Welcome to Munitions Response and Remediation

**Moderator:** Ms. Nelline Kowbel

**Speakers:**

Mr. John Jackson, USACE, Sacramento District

Mr. Charles Welk, InDepth Corporation

Mr. Roman Racca, California Department of Toxic Substances Control
South Pacific Division
Advanced Classification

John M. Jackson
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Range Support Center
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Agenda

- Advanced Classification (0-60mph in 5s)
- USACE/Industry Concerns
- Ongoing projects and path forward
MMRP Cleanup Cost Break Out

- Total Non-UXO: 96.7%
- UXO: 3.7%

(Average from 19 Response Actions)
Classification

- Classification offers the ability to divide geophysical anomalies into those caused by targets of interest (MEC) and those caused by other things (scrap metal)
Traditional Technology (EM61)

- Great EM instrument for detection
- Attempts at advanced classification have been little better than without
MMRP Industry’s New Toy

Geometrics MetalMapper
Classification with next generation Advanced EMI Sensors

- Decay, ratios, and library match of modeled polarizabilities
- Feature vector space plots

Data (MetalMapper: 3Tx-7Rx-3Ax, 42 time gates)

EMI response model

$$V(t) = \mu_0 n_R n_T I_0 C_R \cdot C_T P(t)$$
Receiver Operating Curves (ROC)

- **Perfect**
- **Flipping a coin**
- **EM61 results**
MetalMapper Real Results

Pole Mountain

Camp Beale
USACE Concern #1

- Not every geophysicist is created equal
  - Processing routine is much more involved
  - Many more decision points
  - Big learning curve seen in demonstration projects
  - How do we define “qualified geophysicist” on contracts?
USACE Concern #2

- Libraries and feature space plots
  - Who maintains the “official library?”
  - How is a site specific library developed?
USACE Concern #3

- Regulator buy in?
  - We have been working in coordination with multiple agencies and states, but...
  - Verification digging
USACE Concern #4

- Good data in = good data out
  - Good positioning is absolutely paramount
  - A good signal to noise ratio drastically reduces the number of cued points needed
  - Good QA/QC program
  - Higher up front costs ultimately reduces costs in the long run
Path forward

- Range Support Center has multiple ongoing projects at different stages
  - Camp Beale
  - West Mesa
  - Hawthorne
What *can* this mean?

- More land and/or more UXO removed
- Greater risk mitigation for same amount of money
Thank you

Thanks to:

SERDP/ESTCP
USACE CX
USACE SPK
SAIC
Geometrics
Advanced Sensors
Challenges to Entry

Charles Welk
InDepth Corporation
InDepth’s Metal Mapper

Rationale for Purchase

- Understood and believed in the technology
- Agreed that this was a natural extension of our current services
- Technology was transferred and commercially available
InDepth’s Metal Mapper

• Ordered from Geometrics in August 2011
• Received in January 2012
• Repackaged sensor and DAC
• Designed and constructed delivery platform
InDepth’s MM Program

• After purchase we were informed that certification would be required before InDepth could deploy this instrument
• Performed self-funded testing and training
• Invested approximately $250K to date
• Collaborated with SAIC on an ESTCP proposal to participate in a future Live Site Demonstration
Advanced Sensor Qualification/Certification

• Who is qualified to use advanced sensors?
• Who will certify the processing/acquisition personnel?
• What is the certification process?
• When will guidance documents be published?
• What are the program Specifications/Standards?
Advanced Sensor Opportunities

• ESTCP demonstrations
• Limited production contracts
• Currently no open-competition contracts
• Future??
Current Hurdles

• Performance-Based Acquisition (PBA)
• Quality Control and Assurance
• Process Guidance Documents
• Regulatory Acceptance
• Stakeholder Acceptance
Recap

- Advanced sensor technology will be a useful tool in the future of our industry
- InDepth purchased an advanced sensor too soon
- Production work for advanced sensors is not currently available
- Standards and program guidance is not currently in place
- Will planned improvements render our sensor obsolete by the time it gains regulatory acceptance and when production work becomes available?
Munitions Response and Remediation
Transitioning of Technology

Roman Racca, P.G.
Statewide Munitions Response Coordinator
California Department of Toxic Substances Control
Engineering and Special Projects Office
Regulatory Perspective

- Analog
- Digital Geophysical Mapping
- Geophysical Classification
- Best Available and Appropriate Technology
Regulatory Perspective

- Compliant with CERCLA and RCRA
- ITRC Program and evolution of MetalMapper
- ESTCP Munitions Response Advisory Group
- Potential Technology applicability/land use considerations
Regulator Concerns

• Leaving metal in the ground
• Geophysicist certification/qualification
• Planning and Procedures
• Library Maintenance
• Quality Control/Quality Assurance
Regulatory Concerns

• Technical or Guidance Documents do not exist at this time.
• Development of a QAPP specific to this process.
• Regulators are unfamiliar with process and procedures.
• Process must be transparent and reproducible.
Where Are We in the Process?

1. ESTCP has completed many demonstration projects on munitions response sites across the country.

2. ITRC Geophysical Classification for Munitions Response Team is reviewing results of ESTCP technology demonstrations.

Questions