RAB Meeting Minutes
April 25, 2013

Project: Former Camp Butner Restoration Advisory Board (RAB)

Date: April 25, 2013, 6:30 PM – 8:30 PM

Place: Butner Town Hall
415 Central Avenue
Butner, North Carolina 27509

Attendees:

The table below presents a list of the attendees to the April 25, 2013, RAB meeting, and **Attachment 1** provides the attendance roster.

Name	Organization
Sam Colella	USACE Wilmington District
Ray Livermore	USACE Wilmington District
Chris Cochrane	USACE Huntsville Center
Sarah Dyer	USACE Huntsville Center
Hank Counts	USACE OESS
Kimberly Vaughn	HydroGeoLogic, Inc. (HGL)
Joel Sanders	HGL, SUXOS
Marti Morgan	North Carolina Department of Environment and Natural Resources (NC DENR)
Vicky Cates	Town of Butner (Chairwoman)
Richard Veazey	Citizen of Granville County
Hope Taylor	Cleanwater for North Carolina, local resident

Prepared By: Kimberly Vaughn

Topic: RAB Meeting 19

Introduction

Vicky Cates called the meeting to order and requested an introduction of all meeting attendees. Ray Livermore, USACE discussed the status of the former Camp Butner FUDS since the last RAB meeting and reviewed the topics to be discussed this evening.

RI Update

Mr. Livermore provided an introduction of Kimberly Vaughn, present as Deputy Project Manager for HGL. Mr. Derek Anderson remains the Project Manager for HGL, and Ms. Vaughn is managing the field activities, with Mr. Anderson's input. Ms. Vaughn began the presentation (see **Attachment 2**) with a focus on Munitions and Explosives of Concern (MEC) safety, focusing on the 3 R's: RECOGNIZE - that Military items can be DANGEROUS. RETREAT -

Do Not Touch It! Move away from the area and REPORT - CALL 911. Ms. Vaughn provided an introduction of the Remedial Investigation (RI)/ Feasibility Study (FS) goals and objectives. Ms. Vaughn also identified the stakeholder team as the USACE, NC DENR, and HGL. Chris Cochrane, USACE, noted that the government team works for the USACE Wilmington District, providing technical expertise. Ms. Cochrane invited the group to ask questions and comments during the course of the meeting as they are discussed during the slide presentation.

Ms. Vaughn continued with the presentation and identified the project team, provided an overview of the Formerly Used Defense Site program and the Military Munitions Response Program (MMRP) project process. Mr. Livermore pointed out that the MMRP Project Processes are a refined CERCLA process. Ms. Cochrane noted that the public involvement shown in the graphic on slide 7 extends throughout all phases of a project. This RAB meeting is part of that public involvement. A brief history of the past investigations was reviewed.

Remedial Investigation Field Activities

The objectives of the RI/FS were reviewed, including a distinction from the removal actions that were conducted in the past. The previous removals conducted surrounding people's homes were different from this RI. HGL explains during interaction with the landowners that the nature of this study is to define the nature (what is present onsite) and extent (where is it present) of potentially hazardous items. Ms. Vaughn noted that anytime RAB members may be communicating with their neighbors concerning the FUDS site, it is important to note that the current project is not a removal action. The data gathered during this project will support recommendations for future removal actions, to be funded on new projects in the future.

The type of investigation planned (transects combined with grids with intrusive investigation) was reviewed. Figures were distributed (**Attachment 3**) including the "Camp Butner DGM Transects" figure which shows the digital geophysical mapping (DGM) transects and Reconnaissance Survey transects which have been completed, based on the rights-of-entry (ROE) granted by landowners. A summary of the mileage of coverage and number of grids is included on slide 15. Ms. Vaughn described how transects were planned, the transect spacing, and the placement of grid locations for intrusive investigation based on the results of the DGM transect survey. The figure "Anomaly Density" figure in Attachment 3 shows the results of estimated anomaly density per acre that were generated based off the transect data. The grid locations are currently being intrusively investigated.

Ordnance Discovery Update

Ms. Vaughn noted that the intrusive investigation is underway currently, and the MEC found to date will be updated in future. The grids that are placed in locations based on transect data are then intrusively investigated. During discussions of the typical munitions anticipated on former Camp Butner, the 155mm found on 4/17 and destroyed on 4/18 was discussed. This item was found by hunters walking the property over the weekend. The hunters did not touch the item, gathered its location, and reported it to the landowner. The landowner contacted HGL (based on previous coordination with the landowner to perform RI work on his land). HGL identified the

item as a 155mm high explosive (HE) projectile. The item was destroyed on April 18th, with cooperation from Butner Public Service and the Carolina Forestry Department.

Ms. Morgan asked if Mr. Doug Logan, the RAB member that is Granville County Fire Marshal, has records of any munitions found by citizens. HGL contacts Butner Public Safety for coordination of each detonation required. Butner Public Safety personnel can use their reverse 911 notification services to send an automated announcement to affected residents phone numbers. Mr. Veazey stated that houses shook when the item was destroyed, he remembers the explosion on April 18th, and realizes now that HGL was conducted a demolition. Mr. Joel Sanders, SUXOS for HGL, noted that he can request Butner Public Safety notifications be expanded to a larger radius, since Mr. Veazey felt the shockwave from the blast farther away than the 1-mile radius Butner Public Safety had used on April 18th. Mr. Colella and Mr. Sanders discussed additional sand-bagging of the item for demolition and whether that could minimize the vibration for local homeowners. Mr. Sanders noted that at times containing the blast further from above can have the reverse effect by containing the shockwave and forcing it downward into bedrock and actually increase the shockwave effect.

The group further discussed other contacts that potentially have historical information on munitions items that may have been reported by the public and destroyed by Explosive Ordnance Disposal personnel, perhaps from Fort Bragg. Mr. Livermore and Ms. Cates discussed Mr. Logan's involvement in the past and that he would usually give this type of update. Ms. Cochrane noted that EOD records are usually not highly detailed, and if they can be obtained, they do not usually include as much detail as the team may be anticipating.

