

Meeting Minutes

April 8, 2010

Project: Former Camp Butner Restoration Advisory Board (RAB)

Date: April 8, 2010, 6:30 – 8:30 pm

Place: Soldier's Memorial Sports Arena
24th and D Street
Butner, NC 27509

Attendees:

RAB Members: Art Shacter, North Carolina Department of Environment and Natural Resources (NCDENR); Vicky Cates, Town of Butner (Co-Chair); Scott Strickland, Butner Public Safety; Barry Baker, Granville County Planning.

Other Attendees: Sam Colella, US Army Corps of Engineers (USACE) Wilmington District; Raymond Livermore, USACE Wilmington; Marti Morgan, NCDENR; Brennan Bouma, UNC Superfund Research Program ; Robert Nore, USA Environmental, Inc. (USA); Anne Andrews, Deputy Director of Environmental Security Technology Certification Program (ESTCP); Katherine Kaye, HydroGeologic (HGL); see Attachment 1 for attendance roster.

Prepared By: Robert Nore

Topic: RAB Meeting 15

Introduction

Minutes from the October 15, 2009 meeting were approved.

Environmental Security Technology Certification Program (ESTCP)

Ms. Andrews of ESTCP gave a presentation on planned ESTCP activities at former Camp Butner (see Attachment 2). She indicated that ESTCP does demonstrations and validations of innovative technologies to try to promote better environmental outcomes, lower costs, and more efficient use of resources on Department of Defense (DOD) environmental projects. They try to find ways to reduce DOD liability due to environmental problems, and improve DOD's stewardship of the environment while continuing with the range training programs. The cost of scrap metal removal is disproportionately high compared to all other tasks associated with ordnance projects, mainly because current clearance sensors can't tell whether a metal contact is scrap metal or unexploded ordnance. ESTCP wants to test sensor systems which can discriminate

whether an anomaly is barbed wire, or horse shoes or unexploded ordnance (UXO). She then described the ESTCP plan to demonstrate sensor technologies at Butner, first reviewing similar demonstrations at former Camp Sibert, AL and former Camp San Luis Obispo, CA. The Camp Butner demonstration is more complicated than the previous two sites because of the larger diversity of munitions types used at Butner. ESTCP is conducting surveys at the former artillery impact areas along either side of Uzzle Road.

Ms. Andrews said that their budget can handle between 10 and 15 acres. They have collected transect data on 112 acres along Uzzle Road, and selected several grids where they had 100% coverage with their sensors. She described the grid findings in the southernmost grid, which had the highest density of anomalies, and then the validation digging that is planned for the summer. She noted that any acceptance of the technologies tested through ESTCP will require intensive documentation, and close collaboration with the stakeholders who have to live with the results. Her cost model showed that technologies that can classify anomalies have the potential to significantly cut costs associated with the current industry practice of digging all detections.

During Ms. Andrews' presentation, several stakeholders owning property along Uzzle Road asked questions concerning when they might expect their properties to be cleared of UXO. Mr. Livermore gave an impromptu briefing on the history of the Removal Response actions at former Camp Butner, explaining the Engineering Evaluation/Cost Analysis (EE/CA) which led to a decision document authorizing ordnance clearance of several areas (such as Lakeview Subdivision) as a unit and then clearing 2 acres around individual residences. He noted that 140 residences in Complex 1 (south of Enon Road) and 85 residences in Complex 2 (north of Enon Road) had been identified during the EE/CA as needing clearance, and these are the residences that are covered under the current decision documents. Once the current removal actions are completed, USACE will move to the next phase in the environmental process, a Remedial Investigation/Feasibility Study (RI/FS). USACE has no choice but to follow this process, so residents who built their homes after the EE/CA will have to wait until the RI/FS is completed until another clearance action is possible. The residents asked what they could do in the meanwhile if they need to dig holes or build foundations. Mr. Nore offered that there are many ordnance companies that would be willing to provide construction support for them. Mr. Livermore indicated that he had a list of ordnance contractors he could furnish to the residents.

