeling and parametric inversion for target properties.

## Expected Products

- New UXO detection and discrimination systems that are expected to provide a 95-percent probability of detection and a 75-percent rejection rate of non-UXO targets.
- Innovative analysis algorithms and rigorous models for UXO sensor systems that will use an adaptive analysis capability for geophysical anomaly selection/classification and for constrained, cooperative, reduced parameter, and joint inversion of multiple geophysical data types.
- An ERDC-developed Management Aid for UXO Detection Efforts (MAUDE) software package that assesses key geophysical and environmental site parameters and assists the site remediation manager with sensor/method/system site-specific selection guidelines.



## Potential Users

Primary users are DoD and USACE site managers planning UXO site remediation activities. Work is ongoing with the EPA and the Interstate Technology Regulatory Council to gain regulatory acceptance of new innovative UXO detection/discrimination technologies.

**Projected Benefits**

UXO remediation costs will be greatly reduced by discrimination of UXO from range clutter and minimal active range closure during periodic UXO remediation activities. The DoD Range Sustainability Program will be supported.

**ERDC Program  
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**Participating ERDC  
Laboratories**

Cold Regions Research and Engineering Laboratory, Environmental Laboratory, and Geotechnical and Structures Laboratory