Additional RI/FS Discussions

Ms. Vaughn described the environmental sampling to be conducted during the RI (slides 24 to 26 of Attachment 2). The schedule was also discussed, including the final reporting that will be submitted in the fall of 2013. Additional information is available to the public on the Camp Butner website. Members of the RAB should note that the current URL in the slide presentation for the Camp Butner website is not correct. The corrected URL reference to be used is: http://www.saw.usace.army.mil/Missions/FormerlyUsedDefenseSites/CampButner.aspx. This concluded HGL's update on the status of the RI/FS project and Ms. Cates and Mr. Livermore addressed the remaining items on the agenda.

UXO School/Education Program Discussion

Mr. Livermore, Mr. Veazey and Ms. Cates discussed the school education program. The RAB would like to re-energize the school outreach program. Ms. Morgan noted that the community relations plan indicated that during community interviews the elementary school principal was not aware of the history of the former Camp Butner FUDS site. Mr. Livermore suggests that a separate teleconference be scheduled after reaching out to Mr. Logan to determine his desire to lead the UXO school education effort, to discuss the public relations/community outreach to schools, specifically. Ms. Cates indicated she would provide the school board point of contact to Mr. Livermore to provide a starting point for the program. Ms. Cates also stated that she can also reach out to the new Chief for more information. Mr. Livermore would also like to

incorporate the new Chief into the RAB and perhaps reach out to Butner Public Safety personnel for RAB participation.

Ms. Cochrane made another suggestion that the URL for the UXO Safety Clubhouse (with many helpful activities for children) could be added to the RAB meeting slides for members to use during elementary school outreach activities. That URL is: http://w3.sas.usace.army.mil/UXO/safety_class/

Signage

Mr. Veazey pointed out that there are about six signs missing along Uzzle Road. There are also other signs missing that may have been vandalized or destroyed. Mr. Livermore noted that when he was onsite recently he also made a list of areas that were missing signs. He noted that he and Ms. Cochrane are working on a contract to get the signage put back in place.

New Public Outreach Opportunities

Mr. Veazey informed the group that he is participating in a new information sharing with senior citizens and has made a presentation on the FUDS history and the RAB's existence. He has given them a summary of the efforts currently ongoing for the Butner site. Mr. Veazey noted that the public outreach video that he has is a VHS format video. He thinks that a DVD would be helpful. Mr. Livermore stated that he knows that the Public Affairs Officer out of the Wilmington District has, or will be creating, a DVD version for everyone to use.

Federal Co-Chair for the RAB

Mr. Colella and Mr. Livermore stated that a Federal Co-Chair will always be present on the RAB. During earlier discussions, it was mentioned that Mr. Colella's involvement was necessary based on the level of public response and public involvement. Mr. Livermore would like to propose that he replace Mr. Colella as Co-Chair. Ms. Cates and Ms. Morgan do not have any objections.

Stakeholders Forum on the Use of Geophysical Classification for Munitions Response

Ms. Cates described her participation in November 2012 in the Environmental Security Technology Certification Program (ESTCP) forum. This meeting discussed how the data was interpreted and the quality assurance review of the data, over time that has been gathered by multiple contractors. Ms. Cates noted that based on her feedback it seemed that the Butner RAB has been a better communicated and better staffed RAB than many of the groups that she observed from the other personnel that attended. Her takeaway from the forum was that this RAB deserves positive feedback for the level of communication, teamwork, and involvement of the RAB members.

Next RAB Meeting

Attendance of members at the RAB meeting was discussed and the importance of good attendance. There were discussions of outreach to invite new RAB members to participate. The board members discussed inviting a school board member, Superintendent, or administrative personnel involved with the school district to participate. Ms. Cates also suggested that a member of the parent teacher organization be invited to participate.

A potential date of August 28th or 29th was discussed for the Draft Final RI Report stages as a good date for the next RAB meeting.

Closing/Action Items

Follow up with Mr. Logan and other County or municipal resources for additional munitions items found.

Note: Following this RAB meeting, Ms. Vaughn (HGL) contacted Mr. Logan and discussed the history of citizen-reported munitions. Mr. Logan stated he did not have any records or location information on items found in the past.

Setup a separate teleconference with Mr. Logan on the school outreach.

ATTACHMENT 1

U.S. Army Corps of Engineers, Wilmington District
Former Camp Butner
Restoration Advisory Board Meeting

Meeting Date/Time: 25 April 2013 at 6:30 PM
Meeting Location: Butner Town Hall Multi-Purpose Room
(415 Central Avenue, Butner, NC 27509)

Name	Address	Affiliation (private, Government, etc.)	Place Name on Mailing List (Yes or No)
Vicky Cate	605 22nd St Butner	Town of Butner	yes
Kimberly Vaughan	1403 Baltimore Ln	Hydrologic Logic	yes
Chris Cochrane	USACE - Huntsville	Corps of Engineers	NO
Sarah Dyer	USACE - Huntsville	corps of Engineers	NO
SAM COLELLA	USACE - WILMINGTON		
Hope Taylor	1588 Jack Clement Rd. Stem	Clean Water for NC, resident	N/A
RAY LIVERMORE	USACE - WILMINGTON		

U.S. Army Corps of Engineers, Wilmington District
Former Camp Butner
Restoration Advisory Board Meeting

Meeting Date/Time: 25 April 2013 at 6:30 PM
Meeting Location: Butner Town Hall Multi-Purpose Room
(415 Central Avenue, Butner, NC 27509)

Name	Address	Affiliation (private, Government, etc.)	Place Name on Mailing List (Yes or No)
Richard L Vecca	4149 Range Rd, Stem	past-chair	yes
Marti Morgan	217 W. Jones St. Raleigh, NC	NC DENR	yes
Hank Counts	USACE - Savannah	USACE	N/A

ATTACHMENT 2

Remedial Investigation/Feasibility Study

Former Camp Butner
Remedial Investigation (RI)/Feasibility Study (FS)

US Army Engineering and Support Center, Huntsville

US Army Corps of Engineers, Wilmington District

25 April 2013

US Army Corps of Engineers
BUILDING STRONG®

Munitions and Explosives of Concern (MEC) Safety

RECOGNIZE
Military items can be DANGEROUS.

RETREAT
DO NOT TOUCH IT!
Move away from the area.

REPORT
CALL 911.

