
FINAL

**ENGINEERING EVALUATION/
COST ANALYSIS (EE/CA)
ACTION MEMORANDUM
FORMER CAMP CROFT ARMY
TRAINING FACILITY**

Prepared for:
Former Camp Croft
Spartanburg, South Carolina

Prepared by:
Environmental Science & Engineering, Inc.
Gainesville, Florida

February 1996

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**FINAL ENGINEERING EVALUATION/COST ANALYSIS (EE/CA)
ACTION MEMORANDUM
FORMER CAMP CROFT ARMY TRAINING FACILITY
SPARTANBURG, SOUTH CAROLINA**

The following document, Former Camp Croft Army Training Facility EE/CA Action Memorandum, was prepared and reviewed by the following persons, technically qualified to perform the work:

David Moccia, P.E., Project Manager
Richard Wheeler, P.E.

PROFESSIONAL ENGINEER'S CERTIFICATION

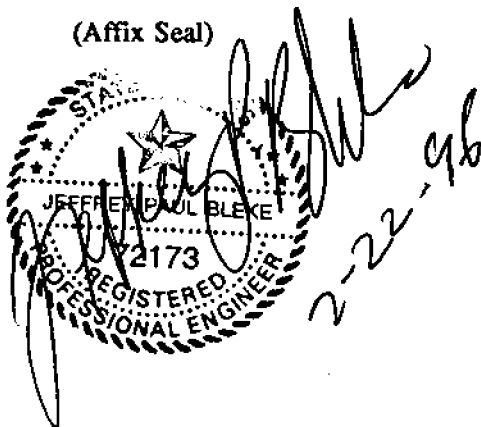
This is to certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. In my professional judgment, and based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and technically complete.

NAME: Jeffrey Bleke, P.E.

DATE: February 22, 1996

TEXAS REGISTRATION NUMBER: 72173

(Affix Seal)



1.0 Declaration

1.1 Site Name and Location

Name: Former Camp Croft Army Training Facility

Location: Southeast of Spartanburg, SC (approx. one mile)

1.2 Statement of Basis and Purpose

This Decision Document presents a determination that further actions are required at the former Camp Croft. This determination was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 USC Section 9601 *et seq.* and the National Contingency Plan (NCP) 40 CFR Part 300. The selected actions are based on the results of the Engineering Evaluation/Cost Analysis (EE/CA) and is further supported by documents contained in the administrative record.

1.2.1 This Action Memorandum and EE/CA does not include all the areas of potential ordnance and explosives (OE) contamination within the boundaries of former Camp Croft. Additional areas have been identified under separate contract actions and are currently under investigation. These additional sites will be addressed at a later date.

1.3 Description of the Selection Actions

Nine areas (ordnance operable units [OOU]) were investigated within the former Camp Croft FUDS (formerly used defense site). Six of the areas (OOU1A, OOU1B, OOU2, OOU4, OOU7, and OOU8) are located within public property (Croft State Park), with the remainder located on private property. Selected actions include no further action, surface clearance, clearance to depth, and government buyback. Attachment A, Figure 3-3 from the EE/CA report, shows the locations of OOU1A through OOU8.

1.3.1 No Further Action

Three areas within Croft State Park (OOU1A, OOU4, OOU8), and one private property site (OOU5) were determined to require no further action.

1.3.2 Surface Clearance

Two areas within Croft State Park (OOU1B, OOU2) were determined to require surface clearance. Surface clearance consists of brush clearance, visual inspections, supplemented by magnetometer surveys where the ground is obstructed, to locate surface anomalies, recovery/disposal of OE/UXO, and site restoration. This alternative includes subsurface OE/UXO that is discovered protruding from the surface.

1.3.3 Clearance to Depth

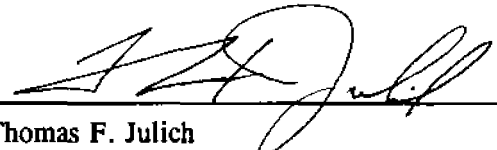
One area within Croft State Park (OOU7) and one private site (OOU3) were determined to require clearance to depth. Clearance to depth consists of brush clearance as required, geophysical surveys to locate anomalies, excavation of anomalies, disposal of OE/UXO, and site restoration. The proposed clearance depth is based on the maximum depth at which OE/UXO was found during the EE/CA investigation.

1.3.4 Government Buyback

One private property site (OOU6) was determined to require government buyback. Government buyback involves the government purchasing the effected land with the intent of postponing removal actions until a future date. It requires institutional controls such as fencing, sign posting and education during the interim period.

1.4 Declaration Statement

Selection of these actions was based on site investigations and time critical removal actions which confirmed that conditions at the former Camp Croft FUDS pose an unacceptable risk to human health and the environment.



Thomas F. Julich
Lieutenant Colonel, EN
Commanding

23 Feb 96
Date

2.0 Decision Summary

2.1 Site Name, Location, and Description

The former Camp Croft covers approximately 19,000 acres and lies southeast of Spartanburg in Spartanburg County, South Carolina.

2.1.1 Camp Croft was established in January 1941 as an army training facility. The camp consisted of two general areas: a series of training, firing, and impact ranges (16,929 acres); and a troop housing (cantonment) area with attached administrative quarters (1,700 acres). The firing ranges at the former Camp Croft consisted of pistol, rifle, machine gun, mortar, anti-aircraft, and anti-tank ranges and contained a gas chamber/gas obstacle course and a practice grenade court.

2.1.2 In 1947, the entire acreage of the former Camp Croft was declared surplus by the War Assets Administration. By 1950, the Army sold the land in pieces to organizations and businesses. This sale also included the transfer of 7,088 acres of land to the South Carolina Commission of Forestry for the creation of Croft State Park. The remaining acreage has been converted to residential housing, churches, and industrial and commercial businesses. The gas chamber and gas obstacle course have been removed, and no evidence of past chemical training is found at the site.

2.1.3 Two major surface water features, Lake Johnson and Lake Craig, lie in Croft State Park and were formed by the construction of a dam in 1951. Lake Craig, the larger lake, covers approximately 150 acres and lies in the south-central portion of the park. Lake Johnson covers approximately 75 acres and lies just north of Lake Craig. Fairforest Creek runs along the southern boundary of the park.

2.1.4 Croft State Park elevations range from 210 to 225 ft national geodetic vertical datum (NGVD) in the northwestern portion of the park in the former cantonment area. A gradual change in topographic relief occurs in the remaining portion of the former Camp Croft, with elevations ranging from 180 to 255 ft NGVD. Surface water drainage is primarily from the topographic high to lower elevations into the surface water features. Surface water features identified at former Camp Croft include Fairforest Creek, Kelsey Creek, Thomson Creek, Lake Craig, and Lake Johnson.

2.1.5 Groundwater depth in the southwest section of Croft State Park is 20 to 30 ft-below ground surface. The saprolite in this area has a potential yield of 72,000 gallons per day, versus 201,600 gallons per day for the bedrock unit. No groundwater data was reviewed for other areas of the park.

2.2 Site History and Enforcement Actions

2.2.1 1984 Site Survey

In 1984, the USACE, Charleston District conducted a site survey of the former Camp Croft. This study concluded that the "potential for unexploded and dangerous bombs, shells, rockets, mines and charges either upon or below the surface" existed at the FUDS. The report recommended that a follow-up investigation be performed.

2.2.2 1990 Site Screening

A 1990 report by the South Carolina Bureau of Solid and Hazardous Waste Management, Department of Health and Environmental Control, documented a site screening of a domestic landfill with groundwater quality analyses of surrounding monitor wells located near the former camp. The landfill was reported as being used for domestic waste and was first used in 1971. No records were available to indicate any use of this landfill by the U.S. Department of Defense (DOD) or the existence of any previous U.S. Army landfill at this site.

2.2.3 1991 Preliminary Assessment (PA)

In 1991, USACE, Charleston District, conducted a PA of this site. The study was conducted in response to the 1984 site survey recommendations for additional investigation of the former camp. The PA determined that the site was eligible for further investigation under the DERP for FUDS (Findings and Determination of Eligibility, 25 November, 1991).

