ITRC PROJECT PROPOSAL
Geophysical Classification Quality Assurance for Munitions Response Projects

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Call for Proposals Topical Area

MUNI Military munitions: *Technologies and approaches for identifying, characterizing, managing, and removing military munitions and their constituents.*

Problem Statement (why is this project necessary and relevant to ITRC's purpose & mission[1]?)

The Department of Defense (DoD) has a potential liability of more than $35 billion for the cleanup of unexploded ordnance (UXO) and discarded military munitions (DMM) at Base Realignment and Closure (BRAC) sites, Formerly Used Defense Sites (FUDS), and other DoD munitions response (MR) sites.

The DoD uses geophysical systems to detect UXO and DMM at MR sites. Before conducting a geophysical survey, the DoD traditionally required its contractors to conduct a geophysical prove-out (GPO). The GPO is a critical quality control (QC) process designed to maximize the effectiveness of

[1] **ITRC Purpose**: To advance innovative environmental decision making
ITRC Mission: Develop information resources and help break down barriers to the acceptance and use of technically sound innovative solutions to environmental challenges through an active network of diverse professionals.

the geophysical survey and elevate DoD, regulator, and stakeholder confidence in the completed MR project. A GPO usually consists of constructing a sample MR site to test, validate, and maximize the capabilities of the selected geophysical system. In the early days of munitions response, the GPO was also used to select the geophysical system.

Five to ten years ago, most regulators and stakeholders responsible for oversight on MR projects were unfamiliar with the GPO process. Furthermore, most of the information available regarding GPOs was highly technical in nature and primarily geared toward geophysicists. In 2004, to fill this knowledge gap, the ITRC UXO Team published the ITRC Technical and Regulatory Guideline "Geophysical Prove-outs for Munitions Response Projects" (UXO-3). Since its publication, UXO-3 has become a valuable tool for state regulators and stakeholders responsible for oversight at MR projects. In 2008, the ITRC UXO team published "Quality Considerations for Munitions Response Projects" (UXO-5). This valuable document also addresses GPO, but does not cover the current advanced sensor technology. Technological advancements in geophysical detections systems, and process improvements in geophysical surveys, have rendered UXO-3 and components of UXO-5 obsolete.

Over the past several years, DoD has conducted many GPOs. From these, DoD and the UXO industry have accumulated a significant body of knowledge and data documenting the capabilities and limitations of geophysical systems. As a result of this gained experience, the GPO as originally detailed in UXO-3 and UXO-5, may no longer be the most effective and efficient process to evaluate geophysical systems in most cases.

The Environmental Security Technology Certification Program (ESTCP), a research wing of the DoD and a participant on the proposed ITRC UXO Team, recently sponsored a study group to consider the role of the GPO in MR projects. Based on this study, they proposed significant changes to the original GPO process and have published guidance material in support of this recommendation. The ESTCP guidance is highly technical in nature, with an intended audience of geophysical project managers and geophysicists.

There are now conflicting guidance documents: the highly-technical ESTCP document that is not intended for ITRC's audience (i.e. regulators and stakeholders), and UXO-3 and UXO-5 which are suitable for use by DoD managers, interested parties, state regulators, and stakeholders, but have become obsolete, because they are not reflective of recent technology and procedural improvements.

Having ITRC documents in conflict with current state-of-the-art regarding GPOs will create confusion for users and, in this case, is likely to diminish the reputation of the ITRC as a source of cutting-edge technology documents.

The current ITRC UXO team is nearing completion of Geophysical Classification for Munitions Response Sites Project. The Tech Reg document and internet-based training will rely heavily on the Project Planning and Quality Assurance components of Geophysical Classification using state of the art advanced sensor technology. Information in the UXO-3 and UXO-5 will not be applicable in the transition of geophysical classification technology.

Proposed Scope to Address Problem (what is the approach for this project?) Please note that technology research and demonstration project proposals are not valid for this RFP.

This Team proposes to provide a separate document which will update the ITRC UXO-3 and UXO-5 documents to reflect technical and procedural advances beyond the GPO, such as using Geophysical System Verification (GSV). The updated information and document will provide guidance to regulators concerning the design and construction of the GSV and the integration of production blind seeding QC/QA programs to support advanced geophysical classification objectives. The guidance will empower regulators and stakeholders to quickly assess the quality of work performed, thereby minimizing rework, speeding up MR projects, and reducing the cost of MR projects.

Targeted Users (who will use products generated by this project?)

- Federal, State, and local regulators involved in the oversight of MR projects
- DoD project managers, consultants, and munitions response contractors

- Community and tribal stakeholders.

Summary of Deliverables (primary project product(s))

The primary deliverables are expected to be 1) an updated technical and regulatory guidance document, and 2) revised internet-based training. The working title for the document and internet-based training is "Geophysical Classification Quality Assurance Considerations for Munitions Response Projects".

Impact (how will this project result in more effective environmental decision making?)

As stated above, having conflicting documents regarding the proper implementation and use of the obsolete GPO will create confusion for users and, in this case, is likely to diminish the reputation of the ITRC as a source of cutting-edge technology documents. This UXO Team proposes to correct this problem by updating UXO-3 and UXO-5 to reflect the technical advancements in geophysics equipment, capabilities, and procedures that are included in the ESTCP GPO document. Also, ESTCP has agreed to participate on the ITRC team updating UXO-3 and UXO-5, providing technical assistance to ensure that the recent and highly-technical developments in geophysics that are covered in their new document are appropriately addressed in the tech reg for the ITRC target audience.