Goals of the RI/FS

- **Protect Human Health and Welfare**
- **Protect and Preserve the Environment**
- **Manage Risk**
- **To determine the nature and extent of contamination from military munitions**

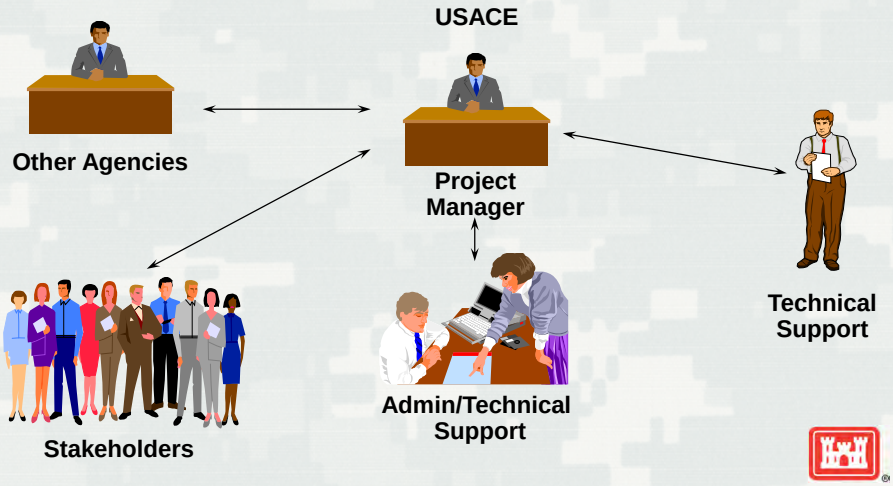
Project Delivery Team

US Army Corps of Engineers

North Carolina Department of Environment and Natural Resources

HydroGeoLogic, Inc. (HGL)

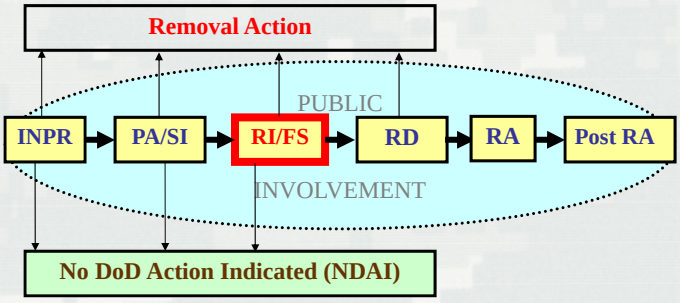
Project Team Composition



FUDS Program

- Congress established the Formerly Used Defense Sites (FUDS) Program in 1986.
- The USACE manages the FUDS program for the Department of Defense (DoD).

MMRP Project Process



MMRP: Military Munitions Response Program
INPR: Inventory Project Report
PA: Preliminary Assessment
SI: Site Inspection
RI/FS: Remedial Investigation/Feasibility Study
RD: Remedial Design
RA: Remedial Action

Munitions and Explosives of Concern (MEC)

Our focus is minimizing the safety hazards from MEC remaining at this FUDS site.

MK II Hand Grenade

81mm Mortar

60mm Mortar

37mm Projectile

Munitions and Explosives of Concern (MEC)

75mm Projectile

M9A1 Rifle Grenade

M8 3.5-inch Rocket

M6 2.36-inch Rocket

Past Investigations

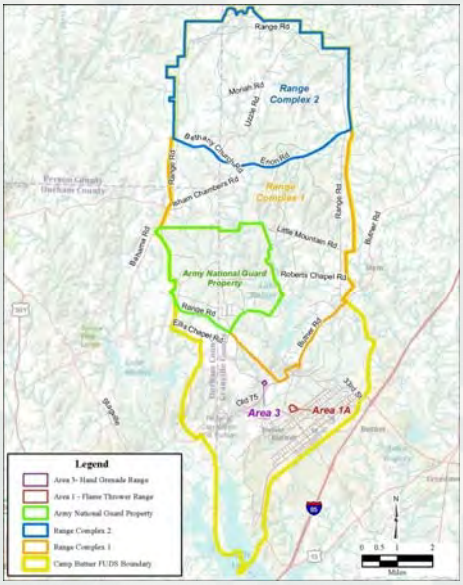
- **Engineering Evaluation (EE)/Cost Analysis (CA) 2001**
  - An EE/CA evaluated 77 acres including 330 grids throughout MRS Range Complexes 1 and 2.
- **GIS-Based Historical Photographic Analysis 2001**
  - An analysis of 1943, 1945, and 1949 aerial photos identified MEC-related features (e.g., crater fields, bombing targets, etc.).
- **Removal Actions (RAs) 2003, 2004, 2006, 2008-2010**
  - RAs covered approximately 20 acres at the Flame Thrower Range, 26 acres at the Lakeview Subdivision, and 250 parcels (averaging 1.75 acres each) throughout Range Complexes 1 and 2.
- **ESTCP Pilot Study 2011**
  - An advanced technology study covered 30 acres for detection of 37mm, 105mm, and 155mm projectiles.

RI/FS Objectives and Tasks

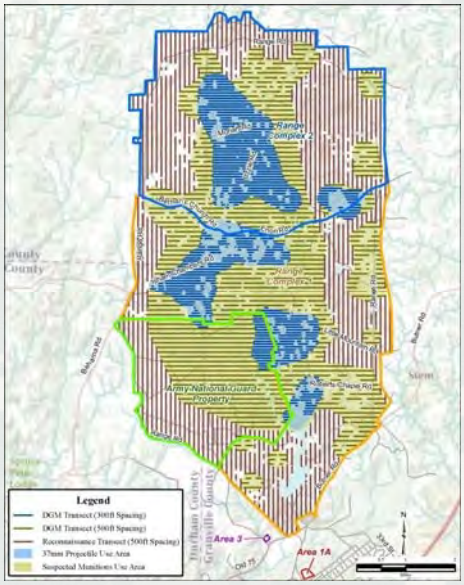
Define the **NATURE** and **EXTENT** of MEC Contamination

- Brush clearing
- DGM transect survey
- DGM grids survey followed by intrusive investigation within grids
- Environmental sampling for munitions constituents (MC)

Munitions Response Sites (MRSs)