One resident, Mr. Lougee, stated that USA Environmental left large amounts (two half drums) of munitions debris on his property after their clearance. Mr. Nore talked to him immediately after the meeting and found that this was the barn and machine shed at 4669 Uzzle Road. The clearance teams had laid out an area larger than 2 acres for clearance due to the number of buildings on the property, but Mr. Nore had abruptly stopped them after clearing 2 acres due to the high density of metal debris being found. Apparently they had left much of the debris in their haste to move to a different site. Mr. Nore asked and Mr. Lougee agreed to keep the debris at his site until USA mobilizes for their 2010 fieldwork, at which time USA will take possession of the scrap.

Work Update

Robert Nore, Project Manager with USA Environmental first informed the new attendees that there is an Administrative Record that contains the EE/CA report and the report for removal actions taken through 2008. He then briefed the RAB on work that was completed in 2009 (see Attachment 3), describing the work procedures and results. He pointed out that USA used mag/dig efforts to dig 130,000 holes in 2009 and recovered 7 UXO items, information which points out the importance of ESTCP's efforts. He indicated that USA's 2009 effort was highly successful due to their hiring of a local resident as Field Office Administrator (FOA). This FOA went door to door obtaining rights of entry (ROE) and arranging for evacuations. She obtained most of the 95 ROEs required for 2009's field effort and was very effective in obtaining cooperation from residents for evacuations. Mr. Nore showed photos of the seven UXO items recovered during the 2009 removals.

Ordnance Discovery Update

There were no new ordnance discoveries.

Public Questions

Questions from the public were addressed during the ESTCP presentation.

Closing/Action Items

The next RAB Meeting is scheduled for October 28, 2010 at 6:30 pm at the same location. At 8:30 p.m., Ms. Cates moved to adjourn and her motion was carried unanimously.

ESTCP Classification Pilot Program



ESTCP



- **Environmental Security Technology Certification Program (ESTCP)** is a Department of Defense (DoD) program that promotes innovative, cost-effective environmental technologies through demonstration and validation at DoD sites. <http://www.estcp.org>

Environmental Drivers



Reduction of Current and Future Liability

Contamination from Past Practices



- Groundwater, Soils and Sediments
- Large UXO Liability
- Emerging Contaminants

Pollution Prevention to Control Life Cycle Costs



- Elimination of Pollutants and Hazardous Materials in Manufacturing Maintenance & Operations
- Achieve Compliance Through Pollution Prevention

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Environmental Drivers



Sustainability of Ranges, Facilities, and Operations



Maritime Sustainability
Threatened and Endangered Species



Toxic Air Emissions and Dust

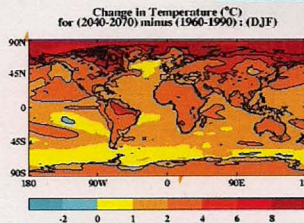


UXO & Munitions
Constituents

Noise



Urban Growth & Encroachment



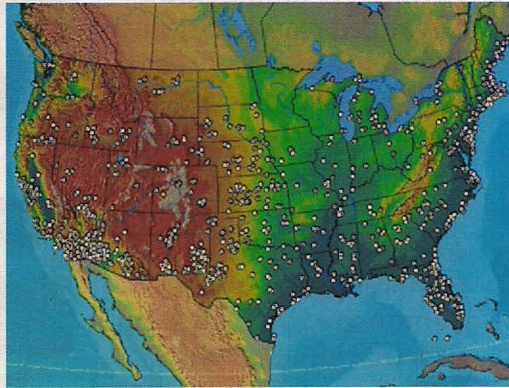
Climate Change

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The Unexploded Ordnance Problem