2.2.4 1994 Site Inspection/Archives Search

In 1994, the USACE, Rock Island District, conducted a site inspection (SI) and completed an archives search of the former Camp Croft. The Archive Search Report (ASR) outlined the nature and degree of OE/UXO to be found at the FUDS. The ASR listed the ordnance that may be found at or below the surface. This report also stated that the gas chamber and gas obstacle course no longer exist, and that no historical evidence was found to document or confirm the presence of chemical ordnance since site closure. The report did state, however, that based on the nature of the training mission, the potential for chemical ordnance or chemical contamination of the soil does exist. It is believed that chemical training during that period would have involved the use of only tear agents as training chemicals.

2.2.5 1994 Environmental Assessment (EA)

In 1994, the USACE, Charleston District performed an EA of the former Camp Croft. The purpose of the EA was to evaluate water quality, measure the presence of hazardous and toxic waste, identify threatened or endangered species, and identify cultural resources present at the former camp. In addition, the EA investigated the probable impact of the EE/CA for land disruption, noise, water and air quality, flora, wildlife, fishery, threatened or endangered species, and cultural resources on the former Camp Croft. The EA concluded that the EE/CA did not constitute a major federal action significantly affecting the quality of human health or the environment.

2.2.6 1994/95 EE/CA Investigation

The EE/CA field investigation was conducted from October 10, 1994 to January 27, 1995. The selection of specific areas for investigation was initially based on information presented in the ASR. However, during the investigation additional information was developed that added additional areas to the investigation. The investigations included magnetometer surveys of suspected areas and intrusive sampling to confirm the presence of UXO. In all, approximately 40 acres of former Camp Croft were investigated for the presence of OE/UXO. Although the area investigated was small relative to the size of former Camp Croft (approximately 19,000 acres), the individual investigation sites were concentrated in areas initially thought to be the prime impact zones within the former camp. The investigation confirmed that OE and UXO were present within former Camp Croft. Attachment A, Figure 3-3 from the EE/CA report, shows the areas investigated.

2.2.7 1994/95 Time Critical Removal Actions (TCRAs)

CEHND contractor, Human Factors Applications, Inc. (HFA) performed two TCRAs at former Camp Croft. The first TCRA was performed at Red Hill, a privately owned property located along the U.S. Highway 176 Bypass. This site is collocated with OOU6. The second TCRA was performed within Croft State Park in the area of the park office and campgrounds. This site is collocated with OOU7. Removal Reports were submitted for both areas and are on file with CEHND.

2.2.7.1 Red Hill

TCRA activities were performed at Red Hill from August 8, 1994, through January 19, 1995. The work area covered approximately 30 acres of a 350-acre privately owned parcel intended for

industrial development, including a Class I industrial landfill. The objective was to remove surface and subsurface ordnance and OE to a depth of 4 ft, and to perform a geophysical mapping of the site. A total of 4 UXO items were found in the approximately 30-acre area of investigation. Findings included one live 105mm artillery projectile with an M48 series fuse, one explosive burster from a white phosphorus projectile, and two 60mm HE mortars with fuzes.

2.2.7.2 Croft State Park

TCRA activities were performed in Croft State Park from March 14, 1995, through March 30, 1995. The work area covered approximately 50 acres in the vicinity of the park office and campground. The objective was to perform a surface clearance of all UXO and hazardous OE. CEHND authorized TCRA activities following confirmed UXO findings during the EE/CA investigation of OOU7. Priority was given to those areas which were easily accessible to the public, addressing the high traffic areas of the park, and then expanding out to the remaining areas as time allowed. Four 60mm mortars and numerous 60mm mortar fins and booms were found in the priority area. The non-priority areas were established on a hilltop along a nature trail. Thirty-five UXO items were found including one 81mm mortar and thirty 60mm mortars. The TCRA contractor also performed a magnetometer survey across the work area, recording subsurface anomalies. The survey revealed a high probability of subsurface OE within the TCRA work area.

2.2.8 1995 Supplemental Archives Search

ESE conducted a supplemental archives search (SAS) and submitted a final SAS report (SASR) in December 1995. The SASR included a supplemental engineering report that summarized the findings of site reconnaissance of some 134 new areas of concern identified during the SAS effort. Some of the areas were within the areas investigated during the 1994/95 EE/CA investigation. However, most were outside these areas. In all, 88 of the areas were recommended for further investigation by the government. Of these 88 areas, 27 were considered high priority, 29 were considered of medium priority and 32 were considered of low priority. These areas are located both within and outside the Croft State Park boundary and include suspected impact areas, munitions burial sites, ranges, grenade fields, bunkers, and gas training areas.

2.3 Highlights of Community Participation

The U. S. Army Corps of Engineers (USACE), Huntsville Division (CEHND) and Charleston District conducted a public meeting on August 30, 1994, to inform the public of the EE/CA

project and the impending field effort. Several landowners from the Spartanburg community and the former Camp Croft area were present for the meeting.

2.3.1 A Media Day was conducted on October 19, 1994, at the former Camp Croft to provide the local media with the opportunity to learn about the nature of the project and the work being performed during the field effort. Local television stations, the regional newspaper, and radio personnel participated in the media day activities. Representatives from the Charleston District, the CEHND project manager, a CEHND safety specialist, a CEHND public affairs specialist, and the ESE project management team were also in attendance to support the briefing.

2.3.2 The Draft-Final EE/CA document was made available in the public repository at the Spartanburg County Library, Spartanburg, SC and the Charleston District Office, Charleston, SC on November 10, 1995. A public comment period was established from November 10 through December 11, 1995. The CEHND and Charleston District held a public meeting on November 28, 1995. Notice of this meeting was given on November 21 and November 26, 1995. Members of the public and media attended this public meeting and had the opportunity to discuss results of the EE/CA, including site features and remaining risk, and to view photographs of removal actions and ordnance removed. Members of the public made oral comments at this public meeting. Written comments were subsequently received from one member of the public.

2.4 Scope and Role of the FUDS Response Action

The EE/CA investigation of former Camp Croft was conducted to determine the presence of OE/UXO. This action memorandum is the final action of that investigation and in assessing the associated explosive risk to the public. The U.S. Army has concluded that OE/UXO is present within the former Camp Croft boundaries and that measures will be necessary to reduce the risk of public exposure. This EE/CA Action Memorandum documents the selection of risk reduction alternatives.

2.5 Site Characteristics

The EE/CA field investigation and time critical removal actions (TCRAs) confirmed the following types of ordnance contamination at former Camp Croft:

- small arms scrap (.20-cal and .30-cal);
- 37mm and 57mm inert projectiles;
- 2.36-inch rockets;
- 60mm, 81mm, and 4.2-inch mortars;

-
- 105mm Howitzer rounds;
 - practice hand and rifle grenades.

Of the discovered OE, UXO was limited to 60mm and 81mm mortars within Croft State Park, and 105mm Howitzer rounds, an explosive burster, and one practice hand grenade on private property located outside the Croft State Park boundary. A summary of the OE/UXO found within the nine OOU's at the former Camp Croft and within Croft State Park and an estimate of UXO densities is provided in Table 1.

2.6 Summary of Site Risks

Risk associated with the presence of UXO at the former Camp Croft was evaluated using a risk assessment model developed for CEHND. This evaluation fulfills the EPA requirement for a streamlined risk evaluation in the EE/CA. Streamlined risk evaluations are intermediate in scope between the limited risk evaluation undertaken for emergency removal actions and the conventional baseline risk assessment conducted at Superfund sites.

2.6.0.1 The risk assessment model, Ordnance and Explosive Waste Cost-Effectiveness Risk Tool (OEWCert), was used to perform a statistical analysis of risks of public exposure to UXO at OOU1A, 1B, 2, 3, 5, 6, and 7. The evaluation was not performed on OOU4 and OOU8, since no UXO was discovered during the EE/CA sampling. The statistical analysis was performed on data collected during the EE/CA field investigation.

2.6.0.2 The OEWCert analyses were performed for three scenarios of removal depths--1, 4, and 10 feet. Horseback riding, hiking, camping, picnicking, hunting, fishing, children playing, jogging, construction, and tree farming were identified as activities currently occurring or that may occur within the former Camp Croft. Risk of exposure was assessed for each of these activities assuming each of the previously described removal action scenarios.