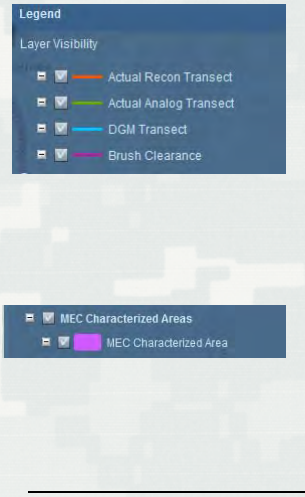


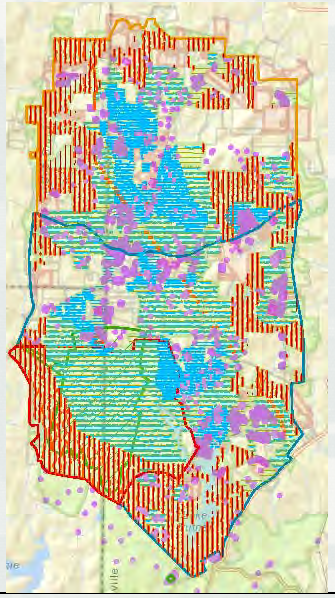
Planned Transects



- Reconnaissance transects will be conducted outside of Suspected Munitions Use Areas and will be spaced 500 feet apart.
- Digital geophysical mapping (DGM) transects will be conducted within Suspected Munitions Use Areas and will be spaced at 300 feet in areas where 37mm projectiles are expected and 500 feet where all other munitions are expected.
- Grid locations will be based on transect survey results.

Actual Transects





- Reconnaissance transects were conducted outside of Interpreted Impact Areas, spaced 500 feet apart.
- DGM transects were conducted within Interpreted Impact Areas and spaced at either 300 feet or 500 feet
- Grid locations will be based on transect survey results.

Actual Site Coverage

	Munitions Response Site*	Number of Grids	Miles of DGM Transects	Miles of Reconnaissance Transects
Remedial Investigation	Range Complex 1	109	70.2	39.0
	Range Complex 2	110	70.8	48.7
	Army National Guard	89	49.5	29.33

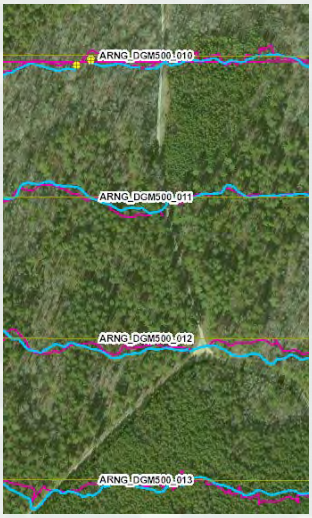
***The Flame Thrower Range and Hand Grenade Range were sufficiently characterized during previous field activities. No additional fieldwork is anticipated in these areas.**
Totals are current through 4/11/13.

Brush Clearing

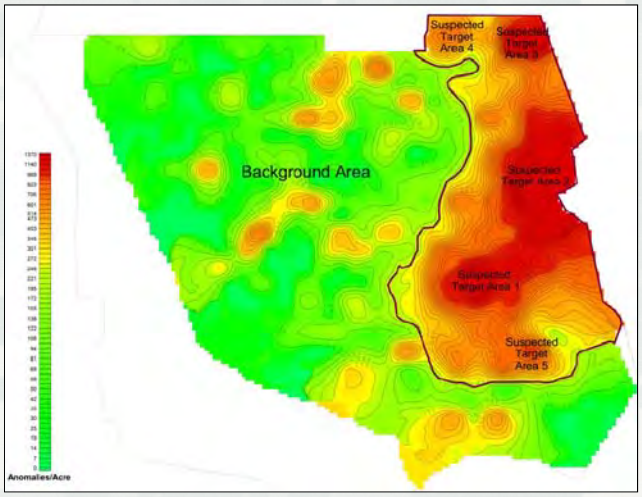
Transects and grids were cleared of vegetation to facilitate transect data collection.

Digital Geophysical Mapping

DGM transcect data
collected and incorporated into GIS



Data Processing / Grid Placement

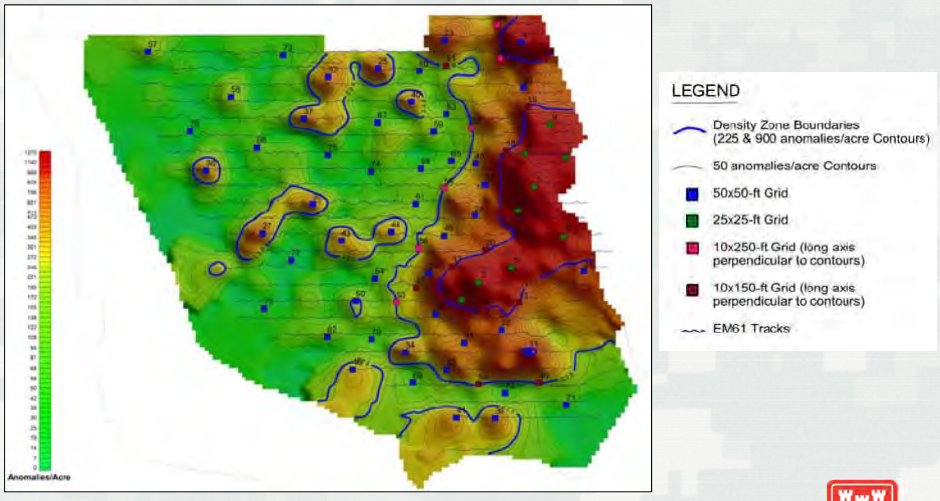


Army National Guard MRS

Based on transect anomaly data, anomaly density maps were produced.

With review and approval from USAESCH and USACE, grid locations are selected.

Grid Locations



Army National Guard MRS

Intrusive Investigation: Grids and transects

Instrument Operator (Locates Anomalies)

UXO Technician (Excavates Anomalies using a Shovel)

Data Logger (Records Intrusive Results)

Intrusive Results

Item:	Date destroyed:	Location
Two 57mm HE projectile (M306) 57mm AP-T projectile (M70)	2/14/13	RC1 (RC1-001, RC1-002, & RC1-003)
60mm HE mortar (M48)	3/22/13	ARNG Grid 11 (ARNG-001)
60mm HE mortar (M49)	4/2/13	ARNG Grid 14 (ARNG-002)
155mm HE Projectile	4/18/13	South of grid RC2-072, near transect RC2-DGM300-045 (RC2-001)

Intrusive Results and Items Found

60mm mortar, ARNG Grid 14

57mm HE, RC1

60mm mortar, ARNG Grid 11

Intrusive Results and Items Found

Environmental Sampling

Soil Sampling

Soil Sampling

- Initial soil sampling to be conducted May 6 to 10th
- Preliminary results will be reviewed and determination for additional sampling made by project team.