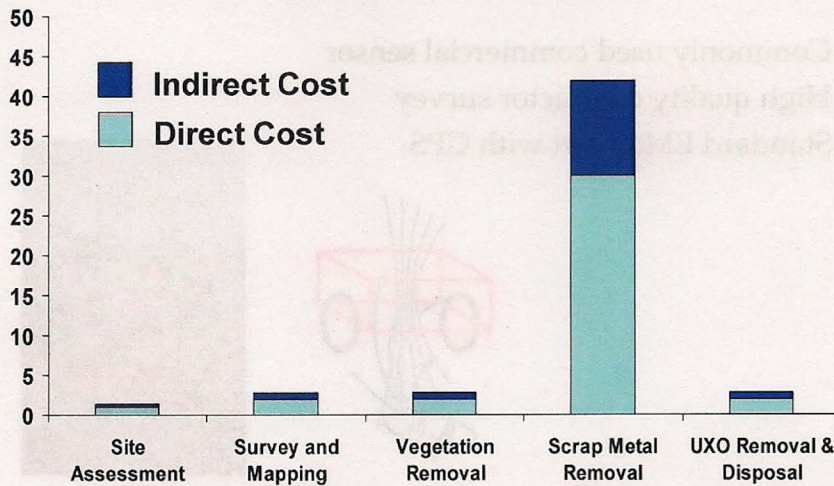


- There are 3000 sites suspected of containing unexploded ordnance (UXO)
- They comprise 10s of millions of acres
- The current annual cleanup effort is on the order of 1% of the projected total cost



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Defense Science Board UXO Clean-up Cost Break Out



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Classification Pilot Program

- **Objective:** demonstrate advanced classification technologies for distinguishing intact munitions from harmless metal and geology
- Acceptance of these technologies requires demonstration of system capabilities at **actual munitions sites** under real world conditions



4.2 in mortar



Half shell



Base plate



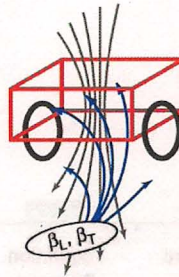
Cultural clutter

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EM61 Cart

- Commonly used commercial sensor
- High quality contractor survey
- Standard EM61 cart with GPS



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Advanced Sensor Metal Mapper

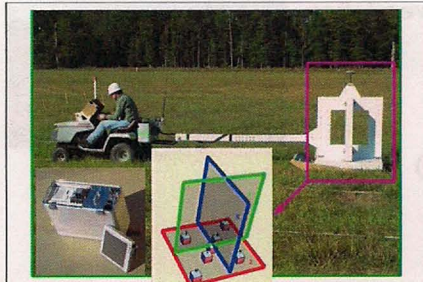


Figure 2: Photos showing the MetalMapper antenna array together with the electronics package and control console (inset). The photo was taken at a demonstration conducted at Aberdeen Proving Grounds (APG) in September, 2008.

- Information on detected object
 - ◆ Size
 - ◆ Shape
 - ◆ Wall thickness
 - ◆ Material properties

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Live Site Demonstrations

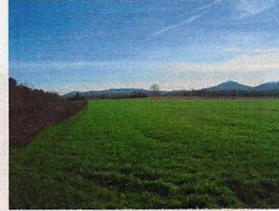
- Validate capabilities of currently available and emerging technologies on real sites
- Supports dialog with regulators and program managers

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Former Camp Sibert AL

- **Simple Site:**
 - ◆ Benign terrain, topography, and vegetation to ensure good data quality
 - ◆ Single large munition type
- **Commercial Sensor – EM61**
 - ◆ Munitions correct – 99% (118/119)
 - ◆ Clutter correct – 44%
- **Advanced Sensor – BUD**
 - ◆ Munitions correct – 100% (56/56)
 - ◆ Clutter correct – 97%



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Former Camp San Luis Obispo, CA

- **More challenging**
 - ◆ Wider mix of larger munition types
 - ◆ More difficult site conditions (steep terrain)
- **Commercial Sensor – EM61**
 - ◆ Munitions correct – 100%
 - ◆ Clutter correct – ~50%
- **Advanced Sensor – Metal Mapper**
 - ◆ Munitions correct – 97%
 - ◆ Clutter correct – ~80%



Increasing difficulty at each site

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Pilot Program Approach

- Site selection
- Site characterization/preparation
- Geophysical sensor data collection
- Classification approaches applied to data sets
- Dig lists submitted
- Technology performance scored