2.6.1 Croft State Park OOU's

2.6.1.1 OOU1A

The risk model predicted a zero probability of exposure for both "no action" and removal to 1 ft. However, this estimate was based on surface use only (hiking and horseback riding) and the contractor's interpretation from the EE/CA sampling data that "...there was no surface ordnance contamination". A more conservative conclusion was deemed appropriate, primarily based on the fact that the EE/CA sampling results were derived from sampling less than 1 percent of the total

area of OOU1A. It is believed that some level of risk remains and that the exposure levels and probability of exposure are greater than zero.

2.6.1.2 OOU1B

The risk model predicted a zero probability of exposure for both "no action" and removal to 1 ft. However, this estimate was based on surface use only (hiking and horseback riding) and the contractor's interpretation from the EE/CA sampling data that "...there was no surface ordnance contamination". A more conservative conclusion was deemed appropriate, primarily based on the fact that UXO were observed sufficiently close to the surface (1 to 2 inches) to be considered surface contamination and that the EE/CA sampling included only approximately 4 percent of the total area of OOU1B. It is believed that some level of risk remains and that the exposure levels and probability of exposure are greater than zero.

2.6.1.3 OOU2

The risk model predicted probabilities of exposure ranging from 1/11,000 (one exposure in 11,000 chances) to 1/19,000 for "no action" and 1/144,000 to 1/240,000 for removal to 1 ft. This represents approximately a 90 percent reduction from taking "no action" to removal of UXO to a 1-ft depth.

2.6.1.4 OOU7

The risk model predicted probabilities of exposure ranging from 1/3 to 1/2 for "no action"; 1/5 to 1/3 for removal to 1 ft; and 1/13 to 1/8 for removal to 4 ft. This represents approximately 50 percent reduction from taking "no action" to removal of UXO to a 1-ft depth, and an 80 percent reduction for removal to a 4-ft depth. However, the probability of exposure remains high for all depths.

2.6.2 Private Property OOU's

2.6.2.1 OOU3

The risk model predicted probabilities of exposure ranging from 0 to 1/300,000 for "no action" and 0 to 1/4,000,000 for removal to 1 ft. This represents approximately 90 percent to 100 percent reduction from taking "no action" to removal of UXO to a 1-ft depth.

2.6.2.2 OOU5

The risk model predicted probabilities of exposure ranging from 0 to 1/300,000 for "no action" and 0 to 1/4,000,000 for removal to 1 ft. This represents approximately 90 percent to 100 percent reduction from taking "no action" to removal of UXO to a 1-ft depth.

2.6.2.3 OOU6

The risk model predicted probabilities of exposure ranging from 0 to 1/2 for "no action"; 0 to 1/2 for removal to 1 ft; and 0 to 1/4 for removal to 4 ft. This represents approximately 75 percent reduction from taking "no action" to removal of UXO to a 4-ft depth. However, the probability of exposure remains high for all depths.

2.7 Description of Selected Alternatives

The preceding risk analysis provided a source of technical data that was considered during the development and evaluation of alternatives for risk reduction. However, OEWCert is a statistical model and, as such, does not consider all the factors needed to make a complete and comprehensive recommendation. Therefore, the final response action recommendations were developed based on an analysis of all relevant and available data, including the risk analysis.

2.7.1 Croft State Park OOU's

2.7.1.1 OOU1A—No Further Action

At OOU1A, a 1020-acre wooded area located in the northwest corner of the park, findings during the EE/CA investigation were limited to inert 37mm and 57mm projectiles (scrap). No UXO was found. The CEHND risk contractor estimated a zero exposure probability, based on the landuse being generally limited to recreational surface activities of hiking and horseback riding. Because of the later and since no UXO was discovered during the investigation, the No Further Action alternative was selected for implementation at OOU1A.

2.7.1.2 OOU1B—Surface Clearance

At OOU1B, a 65-acre forested area located within the center of the park, twelve 60mm and one 81mm mortars (UXO) were discovered. The CEHND risk contractor estimated a maximum UXO density of 12 per acre, based on the size of the area, percent of area that was sampled, and the number of UXO found within the sampled area. Activities in OOU1B are generally limited to recreational surface use (hiking and horseback riding), with little potential for intrusive subsurface

activities. Therefore, the Surface Clearance alternative was selected for implementation at OOU1B. The surface clearance was selected along trails and along the edges of Croft State Park Road, which also passes through OOU1B.

2.7.1.3 OOU2--Surface Clearance

At OOU2, a 325-acre area located on the east side of the park, approximately 0.7 mile from State Highway 295, nineteen 60mm and one 81mm mortars were discovered. A single piece from a 4.2-inch mortar discovered during the investigation suggests that the area may have also been used as a 4.2-inch mortar target. However, no unexploded 4.2-inch mortars were found. The CEHND risk contractor estimated a maximum UXO density of nine per acre for OOU2. Activities in OOU2 are generally limited to recreational surface use (hiking and horseback riding) with little potential for intrusive subsurface activities. Therefore, the Surface Clearance alternative was selected for implementation at OOU2.

2.7.1.4 OOU4--No Further Action

At OOU4, a small area located in the center of the park near the swimming pool, findings were limited to .30-caliber slugs. No other OE or UXO was found. Activities in OOU4 are generally limited to recreational surface use (hiking and horseback riding) and since no other evidence of OE or UXO was found, the No Further Action alternative was selected.

2.7.1.5 OOU7--Clearance to Depth

OOU7, located in the vicinity of the park office and campgrounds, is the busiest area of the park. Sixty 60mm and two 81mm mortars (UXO) were discovered during the EE/CA investigation and a follow-up TCRA. The TCRA was limited to surface clearance. Evidence of 2.36-inch rockets was discovered at OOU7 during the TCRA, but only as parts and not as UXO. Based on the data developed during the EE/CA investigation combined with data from the TCRA, the CEHND risk contractor estimated a maximum UXO density of 49 per acre and an exposure probability of 1/2 to 1/3. UXO was discovered in this high activity area where potentially intrusive activities are planned. Therefore, the Clearance to Depth alternative was selected. Based on the exposure probability estimates, implementation of this alternative should reduce the exposure probability by at least 50 percent, and potentially by as much as 80 percent. The proposed clearance depth is 22 inches, based on the maximum depth at which OE/UXO was found during the EE/CA investigation.

2.7.1.6 OOU8—No Further Action

At OOU8, a small area located in the northwest corner of the park just north of Dairy Ridge Road, the only OE finding consisted of 14 empty mine shipping containers found by HFA during an earlier investigation directed by CEHND. No OE or UXO was discovered during the EE/CA investigation. Activities in OOU8 are generally limited to surface use and since no evidence of OE or UXO was found during the EE/CA investigation, the No Further Action alternative was selected.

2.7.2 Private Property OOU8

2.7.2.1 OOU3—Clearance to Depth

OOU3 is in a private residential area north of the park. The area was investigated due to reports that hand grenade parts had been found. Findings during the EE/CA investigation included one MK-2 fragmentation grenade, numerous practice hand grenades, and grenade parts, suggesting that the area may have been a former grenade practice area. The CEHND risk contractor estimated a maximum UXO density of 7 per acre and an exposure probability ranging from zero to 1/300,000. However, because it is a private residential property and prevention of intrusive activities (e.g., children digging, planting, pool construction, installation of utility lines) is impracticable, the clearance to depth alternative was selected. The proposed clearance depth is 19 inches, based on the depth at which OE/UXO was found during the EE/CA investigation.

2.7.2.2 OOU5—No Further Action

OOU5 is also in a private residential area north of the park. It was investigated for similar reasons as OOU3. However, findings were limited to one rifle grenade part (tail boom). No UXO was found. Since no UXO was found at OOU5, the No Further Action alternative was selected.

2.7.2.3 OOU6—Government Buyback

OOU6 contains an area of approximately 340 acres of privately-owned land that is currently being developed for agricultural and industrial purposes, including tree farming and industrial landfills. It was investigated due to reported findings of 105mm Howitzer rounds. UXO findings as a result of a CEHND-authorized TCRA and a limited EE/CA investigation included nine 105mm smoke canisters, two 105mm fuzed ejection rounds, one explosive burster, two 60mm mortars, and one 81mm illumination mortar. The CEHND risk contractor estimated a maximum UXO density of 1.31 per acre for OOU6 and a probability of exposure of zero to 1/2. For OOU6, the Government Buyback alternative was selected. This alternative was selected because it appears to be significantly less expensive than either of the clearance alternatives and it gives the government

the flexibility to postpone removal activities until a more cost-effective removal approach can be developed. Alternatively, the government can perform selected surface and/or subsurface clearances and then release the land with deed restrictions limiting the land use as appropriate.