This update to UXO-3 and UXO-5 will ensure that the two important guidance documents regarding GPOs are in agreement and will ensure that this valuable technical resource continues to provide correct and up-to-date guidance to the ITRC target audience.

Project Schedule

- Year One (January-December 2015)
  1. Prepare schedule
  2. Scope project (Data gathering)
  3. Define scope of the revised UXO-3 and Geophysical Classification Quality Assurance considerations
  4. Form team sub-units; make writing assignments
  5. Produce draft Tech Reg

- Year Two (January-December 2016)
  1. Begin development of internet-based training
  2. Complete Tech Reg
  3. Complete internet-based training development
  4. Offer internet-based training
  5. Attend conferences to promote the UXO Team and its products (ie. guidance document and internet-based training), providing presentations, poster sessions, etc.
  6. Prepare and submit implementation report

Proposed Personnel

Proposed Co-Team Leaders:

Tracie M. White, P.E., Colorado Department of Public Health and Environment: Tracie White is Unit Leader with the Federal Facilities Remediation and Restoration Unit of the Hazardous Materials and Waste Management Division within the Colorado Department of Public Health and Environment in Denver, Colorado. Ms. White has over 10 years experience working in the Military Munitions Response field, and has worked for CDPHE since 2009. Ms. White manages MR projects across Colorado under various Programs and DoD Services, including FUDS, Air Force MMRP, Army MMRP, and Army MMRP-NDNODS. Before coming to the CDPHE, Ms. White gained experience as a DoD contractor, managing MR projects across the country, including airborne wide-area assessment surveys, ground-based geophysical surveys, and intrusive clean-up actions. Ms. White was an active member of the ITRC UXO Team in 2001-2005, when she helped develop the ITRC UXO Basic Training, and presented classroom training modules at ITRC-sponsored training courses across the country. She also participated in writing portions of the 2004 ITRC UXO-3 document that is being proposed for update. Ms. White earned a

Bachelor's Degree in Chemical Engineering, with minors in both Environmental Science and Public Affairs, from the Colorado School of Mines in 1998.

Roman A. Racca, P.G., California Environmental Protection Agency: Roman Racca is a Senior Engineering Geologist and State-wide Munitions Response Coordinator with the Federal Facilities Unit of the Department of Toxic Substances Control (DTSC) for the California Environmental Protection Agency in Sacramento, California. Mr. Racca has worked for the DTSC, since 1999, on various Military Munitions Response Sites. Mr. Racca, as the State Military Munitions Working Group team leader, coordinates with DTSC Project Managers to ensure consistent investigation, remediation, and reuse of contaminated current and former military properties in California. Mr. Racca has been the Remedial Project Manager for military munitions response at the Former Fort Ord, Monterey since 2002. Mr. Racca worked in the private sector for 14 years as an Engineering Geologist, prior to working for DTSC. Mr. Racca completed his BS in Geology at California State University Fresno.

Potential State Interest:
GPO is a critical QC process in the MR industry. The GPO increases the confidence of regulators and stakeholders in the completed project, which minimizes rework, thereby reducing the cost of cleanup for MR sites. As such, it is critical for the state regulator to understand the technology, its benefits and limitations, and have the latest information available regarding the conduct of a quality GPO. Currently, the following States have expressed interest in participating on the proposed UXO Team and developing an updated GPO document: Alabama, Alaska, Arizona, California, Colorado, Michigan, Missouri, Nevada, New Jersey, Oklahoma, South Carolina, Texas, Utah, and Wyoming. In addition, the co-team leaders are trying to encourage broader state participation by reaching out to other States who may become interested, should an ITRC UXO Team be formed.

Other Organizations:
Representatives from the following federal and state organizations have also offered to participate on this ITRC project team: USGS, Washington DC Department of the Environment, US Army ERDC, U.S. Army Environmental Center (AEC), U.S. Army Corps of Engineers (USACE), US Air Force Air Armament Center, US Army Environmental Command, West Virginia Army National Guard, USEPA (OSWER, Federal Facilities Restoration and Reuse Office), Pacific Northwest National Laboratory, US Army Center for Health Promotion and Preventative Medicine, Kansas Army National Guard, NOSSA, and ESTCP/SERDP.

This proposed UXO team also has the following IAP member organizations: DuPont, Tetra Tech-EC, Tetra Tech-Inc., Battelle, AMEC Earth and Environmental Solutions, ARCADIS, UXOPro Inc., SAIC, Weston Solutions, Kleinfelder, and WL Gore and associates.

Skill Mix of Team Members Required:
The UXO team will represent a diverse group of professionals from a range of specialties involved in the military munitions response industry. Of particular importance for this project are:

- Geophysicists (both government and industry),
- MMRP technical staff (Federal and State government and industry), and
- Site/installation-level project managers (Federal and State government and industry).

The team will continue to solicit participation from all segments of the MR industry, including both public and private sectors.

Sectors of Team Members Required:
- State Government
- Federal Government (particularly, USEPA and DoD)
- Private Sector (MR contractors/consultants and community stakeholders)

Related Work:

Environmental Security Technology Certification Program (ESTCP), a research wing of the DoD, has recommended significant changes to the GPO process. ESTCP has agreed to participate on the ITRC UXO Team to assist in updating UXO-3.