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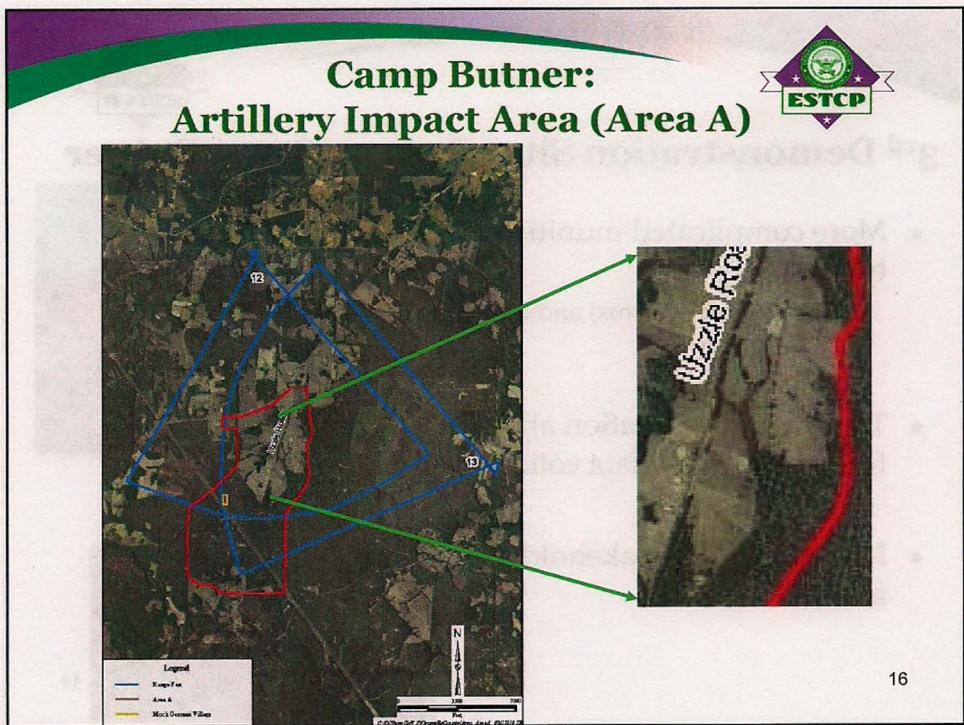
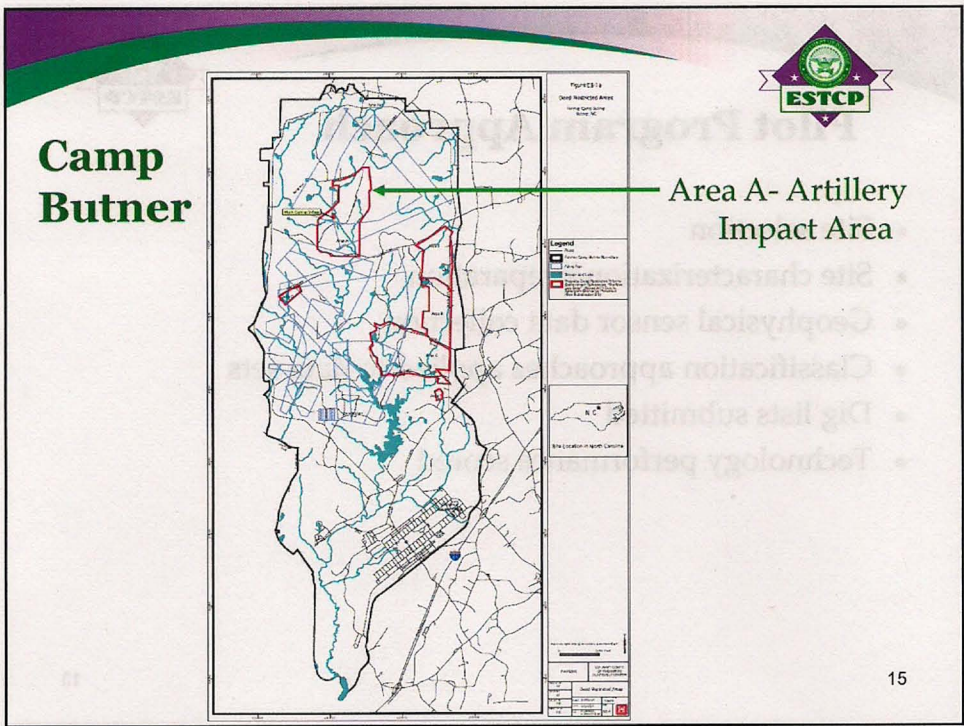