2.8 Explanation of Significant Changes

Comments provided by members of the public were carefully considered before the EE/CA was considered final. However, none of the comments received necessitated changes in the alternatives evaluated or the selected alternatives.

3.0 Responsiveness Summary

Several members of the public made oral comments during the public meeting and one letter was received with written comments. Attachment B includes a copy of the sole letter received from the public. Attachment C includes minutes of the public meeting as recorded verbatim by a certified court reporter.

3.1 As discussed in Section 2.8, public comments were carefully considered and neither the alternatives evaluated nor the selected alternatives changed after considering the public comments.

Table 1. Summary of OE/UXO Contamination Discovered at Former Camp Croft

Location	OE	UXO* (quantity in parentheses)	Estimated UXO Density*
Croft State Park			
OOU1A	37/57mm inert projectiles, small arms (scrap)	None	---
OOU1B	60/81mm mortar parts, small arms (scrap), fragmentation	60mm (12), 81mm (1) mortars	5.85 to 12.11/acre
OOU2	60/81mm and 4.2-inch mortar parts, small arms (scrap), fragmentation	60mm (19), 81mm (1) mortars	5.39 to 9.04/acre
OOU4	Small arms (scrap)	None	—
OOU7	60/81mm mortar parts, 2.36-inch rocket parts, small arms (scrap)	60mm (60), 81mm (2) mortars	38.39 to 48.73/acre
OOU8	14 empty mine shipping containers	None	---
Private Property			
OOU3	Practice hand grenade parts	MK-2 hand grenade (1)	0 to 6.7/acre
OOU5	Rifle grenade part	None	---
OOU6	60/81mm mortar parts, 105mm Howitzer parts, fragmentation	105mm projectiles (6) Explosive burster (1) 60mm mortar (2) 81mm illumination mortar (1)	0 to 1.31/acre

*Includes UXO discovered during TCRA's at OOU6 and OOU7.

*Source: Former Camp Croft Risk Analysis Final Report, Technical Report 95R029, QuantiTech, Inc., 17 August 1995.

Source: ESE.

Attachment A

**EE/CA Investigation, Ordnance
Operable Units 1 through 8**

Attachment B
Public Comments



Former Camp Croft Army Training Facility Engineering Evaluation/Cost Analysis (EE/CA) Spartanburg, South Carolina

RECEIVED
DEC 18 95
CESAC-PM

Comment response form

This form is provided for your comments and questions regarding the EE/CA for the Former Camp Croft project. In your comments, please cite the page and paragraph that you are commenting on. Please use this form when returning any comments to the US Army Corps of Engineers, Charleston District. All comments and questions should be mailed to:

Wayne Bogan, Project Manager
ATTN: CESAC-PM-W
US Army Corps of Engineers, Charleston District
PO Box 919
Charleston, SC 29402-0919

Thank you for your time and efforts in improving this project.

Page #	Para #	Comment
1. 8.8-8.9	8.2.3- 8.2.3.5	The estimated cost of alternative 3 is artificially low. This is based upon the artificially low assumed purchase price. The assumed purchase price does not correctly reflect the following: (1) Actual value of the land, considering the size of entire parcel, topography, etc. (2) Present income stream from the land. (3) Future income stream and other productive uses of the land.
3.		<i>W. Beaulieu Lyons</i>
4.		

Attachment C

**Minutes of November 28, 1995
Public Meeting**

U.S. ARMY CORPS OF ENGINEERS
PUBLIC MEETING

RE: Engineering Evaluation/Cost Analysis
for the former Camp Croft

PLACE: Robertson Hall
South Carolina School for the
Deaf and the Blind

DATE: Tuesday, November 28, 1995

TIME: Scheduled 7:00 p.m. to 9:00 p.m.
Actual 7:05 p.m. to 7:45 p.m.

PRESENTATIONS
GIVEN BY:

Dave Moccia
Environmental Science
and Engineering
Gainesville, Florida

Wayne Bogan
Project Manager
U.S. Army Corps of Engineers
Charleston District

ALSO PRESENT:

Lieutenant Colonel Tom Julich
USACF
Charleston District Commander

Bill Davis
U.S. Army Corps of Engineers
Huntsville Division

REPORTED BY:

Sandy Satterwhite Reporting
P.O. Box 742
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1 BY MR. BOGAN:

2 Good evening. I appreciate you coming out
3 tonight. I think I've seen most everybody here.
4 What we are to do tonight is give you overview of the
5 engineering evaluation cost analysis.

6 Also, I introduce off to my left is Lieutenant
7 Colonel Julich, who will be speaking to you in just a
8 moment. He is our District Engineer from the
9 Charleston District from Charleston.

10 We have Bill Davis, who is the project manager
11 from Huntsville. The Huntsville Division does most of
12 our ordnance work.

13 We have Dave Moccia, the project manager from
14 Engineering -- Environmental Science and Engineering
15 -- excuse me -- who will be giving the presentation
16 tonight on the EE/CA. All right.

17 Without elaborating, since we have such a small
18 crowd, I will ask Lieutenant Colonel Julich to come up
19 and give his opening remarks, and then we'll continue
20 from there.

21 BY LIEUTENANT COLONEL JULICH:

22 I had talked to Wayne about the opportunity just
23 to come up and say, "Hi. Welcome. Glad that you're
24 here tonight." I think you know why we're here. This
25 is part of the EE/CA process that Wayne has already

1 talked about where we get input from the public. You
2 now have a chance to give your verbal input into this,
3 and it will be considered before we finalize this
4 draft EE/CA.

5 I think you also know you have the opportunity
6 to give written input on that, and during this meeting
7 we'll talk to you about how you do that and what time
8 frame you have to do that in.

9 So, your input is needed. We want to hear from
10 you, so be candid in your comments, and we will
11 consider them in the process.

12 So, again, thanks for being here, and let's get
13 on with the meeting.

14 BY MR. BOGAN:

15 Thank you, sir. Now Dave Moccia will get up and
16 give his presentation for the EE/CA. I believe we'll
17 hear questions afterwards, Dave?

18 BY MR. MOCCIA:

19 It doesn't matter.

20 BY MR. BOGAN:

21 Or you can ask them in between.

22 BY MR. MOCCIA:

23 If anyone wants to ask questions while we're
24 doing it, that will be fine also.

25 I apologize for this being a little bit blurred

1 here. I thought it was going to come out a lot nicer.
2 This is a picture of one of the figures that we
3 actually have in the EE/CA report itself. We took the
4 entire figure and we shot it down and then we made a
5 slide out of it, but it didn't -- it didn't come out
6 as sharp as it was supposed to, but what I want to do,
7 while I'm giving the presentation, I want to refer
8 back to this just so that I can show you all the sites
9 that I'm talking about and you all know where they
10 are.

11 Just to clarify a couple of things here. This,
12 if you -- if you can see this border line right along
13 here, just imagine this line that goes along here.
14 This is the former Camp Croft boundary. The Croft
15 State Park boundary is, gosh, I can't even see it
16 myself. Here it is. It comes down through here.

17 Can you see? Can you see the Croft State Park
18 down here? It's hard to see, but it's right down
19 through here.

20 Anyway, my name is Dave Moccia, and I'm the
21 project manager for Environmental Science and
22 Engineering. We had the contract actually to do the
23 investigation and write the EE/CA report for the
24 former Camp Croft.

25 A little bit of preliminary information here.

1 Of course, you all know where it's located. It's
2 approximately the entire -- the former Camp Croft was
3 approximately 19,000 acres, a little more than that
4 actually. It was used during World War II for
5 ordnance training for anything from, you know,
6 cannons, mortars, antitank, rockets, hand grenades and
7 small arms.