Environmental Sampling

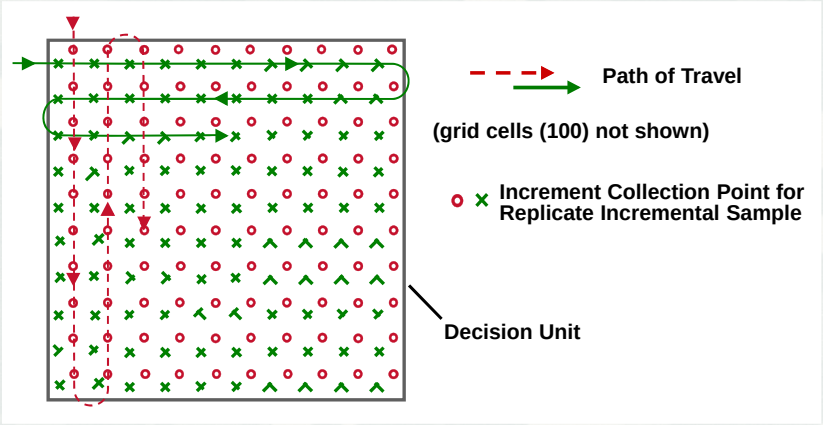
10 incremental sampling units (SU) per MRS
- Locations based on anomaly density and intrusive results

Evaluate initial ISM results for surface soil
- An exceedance = additional ISM SUs for surface soil
- Discrete subsurface samples to characterize subsurface soil

Groundwater sampling from existing wells (to establish background perchlorate and lead concentrations - wells outside site boundaries)

Environmental Sampling

Systematic Random Mode of Sub-sampling



Remedial Investigation Report

- **Field Activities will conclude in May 2013**
- **Remedial Investigation Report**
  - RI report will be submitted to USACE and USAESCH for review.
  - The RI Report summarizes the field investigation and presents conclusions.
- **RI Conclusions and Recommendations**
  - Presents the nature and extent of the munitions-related issues
    - explosives safety hazards
    - munitions constituents
  - The RI characterization effort supports the risk assessment and follow-on feasibility study, if recommended.
  - RI recommends MRSs to go forward to the feasibility study

Remedial Investigation Report

- **Risk Assessment**
  - The RI will also assess risk, specifically the following:

- MEC Risk
  - Evaluates Risk to Humans Presented by Munitions

- Human Health Risk
  - Evaluates Risk to Human Health Presented by Munitions Constituents

- Ecological Risk
  - Evaluates Risk to the Environment Presented by Munitions Constituents

What's Next?

- Conclude Field Activities: May 2013
- RI Report: July 2013
- FS Report: September 2013
  - Analyzes Response Alternatives
- Proposed Plan: October 2013
  - Public Meeting
  - 30-Day Public Review
- Decision Document: December 2013



Review of Potential MEC Items











Review of Potential MEC Items

60mm mortar, ARNG Grid 14

Review of MEC Safety

RECOGNIZE

Military items can be DANGEROUS.

RETREAT

DO NOT TOUCH IT! Move away from the area.

REPORT

CALL 911.