3rd Demonstration Site: Former Camp Butler

- More complicated munition type mix
 - ◆ Mix of small (37mms) and larger munition types
- Terrain and vegetation allow for good quality data collection
- Regulatory and stakeholder interest



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Camp Butner Suspected Mmunition Types (Area A)

- Rifle grenades
- 2.36-inch rockets
- 37mms
- 40mms
- 81mm mortars
- 105mms
- 155mms
- 240mms

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Transect Survey

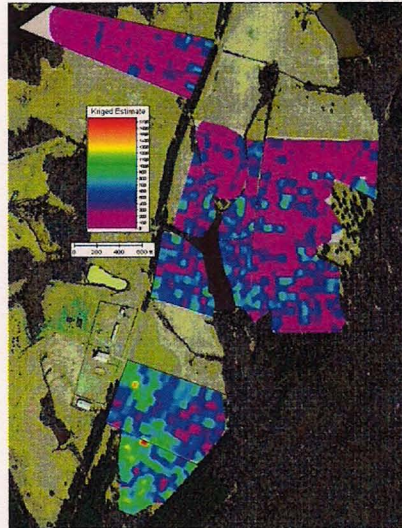
- EM61 cart on 112 acres
- 20m line spacing





Transect Survey: Estimated Anomaly Density

- Estimate anomalies per acre
 - ◆ Light Purple: ~0- 300
 - ◆ Dark blue: ~300- 750
 - ◆ Green: ~800- 1350
 - ◆ Red: ~1400 and above
- Highest densities in the southern parcels



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100% Coverage Areas

- Three high density areas identified in transects- yellow boxes
- Surveyed with EM61 cart
- Chose southern parcel (highest density) for site characterization grid

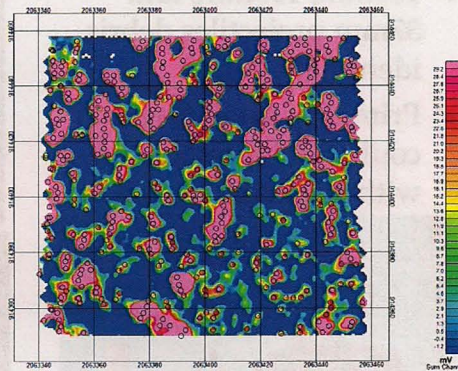


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Site Characterization Grid



100ft x 100ft grid



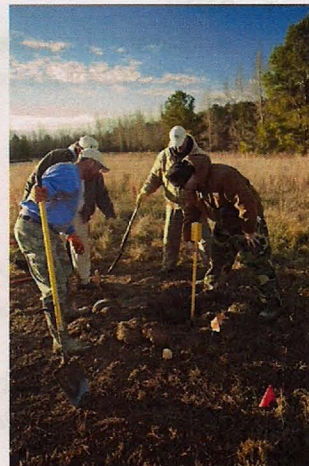
101508 Data
Camp Butner Site Evaluation
Grid B

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Site Characterization Grid Findings by Category



Category	Number of Items Recovered	Depth Range
Munitions Debris	438	0" to 20"
Cultural Debris	155	0" to 20"
Geologic Response	3	NA
No Find	12	NA
Total	608	



57% of the grid was dug due to high density and rain delays

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Site Characterization Grid Findings

- 105mm, 155mm, and 37mm projectiles debris identified
- Primarily small frag that could not be associated with a specific munition