8 Today the primary land use in the area, of
9 course, is about 7,100 acres of it is now Croft State
10 Park, which is basically recreational use. The
11 remainder of it, of course, is private property,
12 agricultural use, industrial, commercial and
13 residential.

14 The purpose of doing the EE/CA, of course, is to
15 -- well, the ultimate objective here is we're trying
16 to reduce risk to public exposure to any kind of a
17 ordnance waste, unexploded ordnance, and what we do in
18 the EE/CA process is look at different alternatives,
19 evaluate different alternatives for reducing the risk
20 at different sites where we found the contamination to
21 exist.

22 We actually perform the field investigation from
23 October 1994 through January 1995. We investigated
24 nine areas that we call ordnance operable units. Six
25 of these areas were in Croft State Park. Three of the

1 areas lie outside of Croft State Park but within the
2 boundaries of the former Camp Croft.

3 The types of ordnance and explosives
4 contamination that we found is listed here. It goes
5 all the way from small arms stuff like .30 and .50
6 caliber stuff all the way through to mortars, 105
7 millimeter howitzers and hand grenades.

8 Actual UXO contamination -- UXO meaning
9 Unexploded Ordnance, and that's the stuff that we're
10 really concerned about because that's the dangerous
11 stuff -- within Croft State Park we found quite a few
12 60 millimeter high explosive mortars, a few 81
13 millimeters. On private property we found hand
14 grenades, 105 millimeter howitzers and additional
15 mortars.

16 Now one point I want to make here is that when
17 we first started this investigation, we were into the
18 investigation for a short period of time when we
19 realized that we didn't know everything about the
20 area, that there were some additional sites that were
21 popping up. We were getting additional information
22 throughout the process. So what we have done here is
23 only a part of what's going to have to be done up here
24 at Camp Croft. So this is -- this report that we --
25 that we we're talking about tonight by no means covers

1 everything that is going to have to happen up here.

2 We looked at different alternatives. We call
3 them risk reduction alternatives, no further action
4 alternative. Really -- and it -- it's not -- it's an
5 alternative, but it really means that we're not going
6 to do anything. It's a no further action alternative.

7 Institutional controls. This is an alternative
8 that what basically amounts restricting access to the
9 site, such as by fencing the site, reducing the
10 exposure to the public by keeping the public away from
11 the site.

12 Government buy back is something that we looked
13 at for private property sites. This alternative
14 provides a little bit of flexibility to the government
15 as to how they deal with this particular site.

16 Surface clearance. This is an alternative where
17 we're primarily concerned with clearing items from the
18 surface itself, and then we have an alternative called
19 clearance to depth, where this is where we'll remove
20 ordnance items down to a pre-selected depth. Now
21 pre-selected depth is typically -- in the report we
22 talk about the pre-selected depth being based on the
23 maximum depth at which we found ordnance contamination
24 when we actually investigated the site, and, of
25 course, that's an alternative that we'd only be

1 looking at the sites where we actually found UXO.

2 Each alternative was evaluated. We used as a
3 guide -- guidelines the CERCLA guidance, EPA CERCLA
4 guidance where you look at basically three types of
5 criteria affecting this criteria: Implement ability
6 and cost.

7 In effectiveness, what we're talking about here,
8 is how effective is the alternative to do what it
9 needs to do? Will it protect human health and the
10 environment? Will it be effective for the long term?
11 Will it have permanence? You know, is it an
12 alternative that once you do it, can it reverse
13 itself? That's what we mean by permanence. In other
14 words, it will be -- it will have long term
15 effectiveness and it will be permanent. Will it
16 reduce mobility, toxicity and volume? Most of our
17 alternatives don't do much in terms of reducing the
18 mobility or the toxicity, but it certainly reduces the
19 volume if you take it out of the ground.

20 The short term effectiveness. This has to do
21 with whether there is any effectiveness on the
22 community or on the workers during the implementation
23 stage of the alternative. If it's an alternative that
24 takes 30 days to implement, we're talking about any
25 affect on the community or the workers during that 30

1 day period.

2 Compliance with appropriate and relevant and
3 applicable -- or applicable and relevant or
4 appropriate regulations. That's what ARAR stands for.

5 That's generally federal and state and environmental
6 regulations and in some cases local regulations. It
7 also includes DOD safety regulations for handling
8 ordnance or managing ordnance items.

9 The second criteria, of course, is implement
10 ability. There, of course, we're concerned with is
11 the alternative technically feasible. In other words,
12 can you -- can you actually implement this alternative
13 from a technical standpoint? Is it administratively
14 feasible? Are you going to be able to get people to
15 agree to it? Are you able to get the proper
16 permitting for it? That type of thing.

17 Availability of services and materials. If when
18 you get around to doing the alternative or actually
19 implementing the alternative or the services and the
20 types of materials that you need to do the
21 alternative, are they readily available?

22 In community and state acceptance, I think
23 that's pretty clear what that means. And then, of
24 course, the other criteria that is looked at is cost,
25 capital cost, actually cost of implementing the

1 alternative; and then in some cases we may have annual
2 costs. We may have -- like in the case of
3 institutional controls, we may have to go back to the
4 site. If it's institutional controls, you're going to
5 have maintenance, yearly maintenance with it. If it's
6 a site where we actually have done a removal but we
7 decided to leave signs in place, then you've got to
8 back on a yearly basis and maintain the signs and make
9 sure the signs aren't torn up and replace them as
10 needed.

11 Okay. The ordnance operable units -- that's
12 kind of a wasted slide there. Within Croft State
13 Park, we have -- like I say, we had six areas that we
14 investigated in there. The first one we refer to is
15 Ordnance Operable Unit 1A. This is about a 1,000 acre
16 area up in the northwest area. In fact, it's this
17 right here.

18 This is Dairy -- this is Dairy Ridge Road coming
19 down through here, and this is Highway 56, I guess
20 that is. It comes down this way. You know, this is
21 -- this is what we refer to as Ordnance Operable Unit
22 1A. This is the main park road that goes into the
23 park itself. It goes down to the horse -- the ring
24 area and the campground to give you all some
25 orientation there.

1 We investigated that area because, based on the
2 archives search report that we were basing our
3 original investigation on, that was a former target
4 range area. So we did quite an extensive
5 investigation in that area, but all we found were 37
6 57 millimeter projectiles, and they're -- which is
7 basically scrap. We found some arms stuff, like .30
8 and .50 caliber stuff, and because there was no
9 certain -- because there was no UXO found and because
10 the area was pretty much limited to just surface
11 activities, in terms of horseback riding and hiking,
12 we proposed the no further action alternative for that
13 particular site.

14 The next one was Ordnance Operable Unit 1B,
15 which is down right in this area right here. It's
16 about a 65 acre area. We investigated it primarily
17 because it was still within that same area that we
18 were dealing with the 1A. We knew -- we thought it
19 was a former target range area, and in this area we
20 did find UXO. We found 60 millimeter mortars, high
21 explosive mortars, and also at least one 81 millimeter
22 mortar. So that area was a little more serious than
23 1A.

24 BY MR. PATTON:

25 Could you show 1B one more time?

1 BY MR. MOCCIA:

2 Oh, where it's at on here. Yeah, it's -- it's
3 right here. Again, I apologize for this drawing up
4 here. Can you see that kind of dotted line right
5 there?

6 BY MR. PATTON:

7 Yes.

8 BY MR. MOCCIA:

9 That's the circle, and then there's a smaller
10 one in here. That's the real high impact area. We
11 just drew a larger circle around it.

12 Because there was UXO present in that area -- in
13 other words, we confirmed that there was UXO present,
14 and we didn't -- we know we didn't -- the object was
15 not to go in there and remove it all. We were doing a
16 sampling exercise, so we know that there could be UXO
17 present in that area, and there are some surface
18 activities in that area, so we proposed a surface
19 clearance operation for that area at a cost of a
20 little better than a half a million dollars, and an
21 annual cost of about \$700 just to go back and do some
22 maintenance on some signs, because this is one of
23 those areas where once we go in there and do some
24 clearance operations, we would plan to go back and put
25 some signs in, and then just we would have a yearly

1 maintenance just to come back and maintain those
2 signs. At least that's -- that's the current plan on
3 that further report check.