How to Obtain More Information

Camp Butner Website

http://www.saw.usace.army.mil/Missions/FormerlyUsedDefenseSites/CampButner.aspx

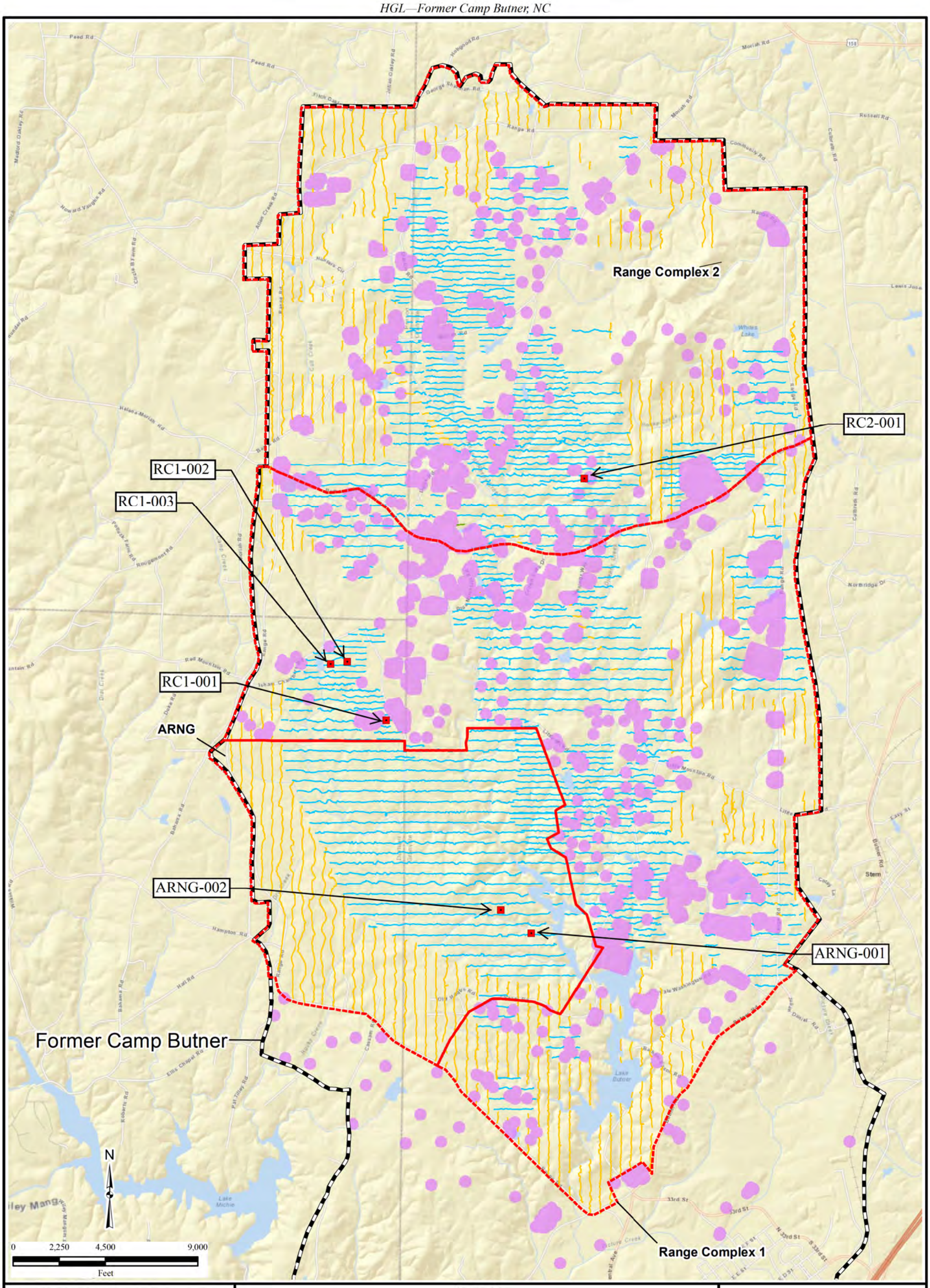
Camp Butner Administrative Record

South Granville County Library
1550 S. Campus Drive
Creedmoor, North Carolina 27522

Public Affairs Office

U.S. Army Corps of Engineers–Wilmington District
69 Darlington Avenue
Wilmington, North Carolina 28403
(910) 251-4626
Email: ann.johnson@usace.army.mil

ATTACHMENT 3



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4/22/2013 update author initials
Source: HGL, ESRI Online Imagery

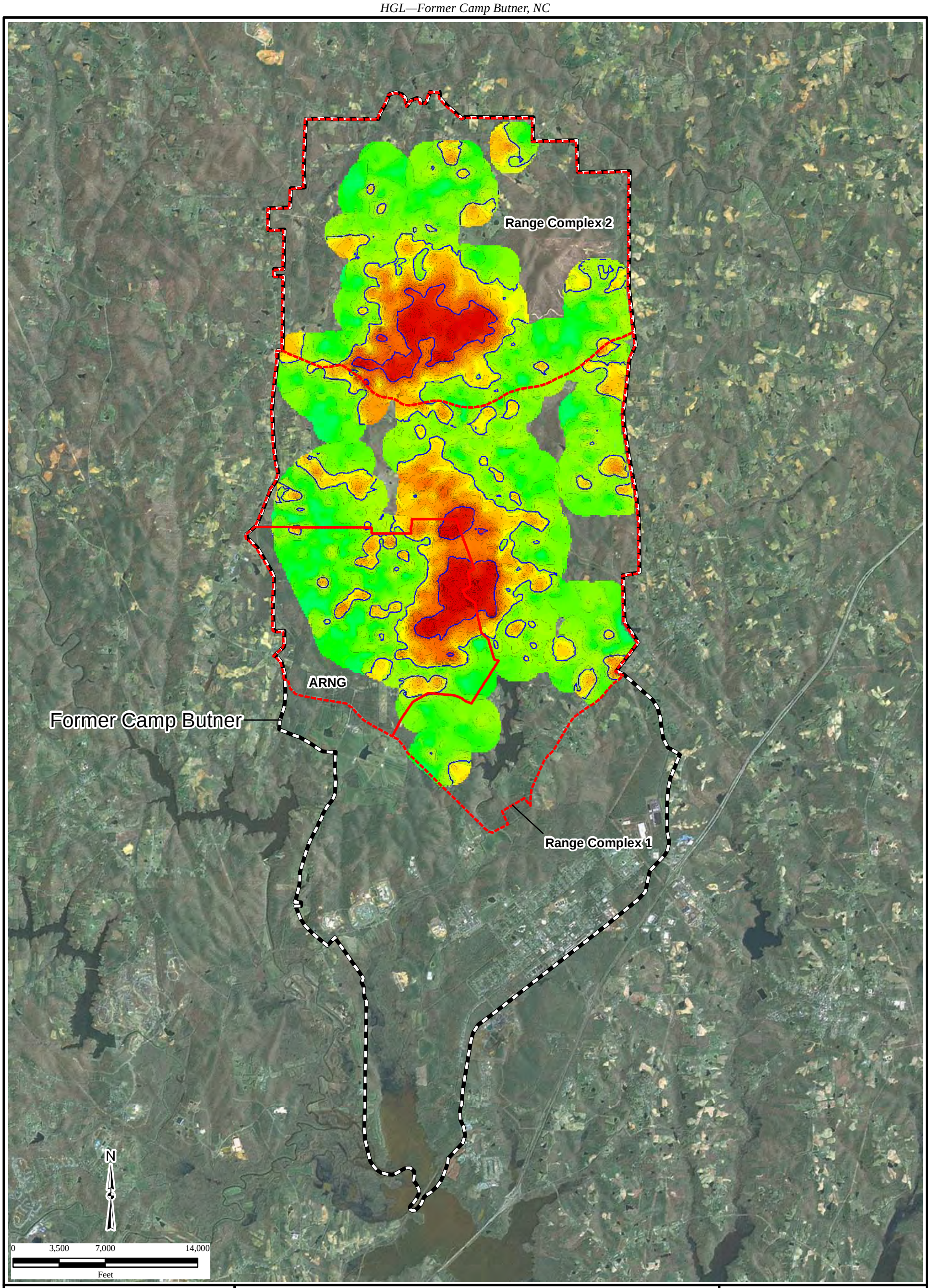
Legend

- MEC
- AnalogTransect
- DGM Transect
- Recon Transect
- MRS
- MEC Characterized Area
- Former Camp Butner

Notes:
ARNG=Army National Guard Property
DGM=Digital Geophysical Mapping
MEC=Munitions and Explosives of Concern
MRS=Munitions Response Site

HGL HydroGeoLogic, Inc

Camp Butner DGM Transects



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4/21/2013 update author initials
Source: HGL, ESRI Online Imagery