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Proposed Next Steps

- April
 - ◆ Surface clearance
 - ◆ 100% coverage pre-survey
- May /June
 - ◆ Seeding
 - ◆ Data collection
- July/August
 - ◆ Validation digging
- August/September
 - ◆ Data processing
- October/November
 - ◆ Technology performance scoring

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Site Preparation/Characterization

- Surface clearance- crew removes metallic surface items
 - ◆ Safety
 - ◆ Subsurface items focus of demonstration
- 100% coverage pre-survey- further characterize the site and provide locations for seed items
 - ◆ EM61 cart and magnetometer
 - ◆ 25 acres located in the south
- Seeding- bury intact inert munitions at known locations to validate technology performance
 - ◆ Approximately 200 items
 - ◆ Inert 37mms, 105mms, and possibly 40mms

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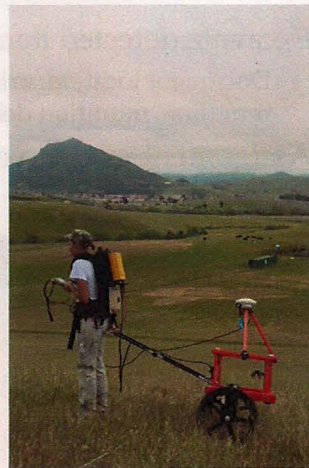


Survey Sensor Systems

- Survey Sensors
 - ◆ EM61 Cart
 - ◆ Metal Mapper



Metal Mapper



EM61 Cart

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Cued Sensor Systems

- Cued Sensors
 - ◆ Metal Mapper
 - ◆ Naval Research Lab Cued EMI array (TEMTADs)
 - ◆ ALLTEM
 - ◆ EM63-3D



ALLTEM



Metal Mapper



TEMTADS



EM63-3D²⁷



Validation Digging

- Excavate detected items
 - ◆ Document location, orientation, depth, and item identity (intact munition, munition debris, cultural clutter, geology)
- Assignment made to each item if considered a target of interest



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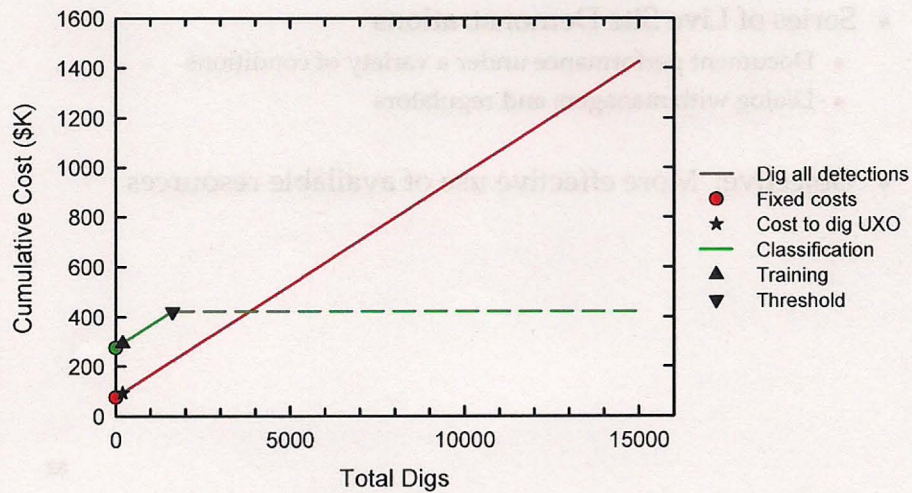
Acceptance

- Requires transparent process involving explicit, documented classification
- Continued collaboration with stakeholders- Advisory Group and beyond