4 The next operable, Ordnance Operable Unit, was
5 No. 2. That's an area located right over here. Right
6 here. It's down off of Henningston Road, and it's --
7 it's primarily park property, but there's a small
8 portion of it right along in this area right along in
9 here that's actually private property. So from a land
10 use standpoint, you know, it's mostly recreational,
11 hiking, horseback riding and things of that nature,
12 but it's also got some hunting on it because of the
13 private property portion of it.

14 In that area we found 60 millimeter mortars, 81
15 millimeter mortars and these were HE, High Explosive
16 mortars.

17 Because of that, the alternative we proposed for
18 that site is surface clearance. The estimated cost,
19 what we estimated for cleaning that up, that was
20 300-something acres. It was around a little over
21 \$3,000,000. Again, with an annual cost estimated at
22 maybe \$1,200. That may be a little higher than what
23 it would be. It's talking about again having a number
24 of signs in the area and having to go back and just
25 maintain signs and replace signs.

1 Ordnance Operable Unit 4 is also within the
2 park. I skipped over No. 3, because No. 3 is a
3 private one, and I'm doing the private ones after I do
4 the ones within the park, but Ordnance Unit No. 4 is
5 an area that's right along in here. It's south of the
6 swimming pool. The swimming pool is up in this area
7 here, and Ordnance Unit -- Ordnance Operable Unit 4 is
8 right down in this area. We investigated that because
9 there had been a reported finding of some ordnance
10 contamination down in that area, and that's why it got
11 on the list. It's a small site. Again, it's
12 primarily horseback riding and hiking in the area.
13 The only thing we found during our investigation was
14 small arms scrap, .30 caliber and .50 caliber stuff,
15 and because of that and because it's only surface
16 activities in the area, we recommended the no further
17 action alternative for that site.

18 Probably the most important one -- well,
19 undoubtedly, I would say the most important one within
20 the park itself is Ordnance Operable Unit 7. This is
21 an area down right around the camp office. There's an
22 office area down at -- down at the end of the main
23 road that comes into the camp. It's also got the
24 campgrounds down there. It's got the show ring for
25 the horses and all.

1 This is an area that was not originally in our
2 plans to sample, but because a park visitor discovered
3 a 60 millimeter mortar there one weekend, it got on
4 our list pretty quick. We investigated it, and
5 actually ended up doing a time critical removal action
6 there because of what we found. We did a surface
7 clearance, a time critical surface clearance type
8 action there.

9 Land use in that area, of course, is everything
10 you can do within the park just about. You've got
11 camping. You've got horseback riding. You've got
12 hiking, and this is also concerns the construction,
13 because there -- you know, they've got some plans in
14 that area. They would like to build a museum or
15 something like that down in that area, and, of course,
16 just the fact that you've got an office building
17 there, you know there's -- there's going to be
18 construction. There could very well be future
19 construction, so you're going to have intrusive
20 activities where people are going to be digging into
21 the ground, so we've got some real concerns for that
22 site. We found, of course, quite a few 60 millimeter
23 mortars. Most of these were found during the time
24 critical removal action itself. We found some 81
25 millimeter mortars, so we know it's a former impact

1 area for mortars.

2 Because of the fact that we know there's UXO
3 present, we know there's a -- or least we suspect
4 there could still be some more UXO present there, and
5 we can't do much to really prevent intrusive activity.
6 People are going to be hiking. The people are going
7 to be camping in the area. You're going to have to
8 worry about people digging campfires, you know,
9 digging in the ground anyway and stuff like that.
10 It's a very high use area, so we proposed a clearance
11 to depth for that area. The estimated cost is around
12 \$3,400,000, and, again, the annual cost here is
13 related to just maintaining signage in the area and
14 maybe also some educational campaigns within the area.

15 Operable Unit 8 -- I forgot to show you all
16 where 7 was. 7 is right here, this funny looking one
17 right here, but 8 is up here, way up in this corner of
18 the park, just north of Dairy Ridge Road. It just is
19 inside the border of the park.

20 That was an area -- the reason we investigated
21 that area was we had a suspicion it might have been a
22 mine -- a practice mine field area based on stuff that
23 had been found there, so we investigated that area.
24 The only thing we found -- we didn't find any UXO.
25 The only thing we found were some empty mine shipping

1 containers, and so because that area is primarily
2 restricted again to surface activities, and we didn't
3 find any UXO, the proposed alternative for that area
4 was no further action.

5 Yes, sir.

6 BY MR. MULLINAX:

7 I heard today that they found something in that
8 area. I don't know what.

9 BY MR. MOCCIA:

10 Uh-huh (affirmative response).

11 BY MR. MULLINAX:

12 I just heard that today.

13 BY MR. MOCCIA:

14 Yeah. They found empty mine shipping
15 containers. We know that for certain.

16 BY MR. MULLINAX:

17 No, sir, I mean this was today. I don't know
18 whether it's ammunition or what.

19 BY MR. MOCCIA:

20 Oh, you mean they found something today?

21 BY MR. MULLINAX:

22 Today.

23 BY MR. MOCCIA:

24 Oh, okay.

25 BY MR. MULLINAX:

1 And I just heard that today.

2 BY MR. MOCCIA:

3 Uh-huh (affirmative response).

4 BY MR. MULLINAX:

5 Back behind the Clary Hood is right above the
6 entrance to Croft State Park. Back in there now.

7 BY MR. DAVIS:

8 Back in behind Clary's?

9 BY MR. MULLINAX:

10 Yeah, it's behind that.

11 BY MR. DAVIS:

12 Okay. That's -- yeah, I know where you're
13 talking about.

14 BY MR. MULLINAX:

15 That would be right where he is talking about.

16 BY MR. DAVIS:

17 This is where Clary sits?

18 BY MR. MULLINAX:

19 Yeah.

20 BY MR. DAVIS:

21 Okay. This is north of Clary and back down to
22 the Duke Power line.

23 BY MR. MULLINAX:

24 Yeah. Yeah, but, again, I don't know. They
25 said there was a house or something. And then the

1 other one where you said -- can I just show you?

2 BY MR. MOCCIA:

3 Sure. Uh-huh (affirmative response).

4 BY MR. MULLINAX:

5 I don't know if you've checked right in here,
6 you know, or the guy I talked with before, he buried
7 some ammunition right in here, wherever the entrance
8 to the park was.

9 BY MR. MOCCIA:

10 The entrance is right in here.

11 BY MR. MULLINAX:

12 Right in here. Okay. Right in here. He buried
13 a lot of small arms ammunition. I mean, he personally
14 told me.

15 BY MR. MOCCIA:

16 About 30 millimeter.

17 BY MR. MULLINAX:

18 Right. The smaller stuff.

19 BY MR. DAVIS:

20 That's the general area where there was some
21 stuff found up and dug up a couple of years ago. I
22 believe there was .50 caliber found in there, several
23 cannisters of .50 caliber in that area.

24 BY LIEUTENANT COLONEL JULICH:

25 Can I ask a question?

1 BY MR. MOCCIA:

2 Sure.

3 BY LIEUTENANT COLONEL JULICH:

4 You just brought up a good point about locating
5 or hearing about something that was located out there.
6 Do these folks out here know who to contact when they
7 find something like this?

8 BY MR. DAVIS:

9 The -- I would -- the Sheriff's Department
10 knows, Fort Jackson knows, the park people know what
11 mine and Dave -- mine and Wayne and Dave's phone
12 numbers, and when stuff comes up -- the fact we've
13 been out of the office today may be why we don't know
14 about it. When they find stuff, they call us up.

15 BY LIEUTENANT COLONEL JULICH:

16 Of course, we want to know this kind of
17 information.

18 BY MR. DAVIS:

19 Yes.

20 BY MR. MOCCIA:

21 Yes.

22 BY LIEUTENANT COLONEL JULICH:

23 And we would like you all to be feeding the
24 information on the line and getting it to us so we can
25 get out there and have somebody take care of it.

1 BY MR. MULLINAX:

2 Well, now, you just exploded some like three or
3 four weeks ago. I don't know. The loud explosion
4 shook my house. People called me and said, "What's
5 going on?"