Legend

MRS

Former Camp Butner

EM61-MK2 Response:

Anomaly Density
Anomalies/Acre
0 4 11 19 27 34 43 54 67 84 102 130 161 201 250 301 395 538 718 969 1330

Notes:
ARNG=Army National Guard Property
MRS=munitions response site

HGL HydroGeoLogic, Inc

Camp Butner Anomaly Density

ATTACHMENT 4

Stakeholders' Forum on the Use of Geophysical Classification for Munitions Response

by Lenny Siegel
December, 2012

Munitions Response projects are typically conducted by private contractors on behalf of the Defense Department or other entities with oversight by state environmental regulatory agencies and/or the U.S. Environmental Protection Agency. However, the people who live in the communities where teams look for and destroy unexploded ordnance—in some cases directly on project sites—are the *ultimate customers* of munitions response. As the Defense Department leads the way toward the adoption of more efficient characterization technologies, such as Geophysical Classification, it is essential that those ultimate customers have an opportunity to review and offer feedback on the appropriate use of those technologies. For that reason, I helped the Defense Department's Environmental Security Technology Certification Program (ESTCP) convene the Stakeholders' Forum on the Use of Geophysical Classification for Munitions Response in Phoenix, Arizona, on November 27, 2012.

At the Forum, ten geographically representative stakeholders from some of the nation's best known former range sites met to learn about and discuss the use of this emerging technology. Participants were uniformly positive about the technology, but they raised important questions about the ways that the technology will be implemented.

Camp Butner (NC) Demonstration Site

Three participants were tribal officials. At least three others are active on Defense Department-sponsored Restoration Advisory Boards at range sites. A number of the sites, listed below, have been or will be ESTCP demonstation sites.

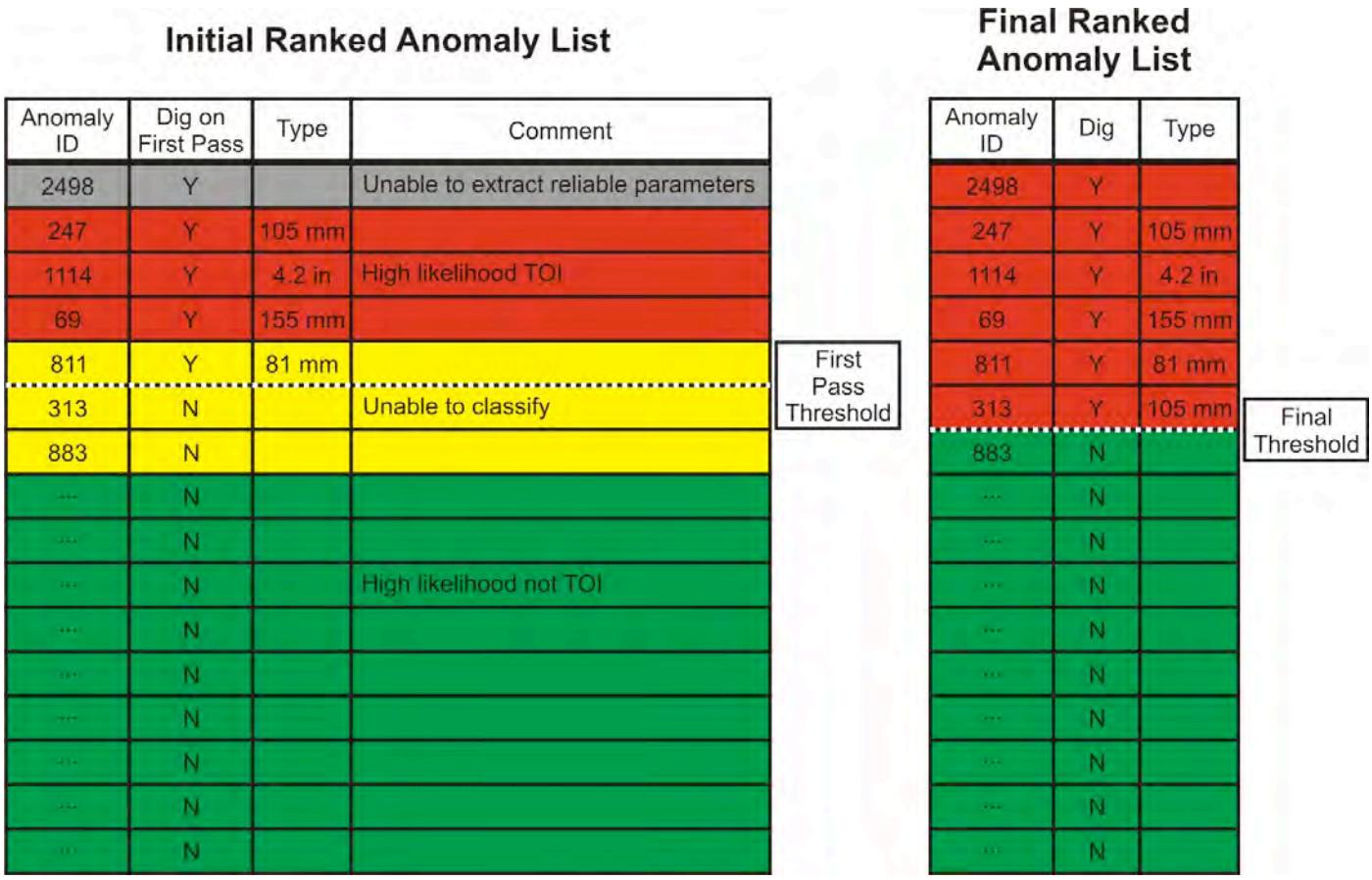
Ak-Chin Indian Community, Arizona
Massachusetts Military Reservation, Cape Cod, Massachusetts
Camp Butner, North Carolina
Fort Ord, California
Jefferson Proving Ground, Indiana
Laguna Pueblo, New Mexico
Lawrence Livermore National Labs, California
Lowry Range, Colorado
Tierrasanta, San Diego, California
Vieques, Puerto Rico

After introductions, the Forum began with a single PowerPoint presentation by Herb Nelson, Program Manager for Munitions Response at ESTCP. Prior to the meeting I had supplied all the attendees with fact sheets developed by both ESTCP and the Interstate Technology Regulatory Council (ITRC) Munitions Response work team. I facilitated the discussions, working from the appended discussion questions, also provided in advance.