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Cost Model





Summary of Cost Model in \$K

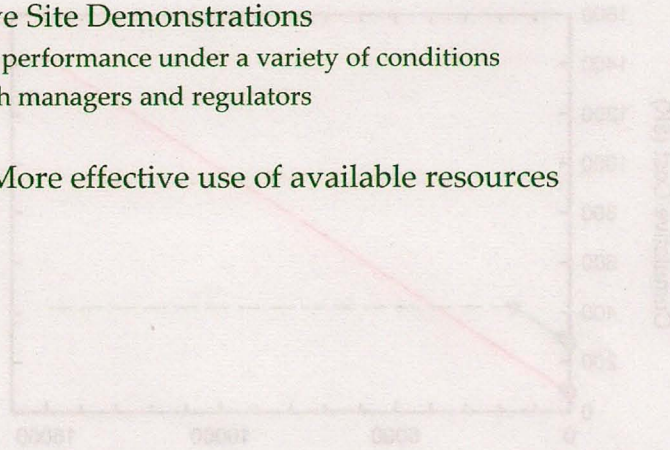
	10-acre Site		100-acre Site	
	EM61 Cart	Metal Mapper	EM61 Array	Metal Mapper
Detection Only	250	250	1,400	1,400
Classification	150	100	750	400
Savings	100	150	650	1,000

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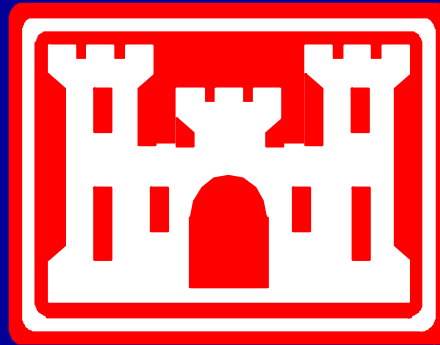
ESTCP Classification Program

- Series of Live Site Demonstrations
 - ◆ Document performance under a variety of conditions
 - ◆ Dialog with managers and regulators
- Objective: More effective use of available resources



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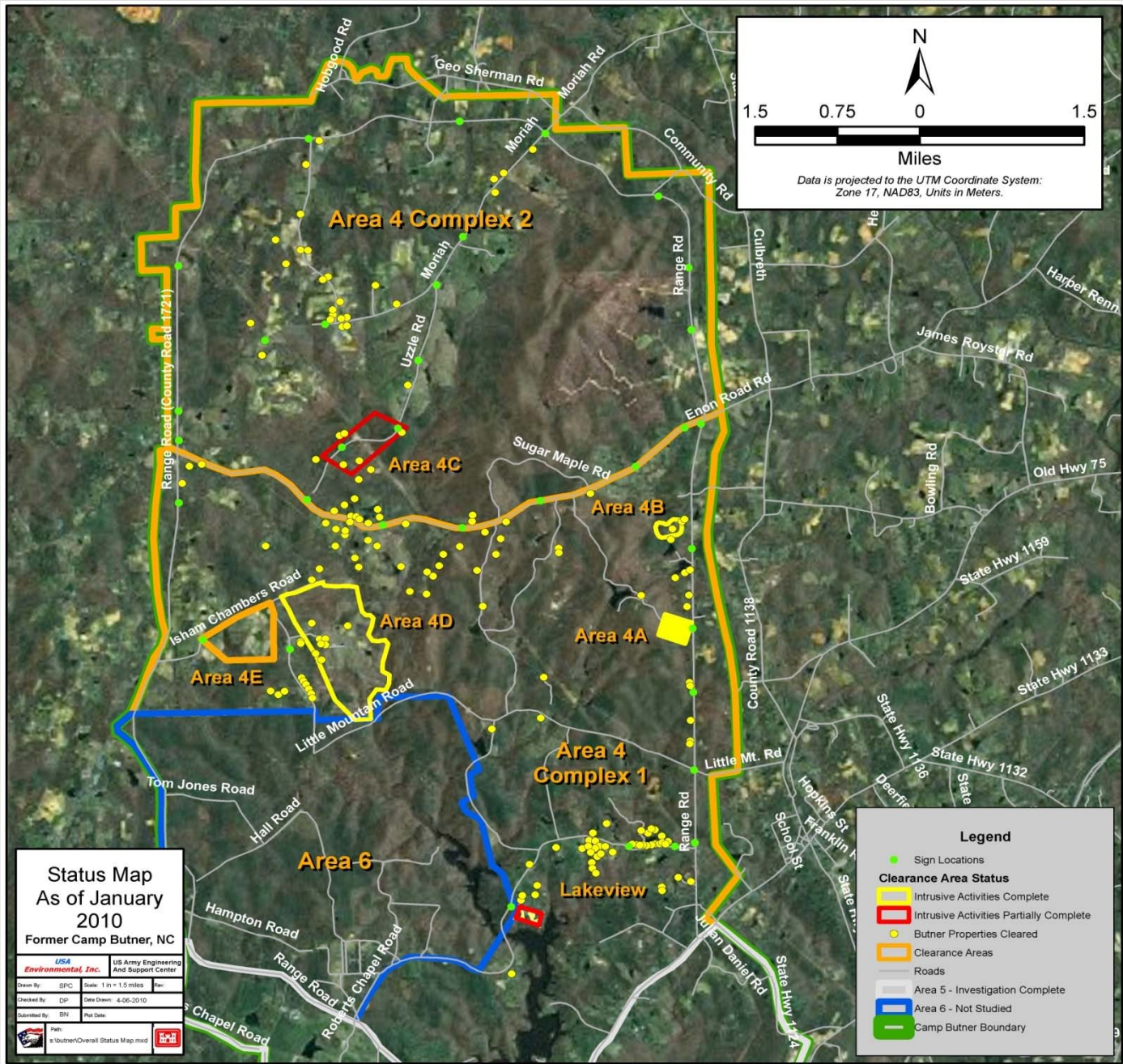
Camp Butner Removal Action