6 I said, "There ain't nothing going on as I know
7 of because the people are not coming back with ---

8 BY MR. DAVIS:

9 That was SLED.

10 BY MR. MULLINAX:

11 That was SLED, and -- yeah.

12 BY MR. DAVIS:

13 SLED did that.

14 BY MR. MULLINAX:

15 But now we ought to know this. I mean, like,
16 say, Croft Fire Department. You could tell those
17 people, SLED or whoever, when you are going to do this
18 because it shakes people up. They don't know what's
19 going on, and that would be a good location, too, if
20 somebody found something is to call Croft Fire
21 Department, and they would know who to contact, you
22 know. I mean, it's a central location. There's
23 somebody there 24 hours a day, 7 days a week.

24 I got some calls. They got some calls. Nobody
25 knew nothing, but we did after talking and called and

1 then checking and found out that -- I mean, there was
2 some loud explosions. I mean, everybody could hear
3 it.

4 BY MR. DAVIS:

5 It's those SLED folks.

6 BY MR. MOCCIA:

7 Yeah.

8 BY MR. DAVIS:

9 Because they pretty well respond to that. It's
10 Law Enforcement Explosive Division or something. I
11 don't know exactly what SLED stands for.

12 BY MR. BOGAN:

13 SLED stands for South Carolina Law -- South
14 Carolina Law Enforcement Division.

15 BY MR. MULLINAX:

16 Now I can see Fort Jackson has to come up and I
17 heard they was going to put two people up here in
18 February so there wouldn't be a -- you know, take the
19 time to get them up here. I don't know this. I just
20 heard that today. That's what I'm basing it on.

21 BY MR. HAYES:

22 People was saying somebody buried them up at the
23 entrance where the entrance used to be up closer to
24 56, and then they moved down to where it is now.

25 BY MR. MULLINAX:

1 No, this is where it is now. The guy showed me
2 the location is where it is right now.

3 BY MR. HAYES:

4 So this wasn't there when they buried it there.
5 It was just ~~right in~~

6 BY MR. MULLINAX:

7 No, it was in that area. I mean, there wasn't
8 no entrance. The State Park was not there. See, it
9 was still Camp Croft. He was stationed there.

10 BY MR. DAVIS:

11 It was back when it was active.

12 BY MR. MULLINAX:

13 Right, back when it was active. He was wanting
14 -- he was wanting to go home. He had to get rid of
15 the ammunition so he buried it so he could go the next
16 day. See, that was back -- he told me this.

17 BY MR. DAVIS:

18 And I believe -- I'd have to go look. I don't
19 have the form on report. Dave, I'm going to interrupt
20 you for a second and see if I can address some of
21 this.

22 BY MR. MOCCIA:

23 Go ahead.

24 BY MR. DAVIS:

25 What -- what you are getting to, sir, is -- is

1 what caused us to stop our efforts with what Mr.
2 Moccia did. When we started up here, started
3 investigating sites, we were getting new reports of
4 new potential locations on the average from three to
5 five a week, and they were like your -- the gentleman
6 told you. "I think I put something here," or "I think
7 I did something over there."

8 At that point, in cooperation with the
9 Charleston District, we made the decision to let Mr.
10 Moccia finish what we had detailed out looking at the
11 sites, the nine sites we had, and then we would go
12 onto a fall on activity.

13 What happened up here about three weeks ago when
14 those explosions occurred is I had another team up
15 here that were out looking at and trying to visit 136
16 newly identified locations. Okay. 136, but we now
17 have done -- we had identified to us 136 potential
18 places for ordnance contamination on the former Camp
19 Croft.

20 I just got the document in yesterday which
21 details that piece of work by Mr. Moccia's company.
22 When we finish looking at that, I will be furnishing
23 copies over at the District. The District will have
24 copies. A copy of that will be going in the archives
25 search report. We did not get to look at all 136

1 sites, partly because of right of entry problems.
2 This is hunting season. People don't want us out in
3 the woods disturbing the deer. They don't want
4 anything like that going on, but we looked at about 80
5 percent of those sites.

6 We have developed some lists which are
7 identified -- another 73 areas that we think are high
8 priority that we need to come back and look at. We
9 were able to eliminate about 46 of them totally off
10 the list after looking.

11 Some of the areas that are on that list for
12 future work are -- there are apparently five reported
13 burials up here that are on the list of things that
14 sometime down the road we're going to have to take a
15 look at and deal with and make a determination of what
16 we're going to do.

17 For the most part, unless the State of South
18 Carolina or a local entity wants us to do something
19 about ammunitions burial, okay, that is a real low
20 priority item for us. Buried ammunitions that have
21 not been fired that are still in the shipping
22 containers have a much lower threat than the areas
23 similar like this where we've got live rounds on the
24 surface or down in here where we don't want a live
25 round laying real close to the surface.

1 Those areas will be looked at, and they will be
2 given consideration down the road, but our first order
3 of business are the areas where you have surface
4 contamination, fire ammunition contaminations and
5 people. Our focus of our program is to separate
6 people from live ordnance either through the --
7 through the use of maintenance programs Mr. Moccia has
8 talked about.

9 We will come back probably in January. They're
10 forming, I think, a remediation advisory board up
11 here, the Charleston District is. We will be back in
12 January to go before that with a strategic long term
13 plan on how we approach dealing with the problem and
14 doing something with the ordnance contamination on
15 Camp Croft.

16 It's a 19,000 acre site. To be real honest with
17 you, probably 2,000 to 4,000 acres, roughly, has
18 ordnance on it that we'll have -- we'll have to look
19 at and deal with over the next several years, but it's
20 going to take time. It's been up here a long time,
21 long since any of you all were here, but we're going
22 to get back up and we're going to address those sites,
23 and we're going to be coming back to the public with
24 what we think ought to be done like we're doing today,
25 but that's down the road a little ways.

1 If you have additional information on sites, we
2 want it. As Lt. Colonel Julich says, it's real
3 important. It's the only place we get information.
4 What I would like to do is let Mr. Moccia go ahead and
5 finish up on what he did on this, and if you'll --
6 we'll be available after the meeting, myself and Mr.
7 Bogan will get with you and get additional information
8 because that's the only way we're going to get it. I
9 don't know of nobody else that has that kind of
10 information. It's real critical. It's -- it is the
11 most important thing we've got.

12 BY MR. HENDERSON:

13 Sir, what's your name, again, and position?

14 BY MR. DAVIS:

15 I'm Bill Davis. I'm the project manager for
16 Army Corps of Engineers Charleston.

17 BY MR. MOCCIA:

18 Ordnance Operable Unit No. 3 is the first of the
19 three private property sites where we some
20 investigations. This is an area that's located right
21 up -- right up here. It's on the golf course. I
22 forget the name of the subdivision. It's on Wedgewood
23 Road or something like that.

24 Based on the previous reports, we suspect that
25 it may have been a grenade practice field, so we

1 investigated that area. Of course, the land use is
2 residential. There's houses in the area. We did find
3 a MK2 hand grenade. That's basically the only thing
4 we found that was dangerous. It turned out to be
5 inert, however, and then we found 15 practice hand
6 grenades in that search.

7 Because we think there is still a potential for
8 UXO to be present in the area, and it's kind of
9 difficult to limit intrusive activities around a home,
10 people are going to be -- you know, they're going to
11 plant pipelines. They're going to want to build
12 swimming pools. They're going to have kids digging
13 out in the backyard. You know, you just can't -- it's
14 not practical to try to eliminate the intrusive
15 activities, so what we've proposed there is a
16 clearance to depth to go in and actually clear down to
17 the depth that we did confirm that we had ordnance
18 contamination on that site.

19 In estimated cost, we estimated that at
20 approximately \$131,000 for that site.

21 Ordnance Operable Unit No. 5, again, is another
22 private residential area. It's located right along in
23 here. Again, I forget the name of this subdivision
24 here. It's just north of Dairy Ridge Road along here.

25 This is primarily -- the area we investigated

1 was primarily an open field, but it is in a
2 residential area. Again, we -- based on reports, we
3 thought we could have had a practice mine field -- not
4 mine field but a practice grenade field area, so we
5 investigated that. The only thing we found was a
6 part, a single part from a rifle grenade. That's all
7 we found. So because of that, we recommended, since
8 we didn't find any UXO in that area, we recommended no
9 further action for that site.