Participants were familiar with the traditional approach to munitions surveys. Single-dimension electromagnetic devices, such as electromagnetic induction devices or magnetometers, are used to identify and map subsurface metal. The signals generated by those items are known as anomalies. Then, trained technicians carefully uncover each item, removing or destroying bombs, shells, and other items that may contain explosives, and collecting other metal items, such as horseshoes, barbed wire, and nails, as well as metal fragments ("frag") from explosives devices that detonated.

Nelson explained how geophysical classification begins with the same type of survey. Then teams return to each anomaly to conduct a "cued" investigation with instruments such as the MetalMapper and TEMTADS, which collect three-dimensional electromagnetic data. From that data, analysts create "dig lists." Electromagnetic anomalies that fit the profile of projectile-shaped ordnance are assigned for digging. Those that clearly are not munitions are indicated to be left underground. And those that analysts are unable to classify are assigned for excavation as well.

At the ESTCP Demonstration sites, inert munitions are placed underground ("seeded") to increase the number of geophysical anomalies, and after analysts create their dig lists all anomalies are excavated to check how accurate they are. At production sites, only those designated for excavation are dug.



At traditional munitions response sites, technicians must excavate large numbers of anomalies for each round of live explosive found. Nelson explained how at Camp Butner, North Carolina, only 146 pieces of live ordnance were found among more than a half million items excavated. At ESTCP Demonstration sites, only a fraction—from 10% to 25%—of the anomalies are dug, suggesting that classification can cut the total cost of a munitions response project by half or more. When classification is more widely used, there will be other advantages: There will be less environmental damage because fewer holes are dug. In populated areas, with technicians digging fewer suspected ordnance items, evacuation will be much less common.

Of course, these advantages will materialize only if *the ultimate customers* accept the practice of not digging every anomaly. Therefore, I asked the stakeholders: "Under what circumstances, if any, do you believe that your community or tribe (or a similar community) will accept decisions not to dig suspected munitions based on geophysical classification?"

No one had a problem with informed decisions not to excavate at anomalies—that is every piece of detected metal—as long as they could be assured that the classification of anomalies was conducted properly.

It was clear from the discussion that participants understood Nelson's explanation of geophysical classification and were able to view the concept through the lens of their site experiences. In fact some praised the style and content of his remarks.

Aware that ESTCP field demonstrations rely on the judgment of highly trained geophysicists, forum participants asked how they could be assured that the same level of expertise would be used at full-scale munitions response sites. They expressed concern that Army Corps or other contracting entity would award contracts to the lower bidders or businesses receiving preferential treatment, not the firms most qualified to distinguish live ordnance from scrap. They want these life-and-death decisions to be made by people they can trust.

The stakeholders made two suggestions: First, some suggested that there be some form of certification that the person conducting the analysis be qualified by training and experience to make dig/no-dig decisions, and that the basis of those decisions be transparent. Second, some of the stakeholders urged that there be independent verification of those decisions, perhaps by geophysicists working for regulatory agencies. That is, to the degree that forum participants represent people from their communities, they are perfectly comfortable, in theory, with the geophysical classification strategy—that is, leaving metal in the ground—if in practice decisions are made properly.

Furthermore, participants recognized that there is no guarantee that any munitions response strategy will find and remove all explosive hazards. As stakeholders from sites with ongoing programs, they already know that some items may be missed, even if the initial survey is conducted properly. They understood that it is unlikely that the three-dimensional instruments used to collect cued data will find additional items of live ordnance. They discussed the need for institutional controls and education as key elements of any risk management strategy, but they recognized that the need is there whether of not classification is used. Some attendees warned that while it is easy to impose land use controls, there often is no one there to monitor and enforce them.

Attendees said that geophysical classification is appropriate if it "fits the site." They are familiar with the CERCLA process, in which initial investigations develop conceptual site models, and from that remedial action objectives are set. Not only does the success of electromagnetic surveys depend on site conditions such as terrain, weather, and geology, but also the size and depth of the buried munitions. Several participants reminded us that land use often influences remedial objectives. For example, on some cattle ranges it may prove desirable to remove buried frag so it won't rise to the surface.

While participant agreed that reducing the number of digs is likely to be good for the environment and reduce the number of inconvenient evacuations, most of the participants volunteered that they supported classification as a way to reduce waste and save money. One stakeholder, however, warned that others in his community could care less about saving the federal government money.

While the obvious goal of munitions response is to prevent explosions and the resulting injuries and death, those present also pointed out that munitions clearance makes land available for transfer and reuse. Better, faster investigations mean that land may be made available for new uses in a more timely manner.

Stakeholders said that communications with the public, particularly those who are on the land, is essential. People who live, work, or recreate on former munitions sites should be fully aware of what has been left behind, so they know what to do when they encounter a potential munitions item. A couple of participants, who have been involved in school programs about ordnance risk, warned that those programs may disappear. The curriculum in Tierrasanta, where two boys were killed by unexploded ordnance in 1983, was dropped because "there wasn't enough time."

Overall, this group of stakeholders with extensive experience at munitions response sites was not just accepting, but excited about the new technology. Some said they wished it had been available years ago. One stated that it should be *required.* They recognized that geophysical classification was not universally applicable at all munitions response sites, but they believed that communities and tribes would welcome and even seek the new technology as long as they could be assured that it would be implemented properly.

Discussion Questions (provided in advance)

1. Under what circumstances, if any, do you believe that your community or tribe (or a similar community) will accept decisions not to dig suspected munitions based on geophysical classification?

2. Do you feel that the policy of digging where analysis indicates uncertainty is sufficiently protective?

3. Proponents of limiting excavation based upon classification make the following arguments. Do you agree or disagree? Limited excavation:

a. saves money and leads to response over wider areas.
b. protects habitat.
c. reduces the need for evacuation
d. reduces waste.

4. Do you think communities and tribes believe geophysical classification will put public safety at risk?

5. Do you believe conventional methods of munitions response are sufficiently protective?

6. What risk communication should be done in communities before a decision is made to implement munitions response based upon geophysical classification?

7. What other factors might influence a community or tribe's perspective on a proposal to use geophysical classification?