8 April 2010

Work Completed (2009 to date)

- Complex 1, Unit 2 (10) April 9
- Complex 1, Unit 3 (10) May 9
- Complex 1, Unit 5 (10) May 9
- Complex 1, Unit 4 (10) May 30
- Complex 2, Unit 3 (10) June 20
- Complex 1, Unit 6 (10) July 11
- Complex 1, Unit 7 (10) July 25
- Complex 1, Unit 8 (10) Nov 10
- Complex 1, Unit 9 (10) Dec 7
- Complex 1, Unit 10 (5) Dec 16



Definitions

- MEC – Munitions & Explosives of Concern
 - UXO – Unexploded Ordnance
 - DMM – Discarded Military Munitions
 - MC – Munitions Constituents
- MD – Munitions Debris
- MSD – Minimum Separation Distance
- HE – High Explosive

Removal Procedures

- Measure 2-acre envelope around residences
- Lay out grids and lanes
- Clear vegetation and surface clutter
- Mag/dig
- Dispose of MEC/MD

Process Improvements

- Field Office Administrator – local resident
 - Seek Rights of Entry
 - Coordinate evacuations
- Two mobilizations – March and October
- Four Teams

Removal Action Results - 2009

Subtask	Residences	Acres	MEC items Found	# MD Reported
Complex 1 Unit 2*	10	17	0	119
Complex 1 Unit 3	10	11.5	1	50
Complex 1 Unit 5	10	27.1	3	147
Complex 1 Unit 4	10	19.5	0	157
Complex 2 Unit 3	10	18.8	0	124
Complex 1 Unit 6	10	19.5	0	88
Complex 1 Unit 7	10	19.9	2	192
Complex 1 Unit 8	10	19.4	0	150
Complex 1 Unit 9	10	17.8	0	255
Complex 1 Unit 10	5	9.1	1	388
Totals	95	180	7	1670

* 5 residences cleared in 2008

UXO Found

60mm Mortar – 3/25/09
(1087 Roberts Chapel Rd)

Engineering Controls for
60mm Mortar



UXO Found

Post-Detonation for
60mm Mortar



2.36-in Rocket Tail Fin with
Detonator – 3/30/09
(774B Roberts Chapel Rd)



UXO Found

2.36-in Rocket – 4/16/09
(758 Roberts Chapel Rd)



2.36-in Rocket – 4/9/09
(758 Roberts Chapel Rd)



UXO Found

60mm Mortar – 7/2/09
(564 Bethany Church Rd)



Hand Grenade – 7/20/09
(1254 Bethany Church Rd)



UXO Found

M9 Rifle Grenade
(1095 Bourbon Street)