10 Now the last of the private property units that
11 we -- that we looked at is what we call Ordnance
12 Operable Unit 6. Now this is a fairly large area. It
13 was a suspected 105 millimeter howitzer target area.
14 The land use is a little mixed in the area. There's
15 some industrial, agricultural, construction and I'm
16 sure some hunting that goes on in that area as well.

17 What was found there during our investigation
18 and also during a time critical removal action that
19 was ongoing in that area also was only one high
20 explosive 105 millimeter round and some smoke
21 cannisters which are -- which come out of a 105
22 millimeter, an explosive burster and some HE mortars,
23 High Explosive mortars.

24 The alternative that we've looked at or the
25 alternative that we've recommended or proposed, this

1 is a government buy back alternative. This would be
2 the most cost effective risk reduction alternative for
3 this site. It provides the government the flexibility
4 to buy time, develop more cost effective removal
5 technologies and it also allows them to do a selective
6 removal process where they can go in and do a surface
7 removal, you know, and then release the property back
8 with restrictions.

9 The estimated cost for this alternative, which
10 includes -- again, this is just an estimate, but the
11 land acquisition and interim controls, interim
12 controls would be institutional controls until you get
13 to the point where you're going to release the
14 property back, capitals of a little over a million
15 dollars, \$1,000,000, close to a million .25 dollars,
16 and annual costs, again, for things such as
17 maintaining fencing and signs and all is around
18 \$2,000.

19 BY MR. MULLINAX:

20 Where is that unit located on the map?

21 BY MR. MOCCIA:

22 This is right over here. We call this Red Hill.

23 BY MR. MULLINAX:

24 Okay.

25 BY MR. DURHAM:

1 How many acres is that?

2 BY MR. MOCCIA:

3 It's around 350, something like that, roughly.

4 BY DR. LOWRY:

5 Your report on what you found is different than
6 the one I have. It doesn't report any of the empty
7 105 millimeter rounds. I think there was about 40 of
8 those. They've found about 8 since then. Mr. Davis,
9 how are you, sir?

10 BY MR. DAVIS:

11 How are you doing, sir? I just saw you out
12 there.

13 BY DR. LOWRY:

14 I hired my own DOD tech for doing this, and we
15 haven't even been in the part that's the most
16 contaminated with the artillery.

17 BY MR. DAVIS:

18 We -- we realize ---

19 BY DR. LOWRY:

20 I have a different list if you want to ---

21 BY MR. DAVIS:

22 You found some more, what, cannon or HE up
23 there?

24 BY DR. LOWRY:

25 I haven't found any HE at all, and we found 18

1 of those. I think your list ought to include what
2 was found because when you get to one of those things
3 you don't know whether they're live or not, and you're
4 basically ---

5 BY MR. DAVIS:

6 It's in the report, sir. The actual report
7 itself lists those, and those are considered scrap by
8 the UXO ---

9 BY DR. LOWRY:

10 Now when I find one on my tract of land, ---

11 BY MR. DAVIS:

12 I understand.

13 BY DR. LOWRY:

14 --- it's upsetting.

15 BY MR. DAVIS:

16 Yeah, I understand, and I think you're right,
17 sir. I think you're right about where there the
18 heaviest contamination is, sir.

19 BY MR. MOCCIA:

20 That's it. That concludes the report on the
21 EE/CA report. Does anybody have any general questions
22 or just any questions?

23 BY MR. HENDERSON:

24 Is that report from EE/CA available to us?

25 BY MR. MOCCIA:

1 Yes.

2 BY MR. HENDERSON:

3 How much is there?

4 BY MR. MOCCIA:

5 Two volumes.

6 BY MR. HENDERSON:

7 Can we get a copy of that?

8 BY MR. BOGAN:

9 I have a copy that I'm going to show you just as
10 an example. Even though the report is too wide and I
11 very easily placed into one binder for myself, we have
12 a copy that's located at the County Library.

13 If you wanted xeroxed portions of it, you can do
14 that down on Pine Street. I have two copies that I
15 have in my office -- three copies in my office, and if
16 you wanted a copy -- a whole copy for yourself, we can
17 see about getting a xeroxed copy for you.

18 You just need to let me know after the meeting
19 and see what we can do to get you one xeroxed off. It
20 takes a little while to get, plus all the -- getting a
21 copy of the colored map and things.

22 Do we have any other questions or comments about
23 the nine areas that were covered under the engineering
24 evaluation cost analysis?

25 (NO RESPONSE)

1 BY MR. BOGAN:

2 Anything related not to the EE/CA that you would
3 like to refer to that? Yes, sir?

4 BY MR. DURHAM:

5 Is the County Library copy from Section 3.2.4
6 referred to on page 3-7, and then that was cited as an
7 Appendix that I didn't find. Is that Appendix
8 separate from the report, or did I just miss it
9 completely?

10 BY MR. DAVIS:

11 That's a previous investigation that's just
12 cited.

13 BY MR. DURHAM:

14 It's cited as an Appendix to this report?

15 BY MR. DAVIS:

16 Yes, as an ---

17 BY MR. MOCCIA:

18 It's in there. It's in the Appendix volume.

19 BY MR. DAVIS:

20 It's in the Appendix volume.

21 BY MR. MOCCIA:

22 Are you talking about the environmental
23 assessment? Yeah.

24 BY MR. DAVIS:

25 It should have it.

1 BY MR. BOGAN:

2 And, sir, if you don't see it in that volume,
3 then let me know.

4 BY MR. DURHAM:

5 Well, it's referring to it, but is it actually
6 there?

7 BY MR. BOGAN:

8 Is it the environmental assessment, sir?

9 BY MR. DURHAM:

10 All I know is it said to refer to the Appendix.

11 BY MR. BOGAN:

12 All right. It should be in there, sir. Well,
13 I'll show it to you afterwards.

14 BY LIEUTENANT COLONEL JULICH:

15 What's the period that they have to respond?

16 BY MR. BOGAN:

17 Colonel Julich just asked the question of how
18 long do you have to respond and comments verbal or
19 written comments to the EE/CA accept. We've placed a
20 copy of the EE/CA in the County Library around the
21 10th of November, so it's about 30 days from that
22 point, which will take you up to about the 10th of
23 December. It's another week or two. If anybody has
24 any comments after that, we can take those comments,
25 but they may not go into the updating or the changing

1 of the report itself or the comments that will get in
2 from the public.

3 Yes, Dr. Lowry?

4 BY DR. LOWRY:

5 So I should mail you all the list that I have of
6 what was found on my property, because I know there's
7 live 105 millimeter round that's not listed in there,
8 and that was technically a live round.

9 BY MR. BOGAN:

10 All right, sir. If you'll mail me a copy of
11 that.

12 BY DR. LOWRY:

13 So I need to mail this stuff to you?

14 BY MR. BOGAN:

15 Yes, sir, and if you don't have my address, I
16 can give you a card tonight.

17 BY DR. LOWRY:

18 I have your phone number.

19 BY MR. BOGAN:

20 I know you've got my number, and also, with the
21 report in the library, I gave a little form that I've
22 created for providing comments and reports if anybody
23 needs those.

24 Any other questions or comments? If you have
25 any questions or comments related to areas outside of

1 these nine, Bill Davis and I are available afterwards
2 to talk to you and getting that information.

3 Thank you for your time tonight for being here,
4 and give us a call anytime if you need anything. Good
5 night.

6 (MEETING CONCLUDED AT 7:45 P.M.)
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1 STATE OF SOUTH CAROLINA
2 COUNTY OF SPARTANBURG

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CERTIFICATE

3
4
5 This is to certify that the within meeting was
6 taken on the 28th day of November, 1995;

7 That the foregoing is an accurate transcript of
8 the meeting given;

9 That copies of all exhibits, if any, entered
10 herein are attached hereto and made a part of this
11 record;

12 That the undersigned court reporter, a Notary
13 Public for the State of South Carolina, is not an
14 employee or relative of any of the parties, counsel or
15 witness and is in no manner interested in the outcome
16 of this action.

17 IN WITNESS WHEREOF, I have hereunto set my Hand
18 and Seal at Spartanburg, South Carolina, this 15th day
19 of December, 1995.

20
21
22 
23 Notary Public for South Carolina
24 Commission Expires: 8/26/97

25 (SEAL)