U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

Objective:
Utilize available geophysical data analysis tools and results of recent demonstrations to develop site-specific classification routines for the items of interest at various FUDS sites. This project also includes funding for additional digging to test the accuracy of the methods, and to build the body of evidence for classification.

Problem being solved:
Geophysical methods used to detect UXO also detect other non-hazardous metallic items, which are difficult to distinguish. This leads to large amounts of unnecessary and expensive digging. Significant progress has been made in classification technology over the past several years; however, testing has been primarily limited to test sites. Acceptance of classification methods requires demonstration of system capabilities at UXO sites under real world conditions.

Technology Description:
Recent demonstrations have occurred using classification methods based on easily extractable anomaly parameters and commercially available software which have shown promise in reducing the amount of unnecessary digging. These classification methods use anomaly parameters such as rate of decay of EM61-MK2 response (Tau), size of anomaly footprint above background and signal-to-noise ratio. USACE geophysicists have recently performed an anomaly classification demonstration with data provided by the ESTCP's Camp San Luis Obispo demonstration/validation project. The results were promising in that the number of unnecessary digs was reduced significantly while still recovering all munitions items. Tetra Tech EC is currently working on a project under a separate contract with CEHNC to determine similar anomaly characteristics based on data from several project sites/GPOs.

Technical approach:
These projects demonstrate anomaly classification methodologies through cooperation between geophysicists from contractors and USACE; providing transition of technology. Available data from the recent work described above, as well as site-specific testing results, will be used to develop site-specific classification routines for each project. The routines would then be applied to all grid data collected during the respective projects (and potentially transect data depending on the results). Regardless of classification results, all grid anomalies would then be dug to test the accuracy of the methods, and to build the body of evidence for classification. Seeding of inert munitions items in the grids is also planned to provide targets of interest in case none are in situ. After the intrusive effort, an analysis will be performed of the results of the classification method and recommendations made for future efforts and inclusion into remedial alternatives.

Expected DoD Benefit:
Any improvements seen in our ability to reduce the amount of non MEC-related digs would be directly applicable to probable future removal actions, as well as to those on other munitions projects. This project will show the UXO industry how to incorporate this technology during the remedial action strategy.

Distribution A: Approved for public release; distribution is unlimited.